

PROCEEDINGS OF THE
2010 LIBRARY ASSESSMENT CONFERENCE

BUILDING EFFECTIVE, SUSTAINABLE, PRACTICAL ASSESSMENT

OCTOBER 24–27, 2010

BALTIMORE, MARYLAND

UNIVERSITY
of VIRGINIA
LIBRARY



ASSOCIATION OF
RESEARCH LIBRARIES



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Conference Overview

It is with great pleasure that we present 68 peer reviewed papers (including five keynote addresses¹) that were featured during the 2010 Library Assessment Conference held in Baltimore, on October 25-27. This is the third such conference for this growing assessment community; the first took place in Charlottesville in 2006 and the second in Seattle in 2008. The 2010 event marks an opportunity for the Association of Research Libraries to reflect on a journey that started ten years ago—at a forum on Measuring Service Quality where the latest thinking on service quality assessment was brought together and immortalized in a special issue of *Library Trends*.²

Over the last ten years we have observed a veritable explosion in the growth of assessment within libraries, with an ever expanding number of new tools and measures that not only assist in understanding user needs and improving library services, but also are critical in redefining library purpose and roles. We have used assessment information to develop programs and services that place users at the center of articulated outcomes and measures. Library assessment is now an integral part of the effort to define the 21st century library; our tools, methods and applications are developing rapidly. They are needed for the strategic and systematic change that can ensure a vibrant and sustainable future for our communities and our institutions. Simply put, the 21st century library cannot survive unless it develops and uses assessment techniques to ensure that we remain relevant and necessary to the communities we serve.

The growth of the library assessment community can be seen in the success of these Library Assessment conferences. The number of registrants has nearly doubled from 220 in 2006 to 400 in 2010, even though we have limited registration numbers to maintain a sense of community and informal learning. The published proceedings weighed in at 450 pages in 2006³ and 550 pages in 2008.⁴ In planning the 2010 conference, we structured the Baltimore event around five key themes, represented by five keynote speakers whose papers are included in this volume. These papers emphasize strategic approaches to issues of service quality, library as space, learning outcomes, performance measures and scorecards, and articulation of value and impact. Fred Heath, as our opening keynote, offers a general overview, especially of the changes during the past ten years as well as emphasizing the critical support of the Association of Research Libraries for assessment; Danuta Nitecki focuses on assessment of library spaces as a transformative and defining activity of the role of libraries; Megan Oakleaf provides perspectives on the libraries' role in contributing to successful learning outcomes that complement work she has done recently for the Association of College and Research Libraries (ACRL/ALA); Joe Matthews discusses issues related to assessing organizational performance and performance measures; and Stephen Town expands the concepts of value and impact with the notion of a values scorecard that plays an overarching role in defining the strategic elements of the library past, present and future. Complementing these five keynote papers are the 63 contributed papers and 70 posters that demonstrate the wide range of assessment

activities taking place in our libraries. The 68 papers are published in this 788 page volume and many of the posters are available on the conference website.

As before, we will call upon each one of you to make the best of the wisdom shared in these pages, and to share your best with the community as we plan to see each other again in 2012, moving forward by going back to Charlottesville!

Conference Co-Chairs:

Steve Hiller, University of Washington Libraries
Martha Kyrillidou, Association of Research Libraries
Jim Self, University of Virginia Library

2010 Conference Planning Committee:

John Bertot, University of Maryland, College Park
Sam Kalb, Queen's University
Liz Mengel, Johns Hopkins University
Megan Oakleaf, Syracuse University
Kathy Perry, VIVA Consortium
Bill Potter, University of Georgia
Roberta Shaffer, Library of Congress
Agnes Tatarka, University of Chicago
Stephen Town, University of York (UK)

Notes

1. Steve Hiller, Martha Kyrillidou and Jim Self, eds., 2010 Library Assessment Conference Keynote Addresses published as *The Library Quarterly*, 81, 1 (January 2011): 3-128.
2. Martha Kyrillidou and Fred Heath, eds., "Measuring Library Service Quality," *Library Trends* 49, no. 4 (2001): 541-799.
3. Francine DeFranco, et al., eds., *Proceedings of the Library Assessment Conference: Building Effective, Sustainable and Practical Assessment*, September 25-27, 2006, Charlottesville, Virginia (Washington, DC: Association of Research Libraries, 2007), <http://libraryassessment.org/bm~doc/proceedings-lac-2006.pdf>.
4. Steve Hiller, et al., eds., *Proceedings of the 2008 Library Assessment Conference: Building Effective, Sustainable and Practical Assessment*, August 4-7, 2008, Seattle, Washington (Washington, DC: Association of Research Libraries, 2009), <http://libraryassessment.org/bm~doc/proceedings-lac-2008.pdf>.

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Library Assessment: The Way We Have Grown

Fred Heath
University of Texas, USA

Abstract

This chapter served as the basis for the opening keynote speech during the Library Assessment Conference in Baltimore in 2010. It served the purpose of setting the stage by tracing the demands for accountability in the beginning of the century and outlining progress made. It provided important background and context for the following four keynote papers delivered by Megan Oakleaf on teaching and learning, by Danuta Nitecki on assessment of library spaces, by Joe Matthews on performance measures, and by Stephen Town on library value. This chapter emphasizes some of the work the Association of Research Libraries and its partners have supported over the last decade and places ARL developments in the larger context of assessment activities across the profession and across the globe.

“If I have seen a little further it is by standing on the shoulders of giants.” Isaac Newton

Introduction

It is my privilege to write this paper based on an invitation to deliver the opening keynote speech for the 2010 Library Assessment Conference hosted in Baltimore by the Association of Research Libraries, the University of Virginia and the University of Washington. In due course I will also welcome many of the readers of this paper in person delivering a keynote that builds upon this paper, yet cannot promise that my thoughts will not have been expanded slightly as nothing stays the same, and capturing the ways library assessment activities have evolved and grown over the years is a testimony along those lines. The Baltimore event is the third time that administrators, educators, and practitioners of the sciences of evaluation and assessment as it relates to libraries have gathered in North America since 2006.¹ And I am persuaded that through the work of many on the diverse aspects of library assessment, we are beginning to develop a corpus

of data and knowledge that will serve this group well as we undertake to attain the conference theme: the development of effective, sustainable, practical assessment.

The conference itself has four other keynote speakers' papers.² A paper by Megan Oakleaf treats us to research on how libraries and library services impact learning outcomes and Danuta Nitecki, whose work in the field of library assessment is extensive, will share with us aspects of the use of our library spaces in changing times. Joseph Matthews, whose two 2007 books on the topic are evidence of and guide to the growing corpus of research and findings on library assessment,³ focuses on performance measurement and the balanced scorecard. And, the last keynote paper is a topic particularly important in these troubled economic times, Stephen Town discusses how we can measure and convey the value and impact of library services. During the conference a large number of breakout sessions by grassroots practitioners and discipline experts guide us through the many daunting aspects of the assessment challenge and they are primarily organized along the keynote topics outlined here.

In this paper I will attempt to convey an overview of the strides we have made over the past decade in library assessment, an account of the way we have grown as a library assessment community. In attempting to carve this overview, there will be a particular focus on the role that the Association of Research Libraries (ARL) has played in knitting together diverse pieces of the library assessment movement into a coherent suite of services while at the same time creating a constructive space in which other voices can contribute to the assessment dialog.

But before doing that, I must remind us that the

library assessment “movement” did not emerge from the nest full-grown a decade ago. The successes we have enjoyed have progenitors that reach back considerably in time. As we look back, we quickly become aware that concerns with service quality and library effectiveness have occupied both practitioners and researchers for at least a century.

Evaluation and assessment are synonymous with higher education in our time. Everyone attending a North American Conference on Library Assessment is familiar with the roll call of regional accrediting organizations that oversee higher education quality, planning and improvement in the United States. And most of us have had, on at least one occasion, to drag some aspect of our library operations underneath the lens of one of those accrediting bodies to affirm that we were faithfully upholding our part of the university compact with teachers and learners in our community. Our community cares very much about the quality of teaching and learning on our campuses, as well as the quality of the research that steadily advances the frontiers of knowledge and understanding. We are comfortable with accountability and transparency, and we are ready to demonstrate the return on investment, the value received, to all who may be interested.

The Prescriptive Years

Evaluation was not always a component of higher education. In the 19th century, colleges and universities mirrored the chaotic scene of a rapidly industrializing America so graphically portrayed in the novels of Upton Sinclair and Sinclair Lewis. One observer describes higher education institutions of that era as a ‘variegated hodgepodge of uncoordinated practices ... which had never undergone any screening from anybody, and many [of] which were shoddy, futile, and absurd beyond anything we now conceive.’⁴ Slowly, however, to harness the needs of the Industrial Age, education began to be managed, harnessed, and directed. In the public sector, schools tended to follow a common manager-centric model. As David Tyack noted in his book, *The One Best System*, control of public schools in urban settings were the province of elites, of “successful men.” Boards were comprised of business and professional stalwarts, who turned over the administration of public

schools to powerful superintendents charged to shape public education to the economic needs and social conditions of urban and industrial America.⁵

Like the public schools, colleges and universities came to be subjected to oversight and review. The rising tide of regulation saw the emergence of accrediting societies. The New England Association of Colleges and Secondary Schools was established first in 1885, to be followed in short order by the Middle States, North Central, and Southern Associations.⁶ University libraries followed a similar path.

There was little in the way of benchmarking for libraries in the first quarter of the twentieth century. Then in 1928, the Carnegie Corporation established an advisory committee, under the leadership of William Warner Bishop, for the purpose of extending over a million dollars in acquisitions grants to college and university libraries. That prestigious group of college presidents, deans and library directors quickly discovered there were essentially no established or recognized standards with which to guide Carnegie’s investments.⁷ And so the *Carnegie Corporation and College Libraries* standards were born, remarkable in their brevity and explicitness, vestiges of which remain with us to this day. Some twenty one standards embraced the range of library operations, from seating (25 percent of the student body) to collection size, staffing, cataloging and classification and the like. By 1934, most of the accrediting associations had settled on minimum college library collections of 8,000 volumes and expenditures of five dollars per student.⁸

For the most part, however, early assessment of research university adequacy was *prescriptive*, and the powerful advisors to the Carnegie Corporation personally wielded great influence. For the first time, efforts to develop a “scorecard” measuring library effectiveness was established and then largely abandoned by the Board.⁹ University administrators and librarians often turned to visits by or the writings of such eminent academic librarians for guidance on how to conduct their affairs. One member of the Carnegie circle, for example, personally visited 125 of the 200 supplicants for Carnegie aid.¹⁰ Gerould’s book *The College Library Building*, and

William Randall's *The College Library* were underwritten by the powerful Carnegie Corporation.¹¹ Other influential leaders of the early twentieth century included Louis Round Wilson,¹² Maurice Tauber¹³ and Guy Lyle.¹⁴ Like the works of Gerould and Randall, their writings were hugely influential during their time. Library leaders, it can be said, knew a good library when they saw one.

Collection check lists also played an important role in this prescriptive era. The Carnegie Board soon discovered through its efforts at "scorecard" and on-site surveys by luminaries, that simple volume counts were insufficient means by which to assess eligibility for Carnegie largess. The Carnegie-funded *List of Books for College Libraries* by C. B. Shaw of Swarthmore first published in 1930, served primarily as a means for evaluating holdings and only secondarily as a purchase guide.¹⁵ Keeping the accrediting societies in the game, the Southern Association of Colleges and Schools published its own guide, edited by William Stanley Hoole.¹⁶

The Quantitative Years

Subsequently, the influence of the Carnegie Corporation, its interests re-directed, began to shift away from libraries. In time, the numerical benchmarks of accrediting societies, such as they were, also began to evanesce. In some ways, the change resulted from a strategic retreat by the societies from that space. As a result of the Great Depression and the draining capital requirements of World War II, colleges and universities were fiscally stressed, and the accrediting societies began to replace specific library benchmarks (and other measures of institutional adequacy) with more flexible guidelines. And as accrediting societies were permitting institutions to measure library adequacy beneath the lens of institutional purpose, library leaders moved into the vacated quantitative space. The size of collections and the scale of institutional investment in their acquisition mattered directors asserted. The American Library Association, an increasingly influential organization, filled the breach, and in 1943 adopted standards for collection size and expenditures, staffing size and compensation.¹⁷ In 1957, the Association of College and Research Libraries undertook to prepare a new set of standards. Completed in 1959, that six-page document served to guide the rapid build-up of

college and university libraries in the post-Sputnik era, serving to define the dimensions of adequacy as the Higher Education Act of 1965, Title IIA inaugurated a national effort to improve America's college and university libraries.¹⁸ The Clapp-Jordan Formula, first published in 1965, was another gesture toward quantitative standards as the measuring stick of adequacy. Reliance on checklists and other more qualitative approaches, said the authors, was 'slow, tiresome, and costly.'¹⁹

The quantitative measures have never really gone away. In 1963, The Association of Research Libraries assumed oversight of what has come to be known as the *ARL Statistics*TM, a statistical compendium based upon Gerould's, reaching back to 1908.²⁰ Building on the *ARL Statistics*TM, Kendon Stubbs developed the *ARL Index* in the early 1980s, a metrics that became widely recognized among the membership and beyond.²¹ The *ARL Index* is now the oldest, most stable, and most highly regarded measure of research library operations, measuring inputs on collection size, library expenditures, staffing, and services to produce an annual ranking of research libraries across North America.²² And in that context it must be placed at the apex of the quantitative indices that research librarians use to assess the relative strength of their library programs. That index itself went through tweaks over the years. In 1980, ARL adopted new criteria for membership that drew heavily on the *ARL Index* that was originally based on 10 variables selected or determined by factor analysis to be followed by a five-variable index since 1986.²³ From 2005-6 data forward, the *Expenditures-Focused Index*, or as it is now known, the *ARL Investment Index*, shed some of the artifact-derived factors in its algorithm to produce rankings based on total library expenditures, collection expenditures, salaries and wages, and total number of staff.²⁴ The annual publication of the *ARL Index* is always a much-anticipated event, with an institution's placement in the rankings often a matter of concern to library director and university president alike.

Evolving Culture of Assessment

But even as the quantitative *Index* has grown in sophistication and acceptance as a longitudinal input measure, so too has the recognition that a complete program of assessment requires a

broader perspective. That shift in mindset goes back several decades as ARL began to actively grapple with the role that *process* and *qualitative measures* played in effective organizational assessment. In 1970 the ARL Office of University Library Management Studies was established. Later renamed the Office of Leadership and Management Studies (OLMS), OLMS guided library directors through efforts at organizational development and improvement until its discontinuance in 2006.²⁵ Indeed, you can trace the taproot of the new culture of assessment that now characterizes ARL back to Duane Webster's arrival in 1970. In 1971 Duane Webster authored *Planning aids for the University Library Director*. With the book's emphasis on planning and development, Webster pointed out to beleaguered library directors that proper assessment of the requirements for change was one of the essential elements of an effective planning program. A companion study by his office the next year underscored the need to focus on organizational improvement and the development of staff capabilities.²⁶ In 1973, the Management Review and Analysis Program (MRAP) was born, and only a couple of years later the first MRAP studies were completed at Iowa State, Purdue, and Rochester.²⁷ For those of you who may remember the acronyms, assessment was what MRAP (the Management Review and Analysis Program) and CAP (the Collection Analysis Program) were all about—informed decision-making based upon carefully assembled information.²⁸

It was during this period that ARL began to develop the management tools still in use by North America's research libraries. The focus on process was evident from the time OLMS came into being, as was the influence of organizational development gurus such as Chris Argyris²⁹ and Rensis Likert.³⁰ A new generation of library leaders appeared to direct assessment and evaluation in research libraries. The 1973 work by Robert B. Downs and Art McAnnally, "Changing Roles of Directors of University Libraries," shifted the focus away from traditional hierarchical management structures and inputs, and issued a call for the embrace of participatory management—a call soon to be echoed by Maurice Marchant, William Birdsall and others.³¹

In 1978, ARL adopted the *Standards for*

University Libraries that had been a decade in preparation by an ACRL/ARL joint committee, funded at least in part by the Council on Library Resources (CLR). The committee was chaired by Downs, and included among its members Clifton Brock, Gus Harrer, John Heussman, Jay Lucker, John McDonbald, and Ellsworth Mason.³² The work of the Downs Committee was completed in 1975 and the final report was presented to the ARL membership in that year. A new joint committee was convened in that year to complete its work, chaired by Eldred Smith. New measures began jostling for recognition alongside the *Index*. According to Beverly Lynch, the larger, wealthier institutions opposed numbers, fearing minimal standards that would not serve to sustain momentum or justify continuing library investment at those institutions. Support for the quantitative approach, such as it was, came from the smaller, less wealthy, and generally public member libraries. In their final version, the *Standards for University Libraries* were service-oriented, advocating processes that would support the instruction and research programs of the universities.³³

As library researchers and managers sought effectiveness measures that ranged beyond input measures and booklists, much of the groundbreaking work took place in the library schools and on the university campuses—a trend that would continue into the mid-90s. Frederick W. Lancaster developed both an interest and an expertise in the field and through his mentorship opened the doors to many other researchers.³⁴ As Lancaster observed in his first work:

Present standards are largely based on current practices at existing institutions that, in some sense, are considered "good." They emphasize inputs rather than outputs (services). ... Perhaps what is needed is standards by which individual institutions can evaluate their own performance in relation to the needs of their user population.³⁵

Among the early thought leaders in research library circles in those days was Tom Shaughnessy, then director at the University of Minnesota. His own writings from that era evince an awareness of movements and leaders, such as Total Quality Movement (TQM) in the first instance and Deming in the second, as well as a

concern of how to map those ideas toward organizational improvement in research libraries.³⁶ In an important issue of *Library Trends* Shaughnessy squarely joined the issue of the relationship between the inputs that had traditionally driven the research library community and the outcomes that the larger research community was seeking. The question of the relationship between expenditures and quality was joined. That important issue of *Library Trends* added sparks to the ongoing research of library effectiveness with far-reaching implications.³⁷

Peter Hernon and Chuck McClure also established their early reputations at least in part in the fields of evaluation and assessment.³⁸ Danuta Nitecki partnered with Peter Hernon to explore the concepts of service quality and user satisfaction on the Yale campus and elsewhere.³⁹ Their careful work overlapped and anticipated the research being done elsewhere that became the immensely popular LibQUAL+®. Steve Hiller⁴⁰ and Jim Self⁴¹ were establishing national reputations for themselves as they developed strong campus-based assessment programs at the University of Washington and the University of Virginia respectively as were Amos Lakos⁴² and Shelley Phipps.⁴³ From the Columbia study to the assessment of user satisfaction at Yale by Hernon and Nitecki, the library community appeared increasingly ready, and able, to take up Dr. Lancaster's admonition to evaluate performance in the context of local needs and expectations.

In the meantime, in Europe, a strong assessment climate was also building. The Department of Information and Library Management at the University of Northumbria at Newcastle, in many ways served to facilitate the European dialog. The first international conference on assessment can fairly be said to be the 1st Northumbria International Conference on Performance Measurement in Library and Information Services, held in Northumberland in 1995.⁴⁴ The first conference proceedings documented the rich diversity of inquiry across Europe, and included contributions from such stalwarts as Stephen Town, Roswitha Poll, and Ian Winkworth. The proceedings have had an international flavor since that first year, when there were keynote addresses by US and South African speakers.

With the blossoming of web-based information technologies in the second half of the 1990s, large-scale, and collaborative, assessment projects became increasingly feasible, and a new chapter was about to begin. As Karen Coyle has observed, the tension between qualitative and quantitative measures of library performance began to take another turn in the mid-1990s as physical holdings and the acquisitions of printed materials began to share prominence with digital formats and licensed resources.⁴⁵ Or as Danuta Nitecki put it plain-spokenly, "A measure of library quality based solely on collections has become obsolete."⁴⁶ As volume counts and ARL rankings based on such inputs became less useful, ARL began to develop other measures to provide information on adequacy and return on investment.

In the winter of 1999, many of the leaders in library assessment and development met in Tucson Arizona to consider the need to develop alternatives to expenditure metrics as measures of library performance.⁴⁷ Carla Stoffle (University of Arizona) and Paul Kobulnicky (University of Connecticut) were among the leaders who facilitated the conversation.⁴⁸ There, ARL's *New Measures Initiative* was born, led by Stoffle and the ARL Statistics and Measurement Committee. *New Measures*, according to ARL, was to become a suite of services that libraries use to solicit, track, understand, and act upon users' opinions of service quality. Results have been used to develop a better understanding of perceptions of library service quality, interpret user feedback systematically over time, and identify best practices across institutions. Recent years have seen a collaborative culture of assessment reach its full maturity. Methodologists, anthropologists, statisticians and others have joined librarians to produce an array of tools that enable library directors to direct resources with greater precision to areas of highest client priority or greatest need. For example the anthropological work of Susan Gibbons⁴⁹ has been popularized through ACRL publications and presentations and has influenced the establishment of a key strategic direction for ARL in 1995, initially articulated as the contributions of libraries to Research, Teaching and Learning (RTL), but more recently refocused on the Transformation of Research Libraries (TRL).

The New Measures Initiative, now re-branded as the *StatsQUAL® Gateway*, to indicate its place within ARL, underscores the convergence of qualitative and quantitative methodology.

According to a recent publication, the goals are now almost entirely outcome focused:

The goal is to establish an integrated suite of library assessment tools that tell users' library success stories, emphasize customer-driven libraries and demonstrate responsiveness and engagement in improving customer service.⁵⁰

It is probably worth taking a quick look at some of those instruments.⁵¹

The StatsQUAL® Era

The StatsQUAL® suite provides managers access to five protocols: ARL Statistics™, LibQUAL+®, DigiQUAL®, ClimateQUAL®, and MINES for Libraries®.⁵² They share some common characteristics. First of all, they are born of colloquy and common purpose, as researchers, administrators and methodologists have come together to pool their best ideas toward common goods. Secondly, they continue the time-honored commitment of ARL to develop longitudinal data that allows the community to assess its individual libraries over time while allowing for the emergence of useful benchmarks, applicable best practices, and sharing and learning from each other. From early practices that were limited by the boundaries of individual universities have grown a suite of services that can be meaningfully employed by libraries in ARL, in North America generally, and the world.⁵³

LibQUAL+®. In 1998, the year that Google first burst upon the scene, Colleen Cook (subsequently Dean of Libraries and then a Ph.D. student at Texas A&M), Bruce Thompson (then TAMU Professor of Educational Psychology), Yvonna Lincoln and others began developing a modified version of the SERVQUAL protocol, long a standard in the for profit sector for measuring user satisfaction.⁵⁴ The team proposed to ARL the development of a tailored service quality assessment tool, subsequently named "LibQUAL+®", that when fully tested, would be given the instrument to ARL for non-profit use in improving libraries.⁵⁵

In January 2000, the American Library Association held its mid-winter meeting in San

Antonio, and at that conference the representatives of a dozen ARL libraries met in a classroom of a TAMU-San Antonio facility to discuss the possibility of pilot- testing LibQUAL+®. Agreement was reached and the first baby steps in user satisfaction assessment were under way. Martha Kyrillidou, ARL Director of Statistics, and the TAMU team successfully submitted through ARL a proposal to the Fund for the Improvement of Post-Secondary Education (FIPSE).⁵⁶ Upon successfully securing a three-year grant, ARL brought together a forum of notable speakers who worked extensively in helping libraries with service quality improvements and the papers from that event were published as a special issue of *Library Trends* on "Measuring Service Quality."⁵⁷ At that time, eleven years ago and not too far from where we are now, the ARL forum captured the latest thinking in assessment and provided the platform for a rich exchange of ideas that flourished in the coming years with the rapid expansion of the LibQUAL+® service.

LibQUAL+® includes the quantitative data yielded from the 22 core items, but also includes qualitative data provided by users in the form of open-ended comments. Consistently, across libraries, a striking percentage of participants--roughly 40%--provide comments, which flesh out users' service quality perceptions, and make specific recommendations for service quality improvements. In its brief life, LibQUAL+® has collected data from more than 1,000,000 library users across more than a thousand institutions. It has been used in the United States, Canada, Mexico, Bahamas, French Polynesia, Australia, New Zealand, Singapore, the United Kingdom, France, Ireland, the Netherlands, Belgium, Switzerland, Germany, Denmark, Finland, Norway, Sweden, Cyprus, Egypt, Israel, the United Arab Emirates, China, Japan, and South Africa. Currently, the protocol supports 18 language variations: Afrikaans, American English, British English, Chinese (Traditional), Danish, Dutch, Finnish, French (Belgian), French (Canadian), French (France), German, Greek, Hebrew, Japanese, Norwegian, Spanish, Swedish, Welsh. A version in Arabic is currently under development. The various editions of LibQUAL+® have been used over a period of ten years.⁵⁸ Of the tools in the StatsQUAL® suite, LibQUAL+® perhaps brings ARL the closest yet

to recognizing Dr. Lancaster's admonition to ". . . evaluate their own performance in relation to the needs of their user population."

LibQUAL+® is in need to be re-purposed to address and assess the services provided by digital libraries. A grant by the National Library Foundation helped ARL initiate research in this area by attempting a summative evaluation protocol for digital libraries. The DigiQUAL® tool researched with support from NSF's National Science Digital Library (NSDL) Program articulated important dimensions of digital library service quality but has yet to achieve the wide appeal and the promise of bringing together a community of developers and evaluators that focus on success of digital library services from a service and user perspective across different institutions and implementations. Like all the tools in the StatsQUAL® suite, DigiQUAL® is the fruit of multi-institutional collaboration (Texas A&M University, the University of Texas, and ARL as well as NSDL partner projects and services).⁵⁹

ClimateQUAL®. ClimateQUAL®—administered at the University of Texas for the first time in the spring of 2010—is also the newest protocol in the assessment toolkit. In many ways it harkens back to the days of Duane Webster's arrival at ARL, the early studies of the Columbia University Libraries, MRAP, and the first visible commitment of the association to organizational development. Born of the work of Paul Hanges of the Psychology Department at the University of Maryland, the instrument originated there as the Organizational Climate and Diversity Assessment (OCDA) protocol. Indeed, its library developers, Charles Lowry and Sue Baughman are now Executive Director and Associate Deputy Director respectively of ARL. The dataset is proprietary and belongs to the University of Maryland and ARL. In the words of its authors and owners, ClimateQUAL® "...uses deep assessment of a library's staff to plumb the dimensions of climate and organizational culture important for a healthy organization in a library setting."⁶⁰ Participants in the protocol commit to share ideas and strategies that promise to improve organizational climate and improve service delivery.⁶¹

MINES for Libraries®. In some ways, MINES for Libraries®, whose developers are

pragmatically aware of the way the information revolution has changed the way researchers and learners interact with the research library is the one protocol that may be the most interesting. MINES stands for Measuring the Impact of Networked Electronic Services. MINES' roots partly lie in the ARL E-Metrics project, a partnership of ARL and the Florida State University Information Use Management and Policy Institute. Led by Sherrie Schmidt (Arizona State University) and Rush Miller (University of Pittsburgh), the E-Metrics project undertook to create a better understanding of how the growing presence of electronic resources were used by the university community and how they contributed to user success and satisfaction.⁶² The ARL E-Metrics work was incorporated in the ARL Supplementary Statistics to the extent that the data are focusing on institutional elements (usage, digital libraries, ebooks).⁶³ The user component though of this work is addressed effectively with the MINES for Libraries® protocol.

MINES for Libraries® focuses on the purpose of use of electronic resources, the demographics of the users, and the location of use. The protocol was developed by Brinley Franklin, Vice Provost for Libraries at the University of Connecticut and Terry Plum, of the Simmons School of Library and Information Science,⁶⁴ and has its roots in a long standing tradition of indirect cost studies. MINES for Libraries® like ClimateQUAL® and LibQUAL+® is accessible to the library community via ARL's StatsQUAL® portal and the application of the protocol does involve local networking expertise and capacity. It has been successfully implemented in consortia like the Ontario Council of University Libraries (OCUL)⁶⁵ but it has also been successful as a local institutional application at the University of Iowa and the University of Macedonia in Thessaloniki, Greece.⁶⁶ As LibQUAL+® measures the lingering commitment of the student to the library as place, MINES for Libraries® acknowledges that many library users are no longer constrained to frequent the physical library to make use of resources that are increasingly accessible digitally.⁶⁷

This protocol also has the potential of expansion into the new directions library assessment is emphasizing, the valuation studies. Building upon important work by Paula Kaufman⁶⁸ at the University of Illinois at Urbana-Champaign and

Carol Tenopir⁶⁹ at the University of Tennessee, ARL staff has partnered with them and pursuing a systematic investigation and awareness of library valuation methodologies. Lib-Value is a three-year grant supported with funding by the Institute of Museum and Library Services (IMLS) and attempts to address limitation and expand the perspectives of Return On Investment studies implemented in public libraries and/or sponsored by vendors. The researchers have a broad perspective of library valuation methods and their goal is to expand the debate of these issues over the coming years.⁷⁰

The Globalization of Assessment

The decade since the ARL forum on Library Service Quality was a period of rapid convergence in library assessment. The important work taking place in North America was mirrored by similar developments in Europe and elsewhere. The International Federation of Library Associations (IFLA) has fostered the conversation through conferences and publications. Roswitha Poll's influential study *Measuring Quality* has now been published in two editions and in six languages and serves as a guide to practitioners with many indicators for performance assessment.⁷¹ The European tradition is well documented in the biennial Northumbria Conference on Performance Measurement and Metrics.⁷² From the first conference at Newcastle in 1995, the rich diversity of research in library assessment was evident. The Northumbria Conference has taken place mostly in the UK but also in places like USA, South Africa, and Italy, as they were scheduled adjacent to IFLA conferences. With each succeeding biennial conference, participation has become more richly diverse. The 8th Conference held in Florence in the late summer of 2009 included some 42 papers from all around the globes. North American presenters included John Bertot, Brinley Franklin, Martha Kyrillidou, Charles Lowry, Steve Hiller, Wanda Dole, and others. Presenters from at least 16 nations contributed to the colloquy.⁷³

In 2006, eleven years after the first Northumbrian Conference, ARL brought to North America its very first Library Assessment Conference. More than 200 participants from seven nations participated--representing over 100 libraries, associations, library systems, or vendors. Some 40 papers were presented on the vast toolkit

assembled to assist librarians in their work.⁷⁴ Paul Hanges keynoted there on his work with the ClimateQUAL[®] protocol, and Brinley Franklin shared additional information on MINES. In 2008, the stakeholders and participants in the library assessment movement assembled again, this time in Seattle. Some 375 professionals attended from around the globe, and some 65 papers were offered. As the editors of the conference proceedings proudly noted, it was the largest library assessment ever held.⁷⁵ Here for the first time, and perhaps emblematic of the maturation of the movement itself, the first Library Assessment Career Achievement awards were awarded to Duane Webster, Amos Lakos, and Shelley Phipps.⁷⁶

More recently the library assessment movement is also reaching communities in eastern European and other African and Asian countries by bringing these communities together in the Qualitative and Quantitative Research Methods in Libraries (QQML) conference. The first and second QQML events took place in Chania, Crete, in 2009 and 2010 respectively. Keynote speakers featured included Peter Hernon and Danuta Nitecki in 2009, W. F. Lancaster, and Roswitha Poll in 2010. The organizing committee is currently planning future events in the coming years.

Summary

And so, for a decade now, ARL leaders and contributing collaborators have been at work developing and promoting innovative means of assessing research libraries, with an eye toward their continual improvement. A methodological suite of protocols has been developed that recognizes and draws upon the descriptive statistics in the *ARL Index* that trace their roots to the beginning of an earlier century and which now includes such tools as LibQUAL+[®], MINES for Libraries[®], and ClimateQUAL[®]. A new generation of assessment experts such as Steve Hiller, Jim Self, Stephen Town,⁷⁷ Danuta Nitecki, Peter Hernon, Brinley Franklin, Colleen Cook, Bruce Thompson, Betinna Koeper, Sayeed Choudhury contribute to and draw upon the evolving suite of assessment protocols. Colleen Cook⁷⁸ and Martha Kyrillidou⁷⁹ have subjected the protocols to the rigor of the dissertation process. And the new leadership of ARL, Charles Lowry and Sue Baugham, bring their own distinguished

backgrounds to the challenges of evaluation and assessment.

If there is a hallmark, a defining characteristic of this decade, it is a new era of colloquy – where methodologists from all sectors actively collaborate to advance the assessment of research library effectiveness. Major contributions to the study of user behaviors over the past decade have been made by OCLC, CLIR and Ithaka.⁸⁰ The current conversation is both global and inclusive as practitioners and researchers learn from one another, combining and melding their instruments in order to optimize the investments in and improve the effectiveness of library operations. Jim Self and Steve Hiller have served the library community as Visiting Program Officers at ARL to answer a call critical to our constrained times: “to assist libraries in developing effective, sustainable, and practical assessment programs that demonstrate the libraries’ contributions to teaching, learning, and research.”⁸¹ Open to all libraries, the lessons of sustainability are brought to the local campus by the program officers. Administration of the StatsQUAL® protocols, interpretation of the result sets, development of local assessment plans, preparation for regional accreditation, and the establishment of benchmarks and performance standards are now within the grasp of the local library.

Brinley Franklin re-introduced me to John Cotton Dana whose writings take us back to the beginning of the century, a long journey we have covered all too briefly with this essay. ‘All public institutions,’ said Dana, should give returns for their costs; and those returns should be in good degree positive, definite, visible, and measurable. . . . Common sense demands that a publicly-supported institution do something for its supporters and that some part at least of what it does be capable of clear description and downright valuation.⁸² It is clear that our best efforts at accountability and demonstrating value and return on investment have not spared libraries from the challenges of the current fiscal climate. What our culture of assessment can do is to allow us to concentrate with precision the assignment of available resources to the goods and services our communities most value. If we listen, and if we act purposefully, we will remain indispensable to teaching and learning.

The Library Assessment Conference in Baltimore offers an opportunity to learn of the additional steps that we in the profession have taken to make our libraries better in service to the communities they serve. We learn how close we have come to answering the admonitions of Mr. Dana and Professor Lancaster, two of the giants upon whose shoulders we stand.

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Notes

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Are They Learning? Are We? Learning Outcomes and the Academic Library

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Abstract

Since the 1990s, the assessment of learning outcomes in academic libraries has accelerated rapidly, and librarians have come to recognize the necessity of articulating and assessing student learning outcomes. Initially, librarians developed tools and instruments to assess information literacy student learning outcomes. Now, academic librarians are moving to a larger scale assessment approach: the articulation and demonstration of library impact on institutions of higher education. This article considers six questions relevant to the assessment challenges librarians face in coming years:

- 1) How committed are librarians to student learning?
- 2) What do librarians want students to learn?
- 3) How do librarians document student learning?
- 4) How committed are librarians to *their own* learning?
- 5) What do librarians need to learn?
- 6) How can librarians document their own learning?

Introduction

In the last two decades the assessment of learning outcomes in academic libraries has accelerated rapidly. Outside higher education institutions, regional accreditation organizations have moved from input and output measures to outcomes-based evaluation. They expect higher education institutions to formulate student learning outcomes, assess the degree to which students attain these outcomes, and engage in a continuous improvement process to meet outcomes over time. As a result, higher education institutions have developed general education outcomes; academic departments have adopted lists of learning outcomes; and co-curricular programs have identified student learning and development outcomes. Over time, academic librarians also

recognized the necessity to articulate institutional student learning outcomes, usually in the area of information literacy. Meanwhile, professional associations have identified outcomes that all graduating students should attain, such as the adoption of the *Information Literacy Competency Standards for Higher Education*.¹ Funding agencies like the Institute for Museum and Library Services have also embraced outcomes-based evaluation for all funded projects; projects must demonstrate that they have a measurable impact on their targeted audiences.

In the last ten years, librarians have progressed by developing tools and instruments to assess information literacy learning outcomes. Traditionally, librarians used surveys and tests to assess student learning.² More recently, librarians have embraced authentic performance assessments³ (e.g., portfolios, research papers, annotated bibliographies, and worksheets) and used rubrics to score them.⁴

Now, academic librarians are moving beyond assessment of individual learning outcomes to a larger scale value assessment: the demonstration and articulation of the impact of libraries on institutions of higher education. In times of economic crisis, the need to show value is heightened, as evidenced by the recent increase in projects, large and small, dedicated to finding evidence of the worth and importance of academic libraries. Still, questions remain:

- How committed are librarians to student learning?
- What do librarians want students to learn?
- How do librarians document student learning?
- How committed are librarians to *their own* learning?
- What do librarians need to learn?

- How can librarians document their own learning?

How Committed Are We to Student Learning?

While many librarians have dedicated their careers to sustaining students, faculty, and colleagues, the idea that academic librarians have a duty and obligation to be educators is not universally embraced. For example, a content analysis of ARL member library mission statements indicates that only 1/5 of ARL libraries consider teaching a key element of their missions. Many express their desire to *support* the teaching missions of their overarching institutions using terms like “promote,” “enhance,” “encourage,” or “assist” to describe their efforts to augment institutional teaching missions. However, only 25 ARL library missions state that they actively “teach,” “educate,” or “provide instruction” rather than serving in a limited support role. While library mission statements do not necessarily encapsulate individual librarian beliefs and library service goals, the difference between these positions may indicate important differences in organizational perspective. ARL mission statements indicate two levels of commitment: 1) libraries that cede instructional territory to disciplinary units and provide only secondary, supplemental support, 2) libraries that identify education as a core value, take responsibility for student attainment of learning goals, and consequently define themselves as active agents in the teaching missions of their institutions. While the latter group certainly commits to a more ambitious role on campus, they also can achieve a more stable and powerful position among competitors.

Of course, while not all academic libraries have embraced teaching and learning as a core value that infuses resource and service offerings, many library departments and individual librarians have. For example, virtually all academic library reference and instruction departments provide some level of education for students in the form of face-to-face teaching, tutorials, subject guides, tip sheets, toolkits, reference interactions, online course support, etc. In addition, many libraries have established a list of learning outcomes that all students should achieve prior to graduation, a necessary step in both producing and assessing student learning.⁵ Taking together, these

examples indicate a degree of departmental and individual commitment to student learning.

What Do We Want Students to Learn?

Librarians who establish and apply student learning outcomes know what they want students to learn. Many librarians look to the *Information Literacy Competency Standards for Higher Education* for inspiration in writing learning outcomes; likewise, libraries that have established agreed-upon learning outcomes typically base them on the *Standards*. Although the *Standards* articulate the information literacy skills students need to acquire during their higher education experience, many faculty and institutional administrators consider them library-centric standards. Therefore, to create value in the minds of students, faculty, and administrators, libraries need to establish their value in terms of academic department and institutional teaching goals by augmenting the *Standards* with broader views, especially when communicating outside the library organization and within a campuswide context.

To determine which standards will serve to translate library learning values to faculty and administrators, librarians can seek the answers to the following questions:

1. What do institutions want students to learn?
2. What do future employers and graduate/professional programs want students to learn?

To answer the first question, librarians can investigate their institution’s general education outcomes and strategic goals as well as regional accreditation mandates to gain a unique, campus-specific, non-standardized picture of what students at their institution need to be able to know and do before graduation. Likewise, subject specialist librarians can also identify learning outcomes for individual academic disciplines and majors as well as any additional accreditation requirements, such as those created by professional associations and applied to professional schools. Some subject specialists, like engineering librarians at NCSU Libraries, have already experimented with this approach.⁶ Taken as a whole, the outcomes, goals, and standards produced by institutions, professional associations, and accreditation agencies represent

what a particular campus wants students to be able to know and do by the time they graduate.

To answer the second question, librarians can gather information from a wide variety of venues. Librarians can research job postings; follow up on student internship supervisor feedback; or explore the job knowledge, skills, and abilities required for specific job fields. Librarians can also investigate the admission requirements and entering student expectations of graduate and professional schools. Finally, librarians can set alerts to be notified of major publications that focus on higher education such as *Raising the Bar: Employers' Views on College Learning in the Wake of the Economic Downturn*.⁷

In addition to these approaches, librarians can utilize other existing learning standards to define library instructional goals more broadly and match campus learning expectations—without departing from the values of traditional information literacy skills. Clearly, there is a high level of similarity among many learning standards, including the ACRL *Standards*, AAC&U LEAP *Essential Learning Outcomes*,⁸ AAC&U *VALUE Rubrics*,⁹ ISTE *NETS-S Standards*,¹⁰ NCTE *21st Century Literacies*,¹¹ *Partnership for 21st Century Skills*,¹² AASL *Standards for the 21st Century Learner*,¹³ *Common Core State Standards*,¹⁴ exemplary co-curricular

standards,¹⁵ and CAS *Learning and Developmental Outcomes*¹⁶ (see Figure 1). Not all of these standards use the term “information literacy” to describe necessary student skills. For example, UniLOA refers to “critical thinking” which they define as “an active process where students use skills of evaluating, analyzing, assessing, interpreting, questioning and restating a problem or challenge. A skilled critical thinker should be able to examine and understand the fundamental qualities of problems, collect and analyze critical data, draw appropriate interpretations and conclusions, examine broad-based problem-solving options and effectively communicate and implement appropriate solutions”.¹⁷ Certainly, this definition of critical thinking includes many characteristics of information literacy. By emphasizing shared student learning outcomes and standards, librarians can simultaneously teach information literacy content and demonstrate the impact of that instruction on what campuses and employers want students to learn most. Indeed, when librarians ignore artificial academic boundaries and embrace a broader conception of their teaching content, they are more likely to utilize teaching best practices such as presenting material within real-life or disciplinary contexts. Consequently, librarians can achieve—and demonstrate—an impact on student learning beyond their expectations.

Figure 1. Shared Learning Standards & Outcomes

ACRL Information Literacy Competency Standards for Higher Education	AAC&U Essential Learning Outcomes	AAC&U VALUE Rubrics	ISTE National Educational Technology Standards for Students	NCTE 21 st Century Literacies and Curriculum Framework	Partnership for 21 st Century Skills	AASL Standards for the 21 st Century Learner
<p>Standard 1. The information literate student determines the nature and extent of the information needed.</p>	<p>Inquiry and Analysis, Problem Solving</p>	<p>Inquiry and Analysis - Identifies a creative, focused, and manageable topic that addresses potentially significant yet previously less-explored aspects of the topic. Critical Thinking - Issue/problem to be considered critically is stated clearly and described comprehensively, delivering all relevant information necessary for full understanding. Problem Solving - Demonstrates the ability to construct a clear and insightful problem statement with evidence of all relevant contextual factors.</p>	<p>Students plan strategies to guide inquiry; students identify and define authentic problems and significant questions for investigation; students plan and manage activities to develop a solution or complete a project.</p>	<p>Students use inquiry to ask questions and solve problems.</p>	<p>Identify and ask significant questions that clarify various points of view and lead to better solutions. (Learning and Innovation Skills).</p>	<p>1.1.3 Develop and refine a range of questions to frame the search for new understanding. 1.2.1 Display initiative and engagement by posing questions and investigating the answers beyond the collection of superficial facts.</p>
<p>Standard 2. The information literate student accesses needed information effectively and efficiently.</p>	<p>Inquiry and Analysis, Problem Solving</p>	<p>Creative Thinking - Not only develops a logical, consistent plan to solve problem, but recognizes consequences of solution and can articulate reason for choosing solution.</p>	<p>Students collect and analyze data to identify solutions and/or make informed decisions; students understand and use technology systems; students select and use applications effectively and productively.</p>	<p>Twenty-first century readers and writers need to manage, analyze, and synthesize multiple streams of simultaneous information; students find relevant and reliable sources that meet their needs; students locate information from a variety of sources.</p>	<p>Access information efficiently (time) and effectively (sources); manage the flow of information from a wide variety of sources (Information, Media, and Technology Skills).</p>	<p>1.1.4 Find, evaluate, and select appropriate sources to answer questions. 1.1.8 Demonstrate mastery of technology tools for accessing information and pursuing inquiry. 1.2.5 Demonstrate adaptability by changing the inquiry focus, questions, resources, or strategies when necessary to achieve success. 1.2.6 Display emotional resilience by persisting in information searching despite challenges. 1.2.7 Display persistence by continuing to pursue information to gain a broad perspective. 2.2.1 Demonstrate flexibility in the use of resources by adapting information strategies to each specific resource and by seeking additional resources when clear conclusions cannot be drawn.</p>

<p>ACRL Information Literacy Competency Standards for Higher Education</p> <p>Standard 3. The information literate student evaluates information and its sources critically and incorporates selected information into his or her knowledge base and value system.</p>	<p>AAC&U Essential Learning Outcomes</p> <p>Critical and Creative Thinking</p>	<p>AAC&U VALUE Rubrics</p> <p>Inquiry and Analysis - Synthesizes in-depth information from relevant sources representing various points of view/approaches. Organizes and synthesizes evidence to reveal insightful patterns, differences, or similarities related to focus. Critical Thinking - Information is taken from source(s) with enough interpretation/evaluation to develop a comprehensive analysis or synthesis. Viewpoints of experts are questioned thoroughly. Problem Solving - Evaluation of solutions is deep and elegant (for example, contains thorough and insightful explanation) and includes, deeply and thoroughly, all of the following: considers history of problem, reviews logic/reasoning, examines feasibility of solution, and weighs impacts of solution. Lifelong Learning - Makes explicit references to previous learning and applies in an innovative (new and creative) way that knowledge and those skills to demonstrate comprehension and performance in novel situations. Reviews prior learning (past experiences inside and outside of the classroom) in depth to reveal significantly changed perspectives about educational and life experiences, which provide foundation for expanded knowledge, growth, and maturity over time. Integrative Learning - Independently creates wholes out of multiple parts (synthesizes) or draws conclusions by combining examples, facts, or theories from more than one field of study or perspective.</p>	<p>ISTE National Educational Technology Standards for Students</p> <p>Students evaluate and select information sources and digital tools based on the appropriateness to specific tasks.</p>	<p>NCTE 21st Century Literacies and Curriculum Framework</p> <p>Twenty-first century readers and writers need to create, critique, analyze, and evaluate multi-media texts; students critically analyze a variety of information from a variety of sources; students analyze the credibility of information and its appropriateness in meeting their needs; students analyze and evaluate the multimedia sources that they use.</p>	<p>Partnership for 21st Century Skills</p> <p>Effectively analyze and evaluate evidence, arguments, claims, and beliefs; analyze and evaluate major alternative points of view (Learning and Innovation Skills); evaluate information critically and competently (Information, Media, and Technology Skills).</p>	<p>AASL Standards for the 21st Century Learner</p> <p>1.1.5 Evaluate information found in selected sources on the basis of accuracy, validity, appropriateness for needs, importance, and social and cultural context. 1.2.4 Maintain a critical stance by questioning the validity and accuracy of all information.</p>
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ACRL Information Literacy Competency Standards for Higher Education	AAC&U Essential Learning Outcomes	AAC&U VALUE Rubrics	ISTE National Educational Technology Standards for Students	NCTE 21 st Century Literacies and Curriculum Framework	Partnership for 21 st Century Skills	AASL Standards for the 21 st Century Learner
<p>Standard 4. The information literate student, individually or as a member of a group, uses information effectively to accomplish a specific purpose.</p>	<p>Written and Oral Communication, Synthesis and Advanced Accomplishment across General and Specialized Studies</p>	<p>Written Communication - Demonstrates a thorough understanding of context, audience, and purpose that is responsive to the assigned task(s) and focuses all elements of the work. Demonstrates skillful use of high-quality, credible, relevant sources to develop ideas that are appropriate for the discipline and genre of the writing. Oral Communication - A variety of types of supporting materials (explanations, examples, illustrations, statistics, analogies, quotations from relevant authorities) make appropriate reference to information or analysis that significantly supports the presentation or establishes the presenter's credibility/authority on the topic.</p>	<p>Students demonstrate creative thinking, construct knowledge, and develop innovative products and processes using technology; students apply existing knowledge to generate new ideas, products, or processes; students create original works as a means of personal or group expression; students communicate information and ideas effectively to multiple audiences using a variety of media and formats; students contribute to project teams to produce original works or solve problems; students process data and report results.</p>	<p>Twenty-first century readers and writers need to design and share information for global communities to meet a variety of purposes; students select, organize and design information to be shared, understood, and distributed beyond their classrooms; students take responsibility for communicating their ideas in a variety of ways; students share and publish their work in a variety of ways; students create new ideas using knowledge gained; students synthesize information from a variety of sources; students manage new information to help them solve problems; students use information to make decisions as informed citizens; students communicate information and ideas in a variety of forms; students communicate information and ideas to different audiences; students articulate thoughts and ideas so that others can understand and act on them.</p>	<p>Develop, implement, and communicate new ideas to others effectively; synthesize and make connections between information and arguments; interpret information and draw conclusions based on the best analysis; articulate thoughts and ideas effectively using oral, written, and nonverbal communication skills in a variety of formats and contexts; use communication for a range of purposes (e.g. to inform, instruct, motivate, and persuade) (Learning and Innovation Skills); use information accurately and creatively for the issue or problem at hand (Information, Media, and Technology Skills).</p>	<p>2.1.1 Continue an inquiry-based research process by applying critical thinking skills (analysis, synthesis, evaluation, organization) to information and knowledge in order to construct new understandings, draw conclusions, and create new knowledge. 2.1.2 Organize knowledge so that it is useful. 2.1.6 Use the writing process, media, and visual literacy, and technology skills to create products that express new understandings. 3.1.1 Conclude and inquiry-based research process by sharing new understandings and reflecting on the learning. 3.1.3 Use writing and speaking skills to communicate new understandings effectively. 3.1.4 Use technology and other information tools to organize and display knowledge and understanding in ways others can view, use, and assess. 3.1.6 Use information and technology ethically and responsibly.</p>
<p>Standard 5. The information literate student understands many of the economic, legal, and social issues surrounding the use of information and accesses and uses information ethically and legally.</p>	<p>Ethical Reasoning and Action</p>	<p>Ethical Reasoning - Student can recognize ethical issues when presented in a complex, multilayered (gray) context AND can recognize cross-relationships among the issues.</p>	<p>Students understand human, cultural, and societal issues related to technology and practice legal and ethical behavior; students advocate and practice safe, legal, and responsible use of information and technology.</p>	<p>Twenty-first century readers and writers need to attend to the ethical responsibilities required by these complex environments; students create products that are both informative and ethical.</p>	<p>Apply a fundamental understanding of the ethical/legal issues surrounding the access and use of information (Information, Media, and Technology Skills).</p>	<p>3.1.6 Use information and technology ethically and responsibly.</p>

<p>ACRL Information Literacy Competency Standards for Higher Education</p> <p>General Definition: The information literate An information literate individual is able to:</p> <ul style="list-style-type: none"> ● Determine the extent of information needed ● Access the needed information effectively and efficiently ● Evaluate information and its sources critically ● Incorporate selected information into one's knowledge base ● Use information effectively to accomplish a specific purpose ● Understand the economic, legal, and social issues surrounding the use of information, and access and use information ethically and legally 	<p>AAC&U Essential Learning Outcomes</p> <p>Information Literacy, Foundations and Skills for Lifelong Learning</p>	<p>AAC&U VALUE Rubrics</p>	<p>ISTE National Educational Technology Standards for Students</p> <p>Students apply digital tools to gather, evaluate, and use information; students locate, organize, analyze, evaluate, synthesize, and ethically use information from a variety of sources and media; students use critical thinking skills to plan and conduct research, manage projects, solve problems, and make informed decisions using appropriate digital tools and resources; students demonstrate personal responsibility for lifelong learning.</p>	<p>NCTE 21st Century Literacies and Curriculum Framework</p>	<p>Partnership for 21st Century Skills</p> <p>Use technology as a tool to research, organize, evaluate, and communicate information; use digital technologies (computers, PDAs, media players, GPS, etc.), communication/networking tools and social networks appropriate to access, manage, integrate, evaluate, and create information to successfully function in a knowledge economy (Information, Media, and Technology Skills); demonstrate commitment to learning as a lifelong process (Life and Career Skills).</p>	<p>AASL Standards for the 21st Century Learner</p>
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Figure 1. Shared Learning Standards & Outcomes (continued)

ACRL Information Literacy Competency Standards for Higher Education	Common Core State "College and Career Readiness" Standards	Penn State Co-Curricular Learning Outcomes	ABET Criteria for Accrediting Engineering Programs	CAS Professional Standards for Higher Education
<p>Standard 1. The information literate student determines the nature and extent of the information needed.</p> <p>Standard 2. The information literate student accesses needed information effectively and efficiently.</p> <p>Standard 3. The information literate student evaluates information and its sources critically and incorporates selected information into his or her knowledge base and value system.</p>	<p>Writing Standard 7. Perform short, focused research projects as well as more sustained research in response to a focused research question, demonstrating understanding of the material under investigation.</p> <p>Writing Standard 8. Gather relevant information from multiple print and digital sources, assess the credibility and accuracy of each source, and integrate and cite the information while avoiding plagiarism.</p>	<p>Students will apply effective reasoning skills.</p>	<p>Engineering programs must demonstrate that their students attain an ability to identify, formulate, and solve engineering problems.</p> <p>Engineering programs must demonstrate that their students attain and ability to use the techniques, skills, and modern engineering tools necessary for engineer practice.</p> <p>Engineering programs must demonstrate that their students attain an ability to design and conduct experiments, as well as to analyze and interpret data.</p>	<p>Knowledge Acquisition, Construction, Integration, and Application – Connecting Knowledge to Other Knowledge, Ideas, and Experiences. Uses multiple sources of information and their synthesis to solve problems; knows how to access diverse sources of information such as the internet, text observations, and databases.</p> <p>Cognitive Complexity – Critical Thinking. Identifies important problems, questions, and issues; analyzes interprets and makes judgments of the relevance and quality of information; assesses assumptions and considers alternative perspectives and solutions.</p> <p>Cognitive Complexity – Effective Reasoning. Uses complex information from a variety of sources including personal experience and observation to form a decision or opinion; is open to new ideas and perspectives.</p>
<p>Standard 4. The information literate student, individually or as a member of a group, uses information effectively to accomplish a specific purpose.</p>	<p>Reading Standard 1. Read closely to determine what the text says explicitly and to make logical inferences from it; cite specific textual evidence when writing or speaking to support conclusions drawn from the text.</p> <p>Reading Standard 2. Determine central ideas or themes of a text and analyze their development; summarize the key supporting details and ideas.</p> <p>Reading Standard 8. Delineate and evaluate the reasoning and rhetoric within a text; including assessing whether the evidence provided is relevant and sufficient to support the text's claim.</p> <p>Speaking and Listening Standard 2. Integrate and evaluate information from multiple oral, visual, or multimodal sources in order to answer questions, solve problems, or build knowledge.</p> <p>Reading Standard 7. Synthesize and apply information presented in diverse ways in print and digital sources in order to answer questions, solve problems, or compare modes of presentation.</p> <p>Writing Standard 6. Use technology, including the Internet, to produce, publish, and interact with others about writing.</p> <p>Writing Standard 10. Write routinely over extended time frames and shorter time frames for a range of tasks, purposes, and audiences.</p> <p>Speaking and Listening Standard 4. Present information, evidence, and reasoning in a clear and well-structured way appropriate to purpose and audience.</p> <p>Speaking and Listening Standard 5. Make strategic use of digital media and visual displays of data to express information and enhance understanding.</p>	<p>Students will demonstrate the ability to integrate and apply ideas and themes across the curriculum and co-curriculum. Students will communicate effectively with others both verbally and in writing.</p>	<p>Engineering programs must demonstrate that their students attain an ability to design and conduct experiments, as well as to analyze and interpret data.</p>	<p>Practical Competence – Communicating Effectively. Conveys meaning in a way that others understand by writing and speaking coherently and effectively; writes and speaks after reflection; influences others through writing, speaking or artistic expression; effectively articulates abstract ideas; uses appropriate syntax and grammar; makes and evaluates presentations or performances; listens attentively to others and responds appropriately.</p> <p>Knowledge Acquisition, Construction, Integration, and Application – Constructing Knowledge. Personalizes learning; makes meaning from text, instruction, and experience; uses experience and others sources of information to create new insights; generates new problem-solving approaches based on new insights; recognizes one's own capacity to create new understandings from learning activities and dialogue with others.</p>

<p>ACRL Information Literacy Competency Standards for Higher Education</p> <p>Standard 5. The information literate student understands many of the economic, legal, and social issues surrounding the use of information and accesses and uses information ethically and legally.</p>	<p>Common Core State “College and Career Readiness” Standards</p>	<p>Penn State Co-Curricular Learning Outcomes</p> <p>Students will acquire ethical reasoning skills. Students will develop a sense of personal integrity and clarify their personal values.</p>	<p>ABET Criteria for Accrediting Engineering Programs</p> <p>Engineering programs must demonstrate that their students attain an ability to communicate effectively.</p>	<p>CAS Professional Standards for Higher Education</p> <p>Intrapersonal Development – Commitment to Ethics and Integrity. Incorporates ethical reasoning into action; explores and articulates the values and principles involved in personal decision-making; acts in congruence with personal values and beliefs; exemplifies dependability, honesty, and trustworthiness; accepts personal accountability. Practical Competence – Technological Competence. Demonstrates technological literacy and skills; demonstrates the ethical application of intellectual property and privacy; uses technology ethically and effectively to communicate, solve problems, and complete tasks; stays current with technological innovations.</p>
<p>General Definition: The information literate An information literate individual is able to:</p> <ul style="list-style-type: none"> ● Determine the extent of information needed ● Access the needed information effectively and efficiently ● Evaluate information and its sources critically ● Incorporate selected information into one’s knowledge base ● Use information effectively to accomplish a specific purpose ● Understand the economic, legal, and social issues surrounding the use of information, and access and use information ethically and legally 		<p>Students will develop critical and reflective thinking abilities. Students will cultivate a propensity for lifelong learning.</p>	<p>Engineering programs must demonstrate that their students attain a recognition of the need for, and an ability to engage in, life-long learning.</p>	

Furthermore, librarians can revise the language they use when communicating the educational value of libraries. Within library walls, the term “information literacy” has gained wide acceptance. On campus, other synonyms may provoke a more positive response. Examples include: “information skills,” “research skills,” “independent scholarship,” “independent research,” “inquiry,” “21st century skills,” or even “lifelong learning.” Indeed, some authors argue that information literacy concepts overlap with many other traditions,¹⁸ such as the scientific method,¹⁹ general research processes,²⁰ and Bloom’s Taxonomy.²¹ Some librarians may argue, with merit, that it is important to teach faculty and administrators what information literacy is and why it should be important to them. In fact, some librarians may be fortunate enough to work with campus partners that are already well-versed in the value of information literacy. For those facing greater challenges, establishing and using a common language that emphasizes shared campuswide values may produce greater success.

How Do We Document Their Learning?

Once librarians decide that they are committed to owning an instructional role within their institutions and know what they want their students to learn, the next steps are to engage in instruction and then assess and document impact.

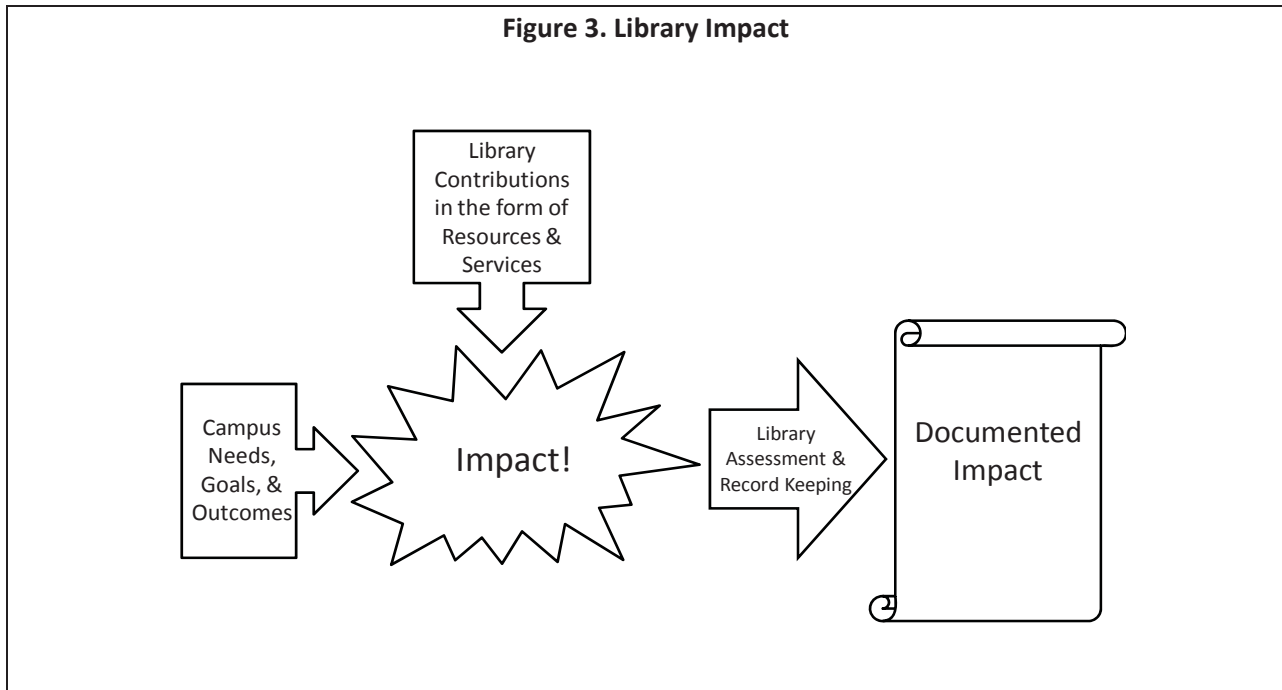
Libraries engage in instruction in various ways. Oftentimes, libraries limit their conception of teaching to face-to-face lessons, online tutorials, and subject or course guides to library resources. Many libraries also recognize the instructional role of reference services, both in physical and digital formats. These instruction and reference services form the cornerstone of library educational efforts. However, traditional instructional services are not the only ways in which libraries contribute to student learning. For example, collections and their associated services (i.e. interlibrary loan and reserves) exist, at least in part, to augment learning. Indeed, because libraries exist within educational institutions, it might be argued that nearly all library resources and services contribute, directly or indirectly, to learning. A helpful tool for librarians seeking to establish the connections between library activities and student learning is a “student learning impact map” (see Figure 2). Librarians might create a student learning impact map by listing library services, resources, and departments along one side of a grid, and student learning outcomes along the other, then filling in how each library element contributes to learning outcomes. Using such a map allows librarians to explore the intersection between library services and student learning and identify opportunities for library impact on student learning.

Figure 2. Student Learning Impact Map Example

	Standard 1. The information literate student determines the nature and extent of the information needed.	Standard 2. The information literate student accesses needed information effectively and efficiently.	Standard 3. The information literate student evaluates information and its sources critically and incorporates selected information into his or her knowledge base and value system.	Standard 4. The information literate student, individually or as a member of a group, uses information effectively to accomplish a specific purpose.	Standard 5. The information literate student understands many of the economic, legal, and social issues surrounding the use of information and accesses and uses information ethically and legally.	Other:
Reference Service	X	X				
Instructional Services			X	X	X	
Circulation		X				
Reserves		X				
ILL		X				
Acquisitions		X				
Collections		X				
Special Collections & Archives		X	X		X	
Physical Space				X		
Other:						

Indeed, while libraries have a long history of offering instructional resources and services, both broadly and narrowly defined, they have less experience assessing their impact in ways that have campuswide relevance. In order to avoid library-centric conceptions of instruction,

librarians need to view instruction from a campuswide standpoint. From a campus perspective, library impact occurs where campus needs, goals, and outcomes intersect with library resources and services (see Figure 3).



Consider higher education institutions that include critical thinking as a general education outcome. These institutions want to graduate students with strong critical thinking skills. If libraries at these institutions want to contribute to campus goals, they need to leverage or possibly retool their existing resources and services. For example, librarians might recommit to teaching critical thinking skills actively and explicitly via digital reference—by presenting information seeking as a step-by-step problem-solving process and focusing on the analytical or evaluative skills that are key elements of both critical thinking and information literacy. In this scenario, library impact occurs at the intersection of campus critical thinking learning outcomes and a library service that actively teaches critical thinking. Or, consider colleges that have adopted the AAC&U VALUE rubrics to assess student learning. Of course, library resources and services are clearly related to the VALUE rubric for information literacy.²² However, librarians can also anticipate an intersection with other areas of the VALUE assessment initiative, such as inquiry and

analysis. At least three areas of the inquiry and analysis rubric naturally relate to library resources and services:

- *Topic Selection*—Identifies a creative, focused, and manageable topic that addresses potentially significant yet previously less-explored aspects of the topic;
- *Existing Knowledge, Research, and/or Views*—Synthesizes in-depth information from relevant sources representing various points of view/approaches;
- *Analysis*—Organizes and synthesizes evidence to reveal insightful patterns, differences, or similarities related to focus.²³

Because standard library instruction efforts at most institutions emphasize these three skills, librarians are well positioned to take ownership for meeting such campuswide goals. Librarians who understand institutional needs and correlate those needs to existing or new library contributions can easily pinpoint impact areas.

To reveal the full picture of library impact, librarians need to map all the intersections between campus needs, goals, and outcomes and library contributions in the form of resources and services—in short, all the ways in which the library helps address campus issues. A useful tool for mapping these intersections is a library

“mission impact map.” Librarians include campus needs, goals, and outcomes in a column on the left hand side of the mission impact map (see Figure 4), and list library existing services, resources, and departments along the top row. Then, they map where library offerings intersect with campus mission to find points of impact.

Figure 4. Mission Impact Map Example

Campus Needs, Goals, & Outcomes	Reference Service	Instructional Services	Circulation	Reserves	ILL	Acquisitions	Collections	Special Collections & Archives	Physical Space	Other:
Student Enrollment		X						X	X	
Student Retention	X	X	X	X			X			
Student Graduation Rates	X	X	X	X			X			
Student Success	X	X							X	
Student Achievement	X	X								
Student Learning	X	X								
Student Experience									X	
Faculty Research Output			X		X	X	X	X		
Faculty Grant Funding			X		X	X	X	X		
Faculty Teaching		X		X						
Other:										

As an added benefit, this process can generate ideas for new library resources and services to satisfy unmet campus needs, goals, and outcomes.

Once librarians map points of library impact, the next steps are to assess and document the impact. However, assessing and documenting library instructional impact, particularly in a campus context, can be challenging. Librarians who engage in instruction do not always have direct access to students for the purpose of learning assessment (e.g. librarians who participate in assignment or curriculum design only). Even librarians with access to students often do not assess student learning, and many do not even design their lessons to accommodate or support

assessment activities (e.g., using the *Understanding By Design* instructional design model).²⁴ When they do assess student learning, many librarians do not know how to document their assessment results to create a large-scale representation of how the library contributes to student learning. Developing a student learning assessment plan helps librarians track student learning and devise ways to overcome assessment challenges. For example, assessment plans encourage librarians to consider and discuss:

- What learning outcomes will be achieved?
- What are the target student audiences for learning?
- What opportunities for learning exist?

- What is known about student learning? Not known?
- What methods or tools would best assess learning?
- How will student learning assessment data be analyzed?
- How will librarians know that students have learned?
- Who is responsible?
- What is the timeline for assessment?
- What resources are required?
- What are the results of student learning assessment?
- How will results be presented? To whom?
- Who can make decisions and recommendations based on results?
- What decisions and recommendations are made based on results?
- What is the plan for following through and following up on the decisions and recommendations for change?²⁵

By capturing, tracking, and reporting the answers to these questions in a student learning assessment plan, librarians can record their impact on student learning. Finally, after documenting their impact on student learning, librarians need to communicate that impact campuswide.

How Committed Are We to Librarian Learning?

Although much of the focus on learning outcomes assessment is rightfully focused on students, librarians also benefit from engaging in assessment.²⁶ By assessing students, librarians determine what students know and are able to do and, as a part of that process, learn to be better teachers and assessors. Furthermore, librarians who engage in impact assessment learn additional skills and strategies. Of course, librarian learning requires effort, time, resources, and support—which begs the question, “How committed are we to our own learning?” Although the need to master assessment skills may be new, librarians’ espoused commitment to the underpinnings of library assessment—theory-based practice, pragmatism, reflective practice, and individual and organizational learning—is not. These theories and philosophies are already deeply rooted in current library practice.

Theory and Practice

Most librarians learn about the value of theory-based practice in “library school”. Historically, LIS programs teach library practices within the context of information theories. Theory-informed practice is also supported by the Council for the Advancement of Standards in Higher Education. The Council recommends basing all higher education practices, programs, and services on theory.²⁷ Librarians learning to assess student skills can reap many benefits from grounding assessment practice in theory. For example, theory helps librarians to combine logic and intuition with empirical knowledge, provides support and guidance for practice, and “increase[s] the strength and utility of strategic assessment planning.”²⁸ According to Keeling et al., basing assessment practice on theory “significantly improve[s] the process and outcomes.”²⁹ Indeed, theory “serves, in practice, to build an essential foundation for assessment planning; assessment purposes, methods, metrics, and reporting are developed on [a theoretical] foundation.”³⁰

Pragmatism

Librarians who acquire assessment skills extend their profession’s existing emphasis on pragmatic processes. As a philosophy, pragmatism focuses on how things work best in practice and seeks to discover ways to reliably achieve goals and improve performance.³¹ For librarians learning about assessment, “pragmatism serves as a...means to taking more effective actions by improving the accuracy of one’s beliefs about how things actually work in the world. It is a system that draws on lessons learned from experience—in both deliberate and systematic ways—to create knowledge for action. High quality knowledge leads to effective action that works reliably well in reaching performance goals”.³² A pragmatic approach improves practice by eliminating “defects in beliefs” that cause errors³³ and creating tools to solve problems.³⁴ Like assessment itself, pragmatism is characterized by “reiterative learning-based processes” similar to this pragmatic step-by-step framework for taking productive action:

1. Thoughtfully interpret one’s environment.
2. Learn from experiences.
3. Reflect on past experiences.
4. Imagine how patterns of cause and effect might impact future experiences.
5. Engage in inquiry to reduce doubt.

6. Take targeted action to achieve a desired result.
7. Use reasoning to apply or create new rules for action.
8. Build knowledge through experimentation.
9. Improve one's knowledge by incorporating discoveries from action.
10. Clarify beliefs by using inquiry to improve performance.³⁵

Librarians who use assessment to improve their practice adhere to pragmatist philosophy.

Reflective Practice

Not only do librarians who learn to conduct assessment align themselves with pragmatic philosophy, they engage in reflective practice. Researchers use many terms to describe reflective processes: reflective practice, reflection-in-action,³⁶ metacognitive reflection,³⁷ reflective learning,³⁸ critical reflection,³⁹ and reflective thinking.⁴⁰ By any name, reflective practice usually begins with a problem or "situation of complexity, uncertainty, instability, uniqueness, or values-conflict"⁴¹ and a decision to find a solution. Next, practitioners seek information about the problem and decide to act. The last step is to take action.⁴² Thus, the result of reflection is action-oriented: Rogers states "Ultimately, the intent of reflection is to integrate the understanding gained in one's experience in order to enable better choices or actions in the future as well as to enhance one's overall effectiveness."⁴³ Like the assessment cycle, reflective practice is ongoing. In fact, according to Dewey,⁴⁴ solving problems through reflection often requires multiple cycles of trial and error.

Librarians employing assessment as a learning tool can use several methods to facilitate reflection. They include mentoring, structured experiences,⁴⁵ group discussions,⁴⁶ critical incidents,⁴⁷ role analysis, and communities of practice.⁴⁸ These methods are most powerful in an environment that fosters reflection and "autonomy, feedback, access, and connection to others, stimulation by others, and significant performance demands."⁴⁹ One of most difficult challenges of reflective practice is to create an environment where assumptions can be broken—assumptions that are often ingrained in personal or organizational norms.⁵⁰ However, the risks of not engaging in assumption breaking and reflection are dire; according to Hammer and

Stanton, "Although successful organizations fail in many different ways, all these failures share one underlying cause: a failure to reflect."⁵¹

Conversely, librarians who embrace reflective practice reap numerous benefits including greater change capacity; more freedom of action; improved flexibility, productivity, and innovation;⁵² new perspectives on experience; changes in behavior; increased commitment to action;⁵³ and increased learning. In fact, some researchers consider learning the major outcome of reflection.⁵⁴ Marsick and Watkins consider reflection a facilitator of informal learning;⁵⁵ Mezirow believes reflection results in transformational learning;⁵⁶ and Schon asserts that reflection contributes to professional learning.⁵⁷

Individual and Organizational Learning

Library assessment reflects a professional commitment not only to pragmatic and reflective practice, but also to individual and organizational learning. On an individual level, assessment closely mirrors the constructivist learning process. According to constructivist learning theory, "problem solving is at the heart of learning, thinking, and development. As people solve problems and discover the consequences of their actions—through reflecting on past and immediate experiences—they construct their own understanding."⁵⁸ Kenny asserts that constructivist approaches to learning are appropriate when individuals confront transformational change "as, by definition, no one knows what the solution will be; there is no expert to transmit the knowledge; it must be created by the individuals within [an] organization."⁵⁹

When assessment is an organizational process, not just an individual one, it leads to organizational learning. Learning organizations are "skilled at creating, acquiring, and transferring knowledge and at modifying its behavior to reflect new knowledge and insights."⁶⁰ Learning organizations have systematic problem solving strategies, use data for decision making, and embrace a habit of experimentation. They learn from the past and from others, and they circulate knowledge throughout their organization.⁶¹ Learning organizations support life-long learning, accept and expect learning from mistakes,⁶² and encourage creativity as "fundamentally critical to successful innovation."⁶³ They are characterized by

“empowerment, openness, team member dialogue, supportive risk-taking environments, appreciative inquiry, and distributive leadership.”⁶⁴

The concept of a learning organization is relevant to all twenty-first century organizations,⁶⁵ but “it is critical that libraries become learning organizations.”⁶⁶ When libraries become learning organizations, they minimize complacency; maximize continuous learning, improvement, and innovation;⁶⁷ promote inquiry and dialogue; facilitate collaboration; create systems to share learning; focus librarians on a unified vision; and connect the library to its environment.⁶⁸

In order to build a learning organization based on assessment, libraries must have supportive leaders and skilled librarians. For example, libraries require leaders who nurture organizational learning⁶⁹ in the area of assessment, communicate a vision, commit to change, connect learning with library operations, capture and reward learning, and ensure sharing of knowledge.⁷⁰ Librarians also need discretionary time to learn⁷¹ and opportunities to work collaboratively with educators in other disciplines.⁷² Jain and Mutula summarize the skills librarians need to make the most of academic libraries that are also learning organizations. These include: “team skills, public relations and communication skills, ability to think in terms of the enterprise (strategically), creative thinking, use of new technology and information tools effectively, ability to train and educate the client effectively, . . . and the capability of working effectively in partnership with faculty members and other stakeholders.”⁷³ If achieved, organizational learning is a “means for achieving success in turbulent times.”⁷⁴

Certainly, there is “no one best theory—and there is no one best way to apply theory to assessment.”⁷⁵ Pragmatism, reflection, and learning theories all underpin library practices, including assessment. However, other theories, philosophies, and paradigms also align well with assessment. For example, assessment of student learning is rooted in assessment theories including “assessment *for* learning”, “assessment *as* learning”, and “assessment *as learning to teach*”.⁷⁶ To assess, demonstrate, and articulate the impact of libraries on institutions of higher

education, librarians would do well integrate all these concepts into their professional culture.

What Do Librarians Need to Learn?

In order to act in accordance with their espoused theories and practices, librarians need to learn new impact assessment skills. But, exactly what skills do they need to learn? Although this question merits deeper study, an initial list of important impact assessment skills might include:

- Developing an assessment plan.⁷⁷
 - Identifying the purposes, values, or theories guiding assessment activities.
 - Linking assessment activities to institutional and library planning documents.
 - Establishing resources for assessment activities.
 - Setting data privacy and other ethical use policies.
 - Scheduling ongoing assessment activities based on an agreed-upon assessment cycle.⁷⁸
- Conceptualizing library impact on learning.
 - Articulating student learning outcomes addressed by libraries and librarians as well as academic faculty and student affairs professionals, independently and in collaboration with academic faculty or student affairs professionals.
 - Defining library impact in an institutional context.
 - Articulating questions about library impact.
 - Matching questions about library impact to appropriate assessment methods.
- Defining an action plan for an assessment activity.⁷⁹
 - Identifying an outcome to assess.
 - Determining the scope of assessment.
 - Checking for existing data.
 - Determining the assessment method.
 - Deploying assessment methods.
 - Gathering student learning assessment data.
 - Analyzing data.
 - Preparing a results report.
 - Applying student learning assessment data to make decisions and take actions that will increase student learning and continuously improve instructional programs.

- Managing student learning assessment data over time, programs, departments, etc.
- Identifying assessment tools that measure student learning such as tests, rubrics, and performance/artifact assessments,⁸⁰ independently and in collaboration with academic faculty or student affairs professionals. Other basic assessment methods include:
 - Observations
 - Interviews
 - Focus groups
 - Surveys
 - Artifact analysis (e.g., documents, transactions, logs)
- Communicating library impact.
 - Identifying valid, reliable, and relevant results.
 - Reporting student learning assessment results to stakeholders including librarians, academic faculty, administrators, students, parents, accreditors, etc.
 - Using impact results to market the library to academic faculty, administrators, students, parents, and other stakeholders.
 - Utilizing impact results to gain resources needed for improvement.
- Seeking assistance from assessment experts as needed.

Among the most challenging student learning assessment skills are the management of student learning assessment data, the application of that data to make decisions and take actions to increase learning,⁸¹ and the creation of results

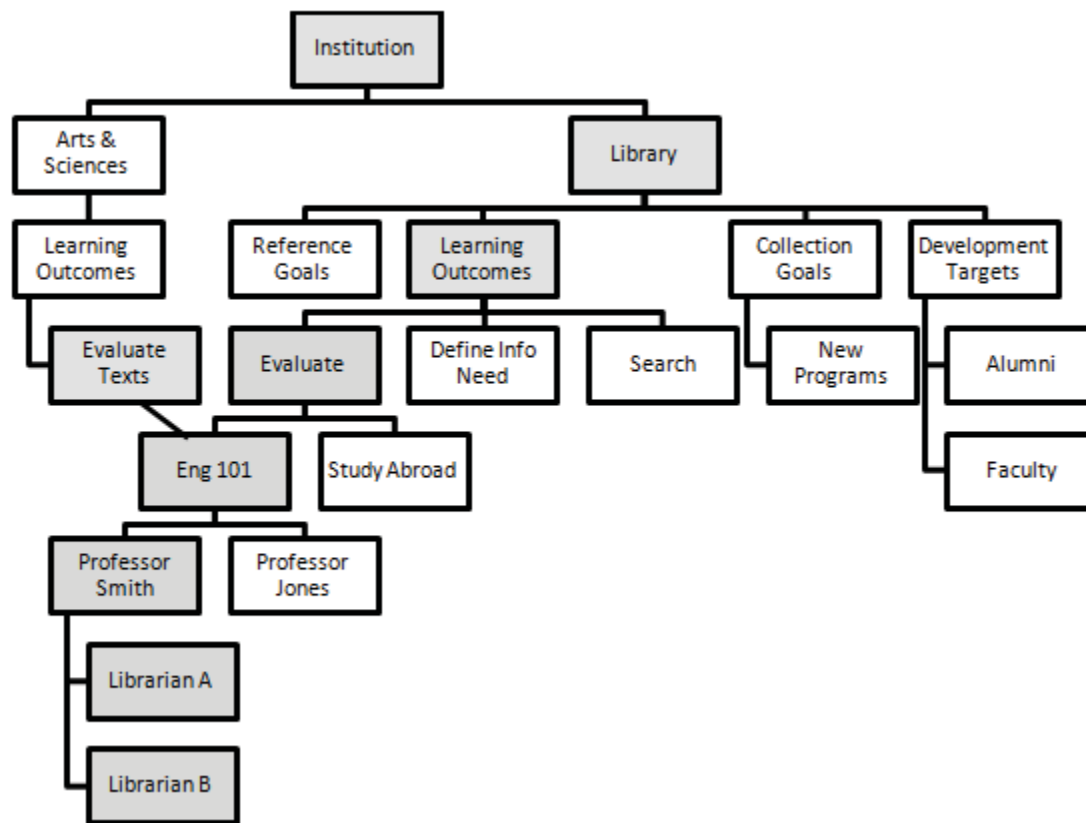
reports for stakeholders. Ironically, librarians, who excel at documenting information, find the documentation of learning, especially what they've learned from student assessment, somewhat challenging. Happily, systems exist to aid librarian efforts to manage, apply, and report what they have learned about assessing and improving student learning.

How Can Librarians Document Their Own Learning?

Assessment management systems (AMSs) exist to help academic faculty, student affairs professionals, and librarians design, document, and report assessments. AMSs not only track what assessments reveal about student learning, but also about what assessors learn as a consequence of the assessment process. In other words, they record information about student achievement of learning outcomes as well as documenting assessor decisions and actions—in short—what assessors have learned.

Several AMSs exist and they share many common features. AMSs are typically organized around a tree structure based first on organizational units (programs, departments, schools, or the entire institution), then on the goals and/or outcomes of those units. In an AMS, goals and outcomes can cover learning as well as other strategic areas (see Figure 5). Permission-setting allows different AMS users to access distinct system areas, either revealing data for large-scale results across programs or protecting information entered by individuals.

Figure 5. AMS Hierarchy Example



Perhaps most importantly, AMSs capture the decisions librarians make in response to their assessment learning, the actions that they pursue based on their learning, and the documents that record their learning over time. AMS examples include WeaveONLINE, TracDat, LiveText, eLumen, Tk20, Waypoint Outcomes, Blackboard Learn's assessment module, OATS from Georgia Tech, openIGOR from Coker College, and AMS from TaskStream.

For librarians, AMSs organize assessment data in ways that facilitate documentation, action, and reporting. For example, many librarians assess student learning using informal methods such as Classroom Assessment Techniques,⁸² worksheets, or observation. Without an AMS, such assessment findings are viewed only by individual librarians, then maintained in files inaccessible to others or discarded. As a result, much assessment-based librarian learning becomes tacit knowledge, which is difficult to surface and share on an organizational level. By documenting informal (and formal) assessment

results in an AMS, librarians gain "the ability to turn tacit knowledge into explicit, codified knowledge that can be shared through different kinds of systems, including those that are more data-based and others that are more relationship-oriented such as communities of practice."⁸³ AMSs enable librarians to share existing assessment data "so that others can benefit from what individuals have learned"⁸⁴ and transform their libraries into learning organizations. Skyrme defines learning organizations as "organizations that have in place systems, mechanisms and processes, that are used to continually enhance their capabilities and those who work with it or for it, to achieve sustainable objectives—for themselves and the communities in which they participate."⁸⁵ In order to capture, document, and report assessment data—transforming individual librarian learning into actionable organizational learning—libraries should adopt AMSs or similar systems. Indeed, the current absence of such systems in libraries is a serious impediment to librarians' ability to learn from assessment processes.⁸⁶

Conclusion

Today, librarians face a new assessment challenge: to articulate the value of academic libraries within an institutional context. To demonstrate the impact of academic libraries on student learning, librarians need to commit themselves to playing an active role in teaching students. To teach and assess student learning, librarians should begin with a list of outcomes that describe what they want students to learn and then target them in their instruction and assessment efforts. Next, they should employ impact maps and assessment plans to determine how those outcomes intersect with institutional, departmental, co-curricular, or accreditation needs, goals, outcomes, and standards. In order to take these steps, librarians may need to acquire additional assessment skills. Fortunately, librarians' existing culture of pragmatism, reflection, and organizational learning can serve as a basis for any new assessment strategies librarians must learn. Finally, librarians can employ assessment management systems to facilitate the recording, analysis, and documentation of library impact at their institution. Clearly, the assessment of student learning—and the acquisition of librarian assessment knowledge—is challenging, but it is also has the potential to revitalize academic librarians' role on campus. Are students learning? Yes. Are we? Definitely. And we're just getting started.

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Notes

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Space Assessment as a Venue for Defining the Academic Library

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Abstract

This chapter offers a framework to consider different factors affecting library space assessment, and insights for undertaking a meaningful inquiry about the relationship of space to an academic library's purpose and ambitions. The paper proposes multiple paths for approaching such assessment, differentiating the assessment's purpose, types of questions posed by it, data gathering methodologies, and reporting strategies of results, by the perspectives on the library's purpose. These paths are useful to gain insights into the evolving role of the library and its contribution to the academic enterprise. Not surprisingly, the inquiry turns as well to changes in the identity of librarians as separate from the building where they work. A tool emerges from this essay's discussion. It suggests the nature of key elements of an assessment associated with different library paradigms: "as reader-centered, book-centered, and learning-centered." These three perspectives on the library's function are briefly outlined with related assessment perspectives in sections entitled "space for accumulation, space for service and space for learning." Research that defines library spaces and the role of academic libraries is in its nascent stages and future inquiry is encouraged building on conceptualizations of the Japanese concept of "ba" thought of as a shared space to build relationships and advancing both individual and collective knowledge. Methodologies for assessment of library spaces are becoming expansive and exciting and have potential to advance the conversations beyond the building to the very essence of the library.

Introduction

Much has been written about the changing paradigms of the academic library—as accumulator and preserver of knowledge resources, service provider for accessing

information, and facilitator of intentional learning and knowledge creation among its visitors. For each of these missions, the spaces of the library, whether physical or virtual, have been constructed and adapted with the hope of improving capacity to contribute to the university. Typically such building processes, at least within physical facilities, are guided with direction from planners, architects and interior designers. Collectively they provide protocols and professional standards to create program plans, construction documents and ultimately the basis for ribbon cutting celebrations. Virtual library spaces are evolving with similar "architects" and development procedures to launch dynamic environments for the parallel functions of digital archives and repositories, retrieval and delivery systems, and social learning and research communities. Librarians have engaged to varying degree in these processes, some having developed insights to do so with a specialized expertise that directs the definition of the library in terms of its architecture. As Hartman observed a decade ago, "Libraries today are in transition both as institutions and as a building type."¹

What is less established in practice is purposeful assessment of library space for the understanding and improvement of the academic library it houses. This chapter will offer a framework to consider different factors affecting such an assessment, and insights for undertaking a meaningful inquiry about the relationship of space to an academic library's purpose and ambitions. It aims to explore the complex and sometimes foggy intersection of two components of this relationship. On one hand, applied research has protocols to conduct program and outcome assessments, and on the other hand, there is an assumption that space and environment influence an institution's program and the subsequent behaviors of those who

benefit from that program. Published accounts of library building programs, reflections on the changing orientation of academic libraries, and attempts to assess physical library spaces have influenced the preparation of this essay. It proposes multiple paths for approaching such assessment, differentiating the assessment's purpose, types of questions posed by it, data gathering methodologies, and reporting strategies of results, by the perspectives on the library's purpose. These paths are useful to gain insights into the evolving role of the library and its contribution to the academic enterprise. Not surprisingly, the inquiry turns as well to changes in the identity of librarians as separate from the building where they work.

Research is a systematic and purposeful process of data collection and analysis. More specifically, assessment utilizes data for *description*, sometimes in terms of established criteria. By contrast, evaluations occur when judgments are made using data gathered. The terms are used with mixed clarity in the literature, and thus often interchangeably. Both processes may be considered applied research, but if taken away from a specific context for problem solving or managerial decision-making, their empirical basis may contribute to the formation of theory to *explain* or *predict*. Formal inquiry about library spaces has only recently begun to be conducted and reported, suggesting spaces mostly have been subjected to descriptive assessments, with few sharable evaluations or evolved theories to inform practice.

Assessment or evaluation typically occurs for constructing or remodeling spaces at one of two stages—in advance, to inform design, and in conclusion, to judge and possibly improve the end product. These two functions are informed by two different types of evaluation research. *Formative* evaluation provides developers information for the formation or improvement of something [e.g. product, service, building design] while *summative* evaluation examines the effects of the object, confirming that the intentions of goals are met by summarizing or describing what happens after the process or program has been delivered. Formative evaluations tend to involve qualitative methods of data gathering and include for example, needs assessments, conceptualizations, and process investigations.

Summative evaluations rely more on quantitative data gathering and involve analysis of deliverables, outcomes, impacts, and cost effectiveness.

A tool will emerge from this essay's discussion. It will suggest the nature of key elements of an assessment associated with different library paradigms. To clarify the basis of differentiating the assessment pathways described in this essay, three perspectives on the library's function will be briefly outlined, as will the basic elements of applied research, which includes assessment. The assessment paths will be illustrated by examples from the literature, where identified, and a "meta assessment" framework will be suggested for interpreting the utility, feasibility, propriety and accuracy of each assessment approach. The essay will conclude with suggestion of areas not well covered yet in the literature and thus ripe for future research.

1. Changing library paradigms

Scott Bennett develops a compelling argument that the history of library space design reflects three distinct paradigms which he characterizes as reader-centered, book-centered, and learning-centered. He illustrates the progression in the physical organization and appearances of libraries in terms of their corresponding purpose: to bring together readers and books in part by providing rooms needed for their reading, reflection and contemplation; to build and shelve large and growing collections; and to embrace the emerging opportunity to address the "transformational character of intentional learning" by "making learning happen" in the library.²

These three perspectives on aligning library space with the role of the library loosely parallels an earlier service model that Danuta A. Nitecki and William Rando developed from empirical study of the impact of using digital images in the teaching of American studies. Their service rubric identifies three levels of library service as collection building, information consulting, and knowledge transformation.³ The role of the librarian [and by extension the mission of the library] evolves these service levels to focus on acquiring, organizing and preserving information resources; on interpreting client needs and providing guidance to locate and access information to meet their individual

requirements; and on building partnerships to maximize the institution's ability to create and share knowledge in the service of research, teaching and intellectual growth. In the model's characterization, space explicitly appears only as an infrastructural requirement at the first service level where it is essential for housing collections and records describing information with user accessibility. It becomes superseded in importance as an infrastructural requirement by retrieval and communication systems, and social and technological networks. The authors' investigation and conceptualization of a future role of the library informed the redesign of a library at Yale University and the implementation of a Collaborative Learning Center within it that has become a popular virtual and physical environment for exploration of learning activities and outcomes involving the library in partnership with educators and service providers interested in learning outside the classroom.⁴

A predictive framework also emerged from examining changes in accreditation and assessments. Nearly a decade ago, Kathlin Ray,⁵ referenced the work of Ralph A. Wolff⁶ and placed four paradigms along a timeframe representing a postmodern philosophical review of libraries. In her model, the library accentuated values at key moments in its history which emphasized resources or holdings [before 1980], access [1980], use by students [1995], and learning transformation [predicted for 2010].

A non-profit group, Ithaka, has conducted its Faculty Survey every three years since 2000, in which it has posed questions about the perceived importance of library functions among faculty in U.S. institutions offering bachelor and higher degrees.⁷ The Ithaka researchers have longitudinal evidence for three traditional functions which they label "gateway" as a starting point for locating information for research, "buyer" role that pays for information resources, and "archive" function to preserve and keep track of resources.⁸ The 2009 survey introduced two additional roles to evaluate the impact of transformative services. Although still articulated as "support," they introduce the two roles of providing collaborative services to facilitate teaching and help increase productivity of research and scholarship. A comparison of data from 2003, 2006, and 2009 surveys indicate that

the importance of the gateway role has dropped, the archival role has stayed somewhat the same, and the buyer role has increased.⁹ In the latest survey, the newly introduced "teaching support" and "research support" are perceived as important library roles by equal numbers of respondents but far less frequently than that of "buyer" and "archive" roles.¹⁰ Responses to specific questions about the starting point for faculty research also indicates low importance given to the library building, with steady drop in this perception over the decade of surveys. Coupled with a similar drop in already low importance given to the library's catalog, the researchers observe that the role of the library to license network access is a technicality and behind the scenes and is not perceived as an important gateway function. Given the low response rate [8%] and potential imprecision of the definitions of roles, to make any generalizations about the importance faculty place on library missions should be done with caution. However, this large scale study highlights the transitional changes in the library paradigms and specifically, the importance of its space.

Collectively, these models suggest at least three distinct activity-based functions that define the library, whether viewed as its core mission, or simply as acknowledged major coexisting roles. For purposes of this essay, these will be categorized as the role of accumulator [of books, equipment, and other information carriers], service provider [for retrieving information and borrowing materials, instruction, and other customer assistance for accessing knowledge], and facilitator [through design of environments and nurturing of relationships that foster self-directed learning and creation of new knowledge].

2. Changing focus of space assessment

Library spaces change slowly. But such changes among campus libraries are evident and follow planning and design processes that are at their best when informed by conceptualizations that articulate not only what to place within the space, but also what will happen there as a result of interactions between people and their environment. Identifying both the content and the engagement of space are critical to designing it. The paradigm shifts in the purpose of the library suggest different visualizations and

requirements for these environments. The processes to assess [through formative research] the requirements of content and activity, as well as to evaluate [through summative research] the success of meeting the envisioned resulting library will vary according to the paradigm of what the library is intended to be. To add to the complexity of the assessment challenge, changes in library spaces are seldom mutually exclusive of existing spaces, and thus assessments may need to factor overlapping intentions. Space also entails existing cultural expression of the social groups or individuals that come to environments to do something purposeful. Conceptualization of the symbolism, feelings and identity, for example, embodied in the cultural meaning of specific environments [such as associated elevated reverence for knowledge, joy of learning, or the importance of concentration, comfort, and aesthetics] are important to design successful spaces.¹¹ Like space development, assessment itself is an evolving and flexible activity. The challenge is to adapt the proven assessment construct and techniques to understanding and monitoring space as an expression and enabler of the variations of what a library aims to be.

3. Basic elements of an assessment

Inquiry in library topics have most often followed the approach of applied research in the social sciences. Though there is no one universally accepted description of this approach, it is communicated through guidelines for research publication, dissertations, and sometimes reports of funded activities. Its seven common elements are briefly described here as suggestion for how to frame an assessment of library space.

1) A *problem statement* sets the context and purpose for which an assessment is undertaken. It should address four functions. The *lead in* sets the stage and entices the reader [the stakeholders] to engage in the communication of the assessment. An assertion of *originality* identifies the assessment's uniqueness and how it will add to knowledge about the target of inquiry. *Direction* highlights the approach that the assessment will take to gain insights useful to taking action. Reflection on the *significance* of the assessment justifies why it should be undertaken and advocates the value its findings will provide decision makers to improve the library space.

2) A *literature review* is not only a process of identifying and reading publications on a topic. A good review synthesizes what is known about the focus of inquiry. For an assessment of library space, such review should identify insights already gained about elements of space and the functions they aim to address, theoretical constructs that inform understanding of the spatial manifestation of library programs and purpose, and methods used to conduct assessments which might be helpful to replicate or modify in particular library settings.

3) The objectives for the assessment will generate specific questions to be addressed. Those objectives that aim to identify space needs or user perceptions for example will generate *research questions*, whereas assessments that seek to compare conditions or behaviors for example with standards and benchmarked practices, might generate *hypotheses*. Most library space assessments are descriptive in nature and are guided by research questions, avoiding the need to apply inferential statistical analysis to hypothesized conditions. Questions may presuppose conditions for which space needs to be planned, as for example, "How much shelving will be required to house collections?" "What is the number of students at a given time that will need group presentation rooms and how large are their study groups?" "What levels of light are needed for different library activities?" Forming the questions is critical to design a useful assessment. Questions are not merely posed to meet interest in using existing data or applying a convenient method for gathering new data, but provide specific directions to address the purpose of the assessment.

4) These first three elements influence the design of what will actually be done in conducting an assessment. *Procedures and methodologies* build on well established and tested protocols for gathering reliable and valid data. Issues of implementation such as the staffing and expertise needed to manage and undertake the project, timing when data gathering is least disruptive to users and staff [but when it also is most likely to yield meaningful results], and funding and other resources available to conduct the assessment, when addressed in this design planning stage will improve the likeliness of generating useful results from the assessment effort.

5) Once conducted, the first step of handling the results of an assessment is to present the *findings*. The selection of how much and what to include in a report is dictated by the purpose of the study and also its stakeholders, considering the amount of time and effort they will have available to absorb the findings [whether through reading or listening]. Selection and synthesis of what is most relevant to the problem and questions articulated earlier call for basic analytic and communication skills. Use of charts or tables, numbers or narratives, words or images, should be employed based on the organization's culture, including the receptivity of stakeholders for data. At this stage, only the facts, without bias and interpretation should be presented.

6) A *discussion* of the findings in response to the questions posed for the inquiry follows. Interpretation of the data gathered becomes evidence toward formulating insights about what is known. Data gathered for example about the way students use group study spaces have generated insights into unanticipated behaviors such as a "study along" quiet but coexisting engagement among a group of students within library social spaces. The implications for designing areas should be discussed as a valuable outcome of the assessment.

7) *Conclusions* are not merely a summary of what was done and insights gained from an assessment. This closing section to the assessment report is where arguments for change or confirmation of strategies underway are made. Next actionable steps are recommended. The implications of "why bother" with assessment should be obvious in presenting the value of the effort.

These steps and intentions frame applied research, but are equally important to guide the practical efforts of developing information for responsible management. Making decisions with evidence is a wise strategy especially whenever risks are high. Shaping library space through new construction, renovation, or even minor adjustments to placement of items [furniture, equipment or people] within it are among the most costly managerial activities library administrators face. They require investment of time, political capital, and funds that are seldom insignificant. These investment costs are

relatively high and their worth is judged by resulting returns. A major assumption in thinking about the importance of assessment of space on not only delivery of library services, but also on demonstrating the vision of the academic library, revolves around the value that evidence offers decision making. Thus the effort to plan and the discipline to execute an assessment approach that will generate relevant evidence should be grounded in tested practices. Assessment of library spaces turns to the practices of experts in the design and construction of architecture, in marketing and improvement of service quality, and in the education of learning and creation of new knowledge.

4. Paths to assessing library space

This essay asserts that depending on the perspective of what the library intends to be, the approach to assessing the requirements or success of its space will be different. To explore this proposition, this section will review adaptations of the first four core elements of an assessment suited for the three perspectives on the role of the library. For each perspective, an attempt is made to identify the core purpose for an assessment [highlighted in problem statements], some unique challenges in understanding spatial elements associated with the library role [emerging from the review of literature and observed practice], illustrative questions to address in the assessment approach, and procedures and methodologies useful to address them.

Academic libraries are not standardized but rather are customized to embrace their role in their college or university's culture and enterprise of education, research, public service, and management of relations with their multitude of stakeholders. One possible consequence of this uniqueness, combined with the formative stage of library space assessments, is that it is difficult to uncover uniform or definitive conclusions about how space design supports libraries in their provision of services. Literature reviews conclude that little exists about best practices or recommended approaches to evaluating library spaces¹² or their relation to learning.¹³ Traditional advice about planning and designing a library, without filtering for the library paradigm, is to begin with a "needs assessment" of the library's services. Data gathered from this provides the basis for the design process. There are numerous

guides on this process, particularly for public libraries where taxpayers and trustees require extensive justification for expenditure of public funds.¹⁴ The size and type of collections projected for decades in the future, the demographics of populations expected to be served, and the structural requirements of a public building are among the type of topics addressed. Analysis of the data gathered includes pricing of options and forming value judgments in recommendations about whether to build new or remodel old spaces, and about the extent to which value will be gained in doing so. Such planning exercises prior to space designing are important assessments for data based decision making among responsible administrators. This approach to assessment of public libraries may be grounded in a more commonly held and consistent perspective of the role of the library than is found among academic libraries.

Attempts at articulating standards for academic library buildings tend to be general and not precise enough to inform design or to account for investment in construction. The Association of College and Research Libraries [ACRL], for example, provides general statements about facilities that guide requirements for libraries in academic settings:

The library facility and its branches should be well planned; it should provide secure and adequate space, conducive to study and research with suitable environmental conditions for its services, personnel, resources and collections. The library's equipment should be adequate and functional.¹⁵

Similarly among the ten questions posed in these ACRL standards to consider in assessment, three are interspersed and relate to the functions of a building, regardless of the program it houses.

Are building mechanical systems properly designed and maintained to control temperature and humidity at recommended levels? ...Is there enough space for current library collections and future growth of print resources? ...Are electrical and network wiring sufficient to meet the needs associated with electronic access?¹⁶

The actual results of assessments, the discoveries about space requirements or criteria adapted to

design spaces in specific libraries, will be noted only to the extent that they suggest generalized insights contributing to knowledge about the contribution of space to fulfilling the library role. In its formative stages, research design for library space assessment is frequently exploratory in nature and results cannot be generalized beyond the case studied. Thus results will not be reviewed in detail here; some sources identify general findings.¹⁷

Similarly, reporting strategies to utilize the findings in managerial decision making toward improving library spaces will also be omitted from this discussion of pathways to space assessments. In general, the details of how space accommodates a library's program are locally determined when and if an assessment is undertaken.

With most contracted projects, building construction concludes with an assessment of the project, identifying through "punch lists" of items not delivered to specification, the areas that require adjustments to the facilities. Such assessments are not unique to the library program, though some guides for librarians include advice on a slightly expanded architect's "post occupancy evaluation" that returns to satisfaction with supporting the program objectives. William Sannwald, for example, with varying degree of detail about this "process of diagnosing the technical, functional, and behavioral aspects of a completed building in order to accommodate information for future programming and design activities," devotes a chapter in the different editions of his *Checklist of Library Building Design Considerations*.¹⁸ The factors considered revolve around contractual and business obligations, such as the completion of the building project on time and within budget, the architect and contractors' performance and responsiveness, and the degree of delivery and adjustments made to meet the library's program. Though desirable, few library building projects include Sannwald's recommended final evaluation factors that address whether the building was:

- Planned and designed to reinforce the library as a center of the campus or community?
- Designed to provide for comfort and health as well as safety and security of the campus or community?

- Designed to make effective use of all available resources?
- Designed to address changing library needs over time by permitting flexibility and adaptability?¹⁹

These assessment factors suggest a focus on the *impact* of the space on the library. Compared to the earlier noted general “standards” for facilities or elements of “needs assessment” these implied questions of impact become clearer depending on the different perspectives about the library’s purpose. Here, three such core library functions will be reviewed—accumulating knowledge, providing services, and fostering learning.

4.1. Space for accumulation

The metaphor of libraries as warehouses for the artifacts of knowledge has a long and rich history in defining the academic library. The most famous library buildings include spatial solutions to house vast collections. This can be found in accounts of the ancient Library of King Ashurbanipal at the city of Nineveh where in the 600s BC tens of thousands of cuneiform tablets were housed in organized fashion or in the 7th century Chinese founding of the Buddhist scripture on tens of thousand stone tablets stored in caves at the Yunju Temple for over a thousand years. More modern visions of a great library have been set by such famous examples as the Library of Congress, the British Museum, or the French National Library, each handsomely providing space for “stacks” of shelving to house organized collections of physical books, journals and other formats of accumulated collections of information resources.

The need for shelving books offers an opportunity to design beautiful facades and architectural detailing that helped establish the important and central role of a library on a campus. In his insightful review of the history of library architecture at Yale University, the architect Robert A. M. Stern acknowledges the potential institutional importance both to the library and to the university that a building offers. As he points out, the first building to solely house books and readers elevated the “University Library to the status of a department equal to other academic departments.”²⁰ Furthermore the design intentionally deviated from the common red brick Georgian style that had become associated with

utilitarianism of New England mills to instead adopt the Gothic style, seen by some as “an antidote to utilitarianism but also as a means . . . to construct a building with ‘pretensions to architectural beauty,’” as assessed by a contemporary who was also a former Yale student [Lyman Hotchkiss Bagg, class of 1869].²¹ The assessment of this associated role of the library as an icon to the historic purpose of housing books for people to read may in part be gauged by expressions of donor support, as fund raising for library buildings includes naming opportunities and places to exhibit the appreciation and endearment of generous benefactors to the university.

But this aesthetic luxury gave way to other constructions where the function to house collections drove design. During the past quarter century, for example, the requirements for massive housing, primarily of print materials, have been studied and applied to the design of facilities dedicated to the efficient use of space to shelve organized collections, in environments conducive to their long term preservation, and typically off campus or on less valued real estate than a reader-oriented library. The Harvard University Library Depository established the best-practice model for numerous off-campus, high efficiency shelving facilities for infrequently used research materials. Yale University, the Library of Congress, and the collaboration among Princeton and Columbia Universities with the New York Public Library are but a few institutions that followed and improved this model. It defines library space focused on this classic accumulation function without special concern for overlapping intentions of bringing readers and books together in that space. As these facilities evolved, problems requiring research addressed issues of preservation as well as delivery of materials to readers no longer proximate to the collections. As Paul Conway observed, commitment to preservation is what distinguished this library building type from warehouses. He suggests a corollary to the accumulator paradigm by envisioning the “library building as a preservation tool” in his detailed discussion of basic experimental science and practical experience as methods undertaken to understand the relationship of temperature and relative humidity, as well as other environmental factors such as light, pollution and particulates.

Furthermore, he extends the inquiry to the care and handling of materials to transport them to and from the reader.²² Research continues in experimental settings, to identify other issues of space housing, such as fire monitoring and suppression, particularly examining the requirements for using water or gas and the associated fire rating of materials surrounding condensed masses of paper.²³

The problems driving assessment under this paradigm have become ones of physics, material science, and operations with such questions as follows. How secure are buildings to withstand earthquakes? What distancing of sprinkler valves will provide needed response to fire? What effect do different levels and types of lighting have on print materials? What are set points of temperature and relative humidity that will extend the life of the book furthest in time? What amount of cleaning to remove particulates from incoming books offers the most preservation? Staff responsible for shelving (whether in specialized off site facilities or in traditional campus library stacks) are constantly monitoring the occupancy of shelves to determine needs for shifting collections and the projection for “filling” shelves. Some of these problems have been researched through experimental tests and resulting best practices offer standards against which to gauge a library’s success, such as an 80-85% occupancy maximum for circulating collections. Methods to gather data to assess a particular library’s success rely on measurement, using sampling and collection growth projections, and statistical analysis to gather information vital for making managing decisions regarding the library as a responsible accumulator with adequate amounts of dedicated space.²⁴

Assessment in the context of the library’s role as an accumulator of collections is of interest to a limited group of persons who manage, fund or possibly leverage the library for other institutional purposes. Operational staffs wish to have information about the rate of growth and the corresponding amount of space needed to house collections. Library administrators similarly need to gauge the projected timeframe when new space needs to be acquired or collections need to be located elsewhere. Administrators will also want to be aware of the cost implications of space management, and some may be assessing the

return on investment into aesthetics of the space by measuring the associated donor response to build new or renovate old spaces.

4.2. Space for service

In the past two decades or so, academic libraries have taken a new focus on use of physical space, trading collection shelving for more seating for readers and sometimes upgrading these public work areas with technologies and equipment. Accompanying this shift has been an increased awareness of the library as a service organization, with ambitions to not only meet, but to exceed “customer” expectations. The purpose of providing high service quality calls for a different set of questions and methods to gather data than inquiry about the physicality of placing objects in space. Perceptions become at least as important as reality and those served become key judges of success and carry opinions that sometimes are more relevant than those held by the experts designing and delivering the services. Questions include self-reporting of attitudes about the degree to which the library service meets expectations for excellence [service quality] or the reaction to a specific service transaction [satisfaction].

Customer-based assessment of service quality is a highly developed topic in marketing. The SERVQUAL is a survey-based questionnaire designed to measure Gap 5 in the Gap Model of Service Quality which defines service quality as the difference between client expectation for excellence and perception of delivered service. The instrument identifies expectations and perceptions from the responses to interval scale ratings of a set of statements about various factors repeatedly identified through empirical research in a range of service industries as being important to customers in their judgment of service quality. Research undertaken in the early 1990s tested the applicability of this methodology to libraries²⁵ and its one statement relating to space was about a perception of safety. Researchers from Texas A&M working with the Association of Research Libraries undertook to design an instrument based on this construct of service quality, but more specifically focused on library settings. The resulting LibQUAL+® has become an internationally used tool to gauge customer-perceived service quality. The “library as place” emerged as an important factor from research

undertaken over several years to develop this instrument. Five statements related to this factor, including characterizations as “space that inspires study and learning,” “quiet space for individual activities,” “a comfortable and inviting location,” “a getaway for study, learning or research,” and “community space for group learning and group study.”²⁶ As a result of the tool’s popularity, assessment of space from the customer’s perspective has entered the library culture. Other tools are available for gathering feedback from library visitors, including the LibSat, an online questionnaire managed by Counting Opinions, which is used along with its SQUIRE Index to compute responses from customers about a range of services.²⁷ The full view survey includes a specific set of questions about the library’s facilities, with request for satisfaction ratings and levels of importance for parking, hours of access, accessibility, seating and workspaces, restrooms, personal safety, security of personal belongings as well as library materials, and “the library building” in general. In addition, another group of questions focuses specifically on equipment.

Space assessment is conducted in this marketing context as a cumulative view of individualized perceptions of a facility and its aesthetics, arrangement for quiet studying or socializing, security, and overall ambiance. The perceptions sought by assessments are similar to those of other marketed environments, essentially answering questions about the customer’s satisfaction revolving around the following types of queries. “Does this place meet your expectations for what a library should look like?” “How comfortable are you in it?” “Do you like it?” And maybe even, “What does it do for you?”

The other shift toward the service purpose of the library came with the emphasis on providing equipment to support research, teaching and study. The 1990s saw the introduction of the “information commons” described as “designated spaces in libraries with additional technology that support student learning.”²⁸ This model initially continues a somewhat passive nature of service, in which success is measured by use of the space, now equipped with more than collections, with seating to consult or read them, along with equipment to retrieve electronic resources and use software for schoolwork incorporating information. Assessments of information

commons look to address the investment in technologies and changing the library offerings by addressing such questions as “How many students use the [new] equipment/space/services?” “What resources are accessed from the commons?” “What happens in the space?” These problems focus on assessing the space as a destination, with marketable attractiveness, but also as the venue for activities. The service responsibility of the library to provide access to information is manifested in part by the presence of information commons, including equipment and increasingly assistance from librarians and technologists.

The presence of the library on the Web introduces new assessments of “space.” Many of the same questions are posed, such as “How many come to websites and from where?” “What do they use?” “Are they satisfied?” But assessment of virtual spaces place greater emphasis than assessment of physical spaces to understand the ease of using the library. Usability testing, including observations, talk aloud protocol, problem solving, transaction log analysis, and interviews are common methodologies for gathering data about the “digital library.” Initial findings reinforce the roles of the library for storing materials accumulated and social interactions.²⁹

Gauging market penetration relies on the traditions of counting “use,” with the “more is better” benchmark. Libraries have relied on measuring surrogates to actual use, by counting the number of items borrowed, of passages through entry or exit gates, and in Web environments, the number of “hits” or downloads. Counters on equipment or software provide data gathering mechanisms and generate circulation system data and security gate or turnstile counts, for example. Methods to project who comes into the “digital library” have evolved and include for example the MINES for Libraries protocol whereby randomly generated instances of point-of-use survey questions gather information about who uses what and for what purpose from the customer’s perspective.³⁰ Data gathering to assess success of information commons has augmented use [counts of how many people visit the space and sometimes, counts of use of its equipment] with the evolving reliance on satisfaction perceptions. Methodologies used include observations and

sometimes transaction log analysis for counting use and describing behavior, as well as surveys and interviews [growingly with focus groups] for gauging satisfaction and perceptions of service quality.

Access to materials continues to be a major service goal of libraries. This function occasionally influences the assessment of the library as a place. For example the Best Colleges Online review of the “25 most modern libraries in the world” primarily highlights public and national libraries with fascinating architecture. However, its entry for one academic library, Pace University Library, applauds its innovations in providing access in conjunction with its physical facilities:

This university library in New York has made it easier than ever to get access to library materials. The library was granted the Library of the Future award for an innovative media network it has implemented. An internal streaming system called MediaPatch allows the library to share various types of media across campuses quickly and easily, allowing patrons at one branch to access the resources from another at the touch of a button. This solves several copyright concerns as the information never leaves the school’s secure servers but still allows distance learners and those in the classroom to quickly and easily access information. The library also participates in a podcasting program designed to cover a variety of subjects.³¹

Testimony to the access function as extended to the Internet is found in reactions among participants to Google Books, becoming the world’s largest library in some people’s mind. It offers the link to the library’s facilitation role, but still grounded in the concept of a service provider and accumulator of resources. The new “transformative” role of the library, as suggested by Barbara McFadden Allen, Director of the Committee on Institutional Cooperation [CIC], is driven by access capabilities and reaches beyond the boundaries of physical space. As she notes, “we’re opening up these resources as both a common good shared among the universities, as well as a public good available more broadly.”³² Or as James Neal, University Librarian and Vice-President for Information Services at Columbia University, projects the results of the Google initiative, it “will enable the Libraries to make available more significant portions of its

extraordinary archival and special collections to scholars and researchers worldwide in ways that will ultimately change the nature of scholarship.”³³ Evaluating such access, specifically of Google Books, revolves around perceptions of convenience, time savings, discovery, and fairness in paying for use of copyrighted materials³⁴ as well as product quality issues such as legibility.³⁵ The very discovery of such assessments in an institutional repository identifies some of the questions that are seen as important for marketing use or possibly gauging value. “What can ScholarSpace [the library space on the Web] do for you?” “What can it do for the University?” The variables for assessing this virtual library space are implied by its goals, for example, to “increase impact of faculty research,” “showcase the university’s research output,” “house digitized collections.”³⁶

4.3. Space for learning

The third function of the library, as a facilitator of learning beyond the classroom, is not universally adopted, but during the past decade has been enthusiastically implemented in numerous libraries. It has been associated with changing space needs to support principles of active or intentional learning, the utilization of information, and the requirement for collaboration, whether among students, with faculty or staff, or across different disciplines. Multiple types of spaces appear to accommodate quiet solitary reflection, noisy group study, and focused conversations between a student [or group] and a specialist in information or technology along with a teacher or tutor at times.

The shift from the “information commons” to the “learning commons” is another framework for changes in space design. This shift has been documented in publications, websites, and conferences.³⁷ Information commons as a description of a library space has evolved into more than an assemblage of equipment and service support for using technology within the library. The concept overlaps with the construct of a “learning commons,” introduced about a decade ago.³⁸ Remy characterizes “learning commons” as having the following distinction: its mission[is] not merely to integrate technology, reference...and services but to facilitate learning by whatever means works best. As a library service environment, the

Learning Commons will enable students to develop a framework to understand and evaluate the impact of information technology on the choices they make as researchers and practitioners. As a bridge to the classroom, it will create the conditions in which students engage critically with information, see themselves as active participants in the production of knowledge, and continue that participation far beyond their university experience.³⁹

Summarizing responses to a survey in 2008 about providing learning and research initiatives and spaces from seventy-seven ARL libraries, Stuart acknowledged the similar appearance of learning commons characterized by “improved furnishings and aesthetics coupled with computer workstations arranged in an open landscape. Service points were tailored to provide information and technology assistance to undergraduates.”⁴⁰

Some interpret this orientation to be the future defining purpose of the academic library as a partner for learning, especially beyond the classroom. To facilitate this role, those who teach in the classroom and guide learners, also have a stake in the resulting designs of this evolving library space. Stuart also observes that “a minority of libraries reported modeling their innovative learning spaces [for undergraduates] on user-derived data, interviews, and insights,” even though by contrast “the most successful iterations of these research-oriented facilities [for graduate students and faculty] are predicated on a deep understanding of the client, informed by careful pre-programming assessment that engages the library, partners, faculty, and graduate students in discovery and insight.”⁴¹ He confirms the impression that,

...assessment of built learning and research spaces is sporadic and often anecdotal. Many libraries report that the most salient statistics are found in the numbers of individuals who visit and work in these arenas. Formal mission and vision statements are sometimes lacking. Perhaps the most telling omission is the dearth of identified learning outcomes that meet faculty aspirations for students coupled with a nuanced understanding of the principal hurdles faced by students in their major disciplines.⁴²

This group of libraries illustrates similar themes in what appears in their innovative spaces, which include collaboration with campus partners, multimedia, faculty and graduate student spaces, flexible user-influenced spaces, classrooms, galleries, performances, tutoring and peer support, cafes and refreshments, and presentation practice facilities.⁴³ Although faculty and graduate students are more outspoken about their expectations for physical library spaces to support their research and contemplative needs, Stuart points out that there is no consensus of what these spaces should be.⁴⁴

Yet assessment of the relation of space to learning is not often reported, if conducted at all. Assessments and evaluations are reported for information commons that consist of counting the number of groups studying in the library as indication of successful collaboration, a characteristic shared by both information and learning commons.⁴⁵ An earlier SPEC survey conducted by the ARL identifies the following methodologies used to collect data on twenty-two information commons and the number of times each was selected among the respondents.

Statistics on service transactions or users	14
Informal feedback from users	12
Formal paper-based evaluation survey	8
Computer-based survey	7
Focus group [interview]	2
Point of use computer pop-up survey	1
Other [observations, staff feedback, one day paper-based survey]	3 ⁴⁶

These do not however address the impact of space on learning. These paths to gather data might identify activities occurring in the space and the satisfaction or perceptions of service quality gained from engaging with services offered in the space. These are not methods to measure what is learned, though could be used to gauge the activities surrounding learning.

In this context, assessment now becomes the interest of not only those who manage and administer space, but also those who engage with learning. Intentional learning calls for the learner to take responsibility for the learning process and achieving change in knowledge. Assessment questions become more complex with inquiry seeking an understanding beyond the library's

input [e.g. the objects to be housed in the space and the space's appeal factors], and beyond the library's output [e.g. the number of visitors to the space or their satisfaction with it]. Outcomes are becoming central to a variety of stakeholders who seek accountability, expecting answers to such questions as, "How does the library as a place affect student capacity to learn?" "How does it affect the creation of new knowledge, whether at novice levels of student learning, or at levels of scholarship that then is distributed and preserved?" There is very little formal assessment of learning that happens in learning commons or other library spaces. The purpose of assessments of activities within libraries has generally involved evaluations of library instructional services or usability of web sites and retrieval systems. The latter is less about the changes in the user of the web than it is in the functionality and characteristics of the site or its navigational structures to retrieve information. As Delia Neumann concludes in her examination of the literature on "learning with information," "the field of information studies has not focused on learning as a goal of information seeking."⁴⁷ As she points out, various information seeking models, including those developed in educational settings, "stop short of making a direct connection between information use and learning." It may very well be that the relationships of space to learning, especially if seeking a causal correlation, pose a set of questions that are difficult, if not impossible, to assess.

Learning is ultimately a highly individualized change in personal knowledge. It will not be understood out of context of the individual learner's experiences, prior knowledge, motivations, and processing of data. Perhaps the best we can hope for is to assess the learning experience, both in terms of what supports activities and what learners perceive is happening in their environment and changing in themselves. Neumann proposes an I-LEARN model to link information seeking to learning and its six categories reflect steps of the experience of learning but not the outcome of the process of learning.

Thus assessing the impact of space on learning is difficult for a number of reasons. There is no generally accepted theoretical framework that identifies the effects of environment on people.

Furthermore, it is difficult to separate influences of space from other variables such as prior experience, personal distractions or stress, or styles of learning. Rapoport has evolved a number of models to clarify components of environment to analyze an activity that occurs within a space. These include four descriptive components [with illustration added to suggest application to learning]:

1. The activity proper [e.g. learning as the processing of information to create new knowledge].
2. Specific way of doing it and where it is done [e.g. reading and reflecting within a library]
3. Additional adjacent or associated activities [e.g. socializing, eating, or listening to music]
4. Symbolic aspects and meaning of the activity [e.g. behaving intellectually and joining the ranks of educated citizenry]⁴⁸

Architects and space designers contracted to build learning environments are associating the importance of pedagogy's influence on space design, both programmatically and symbolically. The space is becoming the embodiment of community, as one environmental designer, notes:

By space I don't just mean classroom, I mean learning community: classrooms, labs, libraries, interaction spaces, maybe residential spaces. ... My frame of thinking about this is that pedagogy drives (or at least should drive) physical environment. So I am thinking about futurist pedagogy—and the physical space needs that implies. I am also thinking about my University's community service mission—and how we might intersect learning spaces with community development spaces.⁴⁹

To analyze the impact of space on the specific activity of learning, clarification of learning outcomes might offer a basis for identifying measurable variables. Honebein proposes seven pedagogical goals for designing constructivist learning environments. These suggest what about the activity is expected to occur in a successful learning space:

1. Provide experience with the knowledge construction process, encouraging students to take primary responsibility for determining the topics or subtopics they pursue, the methods of how to learn, and the strategies or methods for solving problems.

2. Provide experience in and appreciation for multiple perspectives so that students recognize that the real world has multiple ways to frame and solve problems.
3. Embed learning in realistic and relevant contexts to balance the removal from the classroom of the noise of real life.
4. Encourage ownership and voice in the learning process, emphasizing student centeredness.
5. Embed learning in social experience, recognizing that intellectual development is significantly influenced through social interactions.
6. Encourage the use of multiple modes of representations, creating rich experiences by expanding beyond the most common oral and written channels and adopting additional media, such as video, automation, photographs, geospatial representation, and sound.
7. Encourage self awareness of the knowledge construction process, developing student reflexivity and their ability to explain why or how they solve a problem in a certain way and to analyze their construction of knowledge and processes.⁵⁰

Assessing the success of achieving these goals sometimes has been addressed in evaluation of information literacy instruction. However, examples of doing so within the context of library spaces have not been discovered.

A study of impact or the effects of environment on people, as Rapoport suggests, relates particular organization of space, time, meaning and communication on human behavior, well-being or mood. From such frameworks about the goals of teaching, an assessment might be designed to gather data about the extent to which learning activity goals are met. For example, metrics might include the number of group studying sessions, the amount of time spent undertaking activities in a given space, or the use of media in student presentations, each measured in relation to specifically identified areas, arrangements of furniture, or types of light, for example.

Findings might be useful in a formative evaluation for preparation of designing environments that can offer cues for behavior. They might be less reliable, however, in any

predictive role of projecting successful activities within spaces, or the contribution of space to achieving learning outcomes. Measuring or even just identifying the influence of environments on learning outcomes remains a messy assessment challenge. Part of the messiness is a result of the overlapping functions housed in a library and imprecise descriptions of the targets of the library's assessment.

A framework and research design for assessing the alignment between the design of informal learning spaces with institutional values and missions is evolving through research Scott Bennett is undertaking.⁵¹ He links questions related to effective education and learning experiences with student and faculty perceptions about their favored learning spaces. In the first phase of his project he suggests six questions that colleges or universities should answer during the design of learning spaces, some of which are built in libraries:

1. What is it about the learning that will happen in this space that compels us to build a bricks and mortar learning space, rather than rely on a virtual one?
2. How might this space be designed to encourage students to spend more time studying and working more productively?
3. For what position on the spectrum from isolated study to collaboration study should this learning space be designed?
4. How will claims to authority over knowledge be managed by the design of this space? What will this space affirm about the nature of knowledge?
5. Should this space be designed to encourage student/teaching exchanges outside of the classroom?
6. How might this space enrich education experiences?⁵²

Through online questionnaires, Bennett separately surveys faculty and students to identify their perceptions of what learning behaviors are important, how well their campus physical spaces support these behaviors, and where best these behaviors happen. He framed his inquiry on twelve learning behaviors identified from the National Survey of Student Engagement [NSSE].⁵³ The model of a gap analysis allows for assessment of these campus stakeholders' assessment of space quality, echoing the service perspective to

evaluate spaces. In addition, Bennett surveyed 91 college and university libraries in the United States, mostly small and medium sized institutions, which were identified as having created spaces for collaboration among academic support staff. A respectable response from 66 institutions provides information to complement the ARL study. The majority [88%] of respondents indicated that such spaces were located in library buildings.⁵⁴ Similar features of a common space were identified as among the ARL libraries, including group study, tables for collaborative work, student academic services, workstations, peer advising, and combined technology and research help desk.⁵⁵ Importance is ranked highest among respondents, both faculty and students, for spaces aiming to foster learning behaviors to support “conversations with students with different values,” “discussions of readings outside of class,” “conversations with students of different race,” “group study,” “discussions of readings with faculty outside of class,” and “culminating senior experiences.”⁵⁶ Of these the behaviors most commonly perceived to be well supported were “discussions of readings with faculty outside of class,” and “culminating senior experiences.”⁵⁷

Bennett cites others who are thoughtfully interested in framing the design of learning spaces in conjunction with asking the right first questions. Jeanne Narum, Director of Project Kaleidoscope, observes that

Too often, planning for new spaces for undergraduate teaching in science and mathematics begins with the wrong questions. Sometimes the initial mis-step occurs when faculty say “we do not have enough space—we need more room for faculty, for students, for equipment.” Questions about size—“How many square feet per faculty member, per major, per department do you need?”—often surface in response to such demands... These are important questions, they need to be addressed. However when they shape the initial stages of planning, the process is skewed. You will not end up with the building that you need, that your students deserve.⁵⁸

She further concludes,

Questions about the nature of the educational

experience—about quality and the nature of the learning community—are questions that must be asked first and asked persistently throughout the process, and indeed before and beyond the process of planning a facility.”⁵⁹

Mary M. Somerville has described use of a collaborative co-design process utilized at San Jose State University and California Polytechnic State University that involved both students and faculty in the design of library spaces.⁶⁰ The information/learning commons originally were built to advance the formal learning experiences and support teaching beyond the classroom. As a result of action research using a variety of methods such as online surveys, focus group interviews and participant observations, student engagement identified different expanded roles of these spaces. The student perspective urged the inclusion of interactive communities using Web 2.0 tools. Among resulting changes to the spaces were a provision of virtual reality production technologies to allow students to work along side faculty, librarians, instructional designers and technology experts. A café proposal included not only access to food and drink, but also gaming opportunities for relaxation and learning. Assessments of space and learning behaviors utilized not only the growingly popular data gathering methodologies of surveys, interviews and observation, but also incorporated the practices of the pedagogies involved in the learning itself such as using three dimensional modeling, prototyping, and applications of narrative. The evolution of the learning commons at Cal Poly illustrates the “learning through doing” intention to go beyond the engagement of information and knowledge creation to embrace the full range of social dimensions involved in collaborative learning that in turn promotes critical thinking and content expertise among students and faculty. As the space design responds to the awareness of environment needed to facilitate this fully engaged learning, library space spreads beyond the physical boundaries of its facility to integrate activities within virtual spaces as well. As Beagle observes, Somerville’s “collaborative co design techniques ... have perhaps not received the same level of attention as has the ethnographic approach popularized by Foster and Gibbons... although the two are not mutually exclusive.”⁶¹

The library role of facilitator of learning calls for a changing role of its librarian and fellow partners. The introduction of this role has been articulated as the “blended librarian,”⁶² “embedded librarian”⁶³ or “informationists.”⁶⁴ The Welch Medical Library at Johns Hopkins University School of Medicine has articulated on its website the change of the subject clinical and public health “liaison” librarians who provide traditional services of troubleshooting access issues, building collections, answering questions, and conducting literature searches. In addition to these services, these informationists will be

...much better positioned to offer on-the-spot instruction/consultation and searching, creating digital portals for you, develop Web 2.0 forums on your departmental sites, participate on systematic review teams, and collaborate on your projects as they evolve. To foster our relationships, we may ask to attend your open activities such as grand rounds and seminars, and to present our services at one of your departmental meetings. ...we work with you to assess your information needs, we may suggest any or all of the following: holding set “office hours” somewhere in your research or clinical space; participating in your journal club or case/residents’ conference; participating on some of your committees. We’re excited to be part of your team!⁶⁵

The work of the librarian, or perhaps more descriptively renamed informationist, occurs in spaces other than the library building. The success of the library’s ability to accomplish its role of partnering with the medical faculty and students will be meaningful through the academic outcomes rather than the facility of its administration.

5. Summarizing a work in progress

The assessment of how space contributes to a library’s ability to meet its mission is a relatively new area of inquiry. The paths to conduct such

inquiry are dependent on which of the evolving library roles is of interest. The traditional function of a library to accumulate materials has established methods by which space needs to house the gathered collections are quantified. Standards and best practices for shelving materials and even their readers have developed as libraries for years have been built to support this mission. The emphasis on providing service, especially to access information, has introduced a renewed interest in library assessment. Seeking input from the beneficiary of the services, the customers, has expanded the largely quantitative approach to measuring space into use of qualitative methods. Interest in assessment of the perceptions of space became one of several factors that carry a marketing interest for gauging service quality delivery. Through both of these library functions—accumulation and service—space is an important means to achieving the library’s goals and to judge its success.

The relationship of space to the library’s expanded role as a partner in learning, a facilitator of knowledge creation, is less clear. Learning is individualized. There are no commonly held specifications for environments that are necessary for it to occur. A person might be in any of a number of places, libraries included but not necessarily, to engage in learning activities. It seems unrealistic, if not meaningless, to assess the impact of space on learning as an outcome. However, as partners in supporting the activities of learning, libraries are drawn to assess what happens in their spaces, with their facilities, and as a result of their staff’s engagement. These seem to offer a basis of assessment efforts about library space.

A summary of these relationships between the three functions of academic libraries and assessment issues is offered in Table 1. It is an initial attempt to summarize the issues raised in thinking about space assessment. It is a work in progress and invites critique and debate.

Table 1: Factors Affecting Assessing Space in Support of Different Library Roles

LIBRARY ROLE	ACCUMULATION	SERVICE	FACILITATION
SPACE NEED	To house objects, primarily physical materials [books, journals, films, archive boxes]	To respond to customer expectations of convenient and easy access; hours of opening, comfort, appropriate lighting, etc.	To offer individual workspaces, group study areas, presentation and rehearsal facilities, convenience of reserving or using spaces alone, with peers, or with assortment of expert help [information, technology, writing]
PHYSICAL SPACE EXPRESSION	shelving, preservation environments	attractive study areas, including well equipped and staffed information commons	diverse learning environments
VIRTUAL SPACE CONTRIBUTORS	repository for digital resources; server and telecommunications adequate for storage and use of owned and licensed electronic resources	Identification of available resources; remote access from anywhere, anytime	Potential use of social networking to extend learning with persons [peers and expert supporters] in different geographic proximity
ASSESSMENT	of operations	of service quality and satisfaction	of learning behaviors, collaborative engagement and learning outcomes
PERSPECTIVE	staff managing housing	customer satisfaction	learners' perceived growth; educators' perceived support
Time frame for impact	long term	immediate	ongoing
PROBLEM	to project space needs for collection growth; understand preservation environment	to gauge what are expectations and what is needed to maintain high perceptions of service delivery	to align space with learning objectives and fostering communities of learners and knowledge partners
ASSESSMENT OBJECTIVES	to ensure secure preservation environment to extend the life of materials for current and future generation of users	to attract and maintain customers through providing high quality services	to offer learner means to build confidence and monitor accomplishment of information handling competencies and skills, as well as toward life long learning habits

Table 1: Factors Affecting Assessing Space in Support of Different Library Roles (continued)

LIBRARY ROLE	ACCUMULATION	SERVICE	FACILITATION
SAMPLE RESEARCH QUESTIONS & HYPOTHESES	What is projected growth of collections? How many linear feet of shelving are needed? What space for staff and equipment is needed to process and service the collections?	What is important for ideal service? How well is service delivered? What spatial factors contribute most to improving service quality?	How many people simultaneously use different workspaces and areas? How much time is spent in different learning spaces [from isolated to group study]? What encourages students and faculty to engage in conversations and exploration of information in the space? What will enrich the education experience for students?
METHODS	Generally quantitative. Counting through sampling; statistical analysis. Experimental testing of factors such as light, water, humidity, temperature on deterioration of materials.	Mix of qualitative and quantitative. Interviews, surveys, mystery shopper, observation	Mix of qualitative and quantitative. Counting, observations, transaction analysis can address the objectives of housing and balancing different objects, which in this role involves people, furniture and equipment. Count of amount of time spent and number & types of groups engaged with information within spaces. Formative evaluation for improving design. Ethnographic techniques [observation, visualizaiton, usability, talk aloud] to understand learning behaviors. Content analysis of student portfolios.
USE OF DATA	can generalize and establish standards for design and evaluation	local application is most meaningful for diagnostic purposes	local application for designing space; personalized feedback to learner to encourage growth

This summary does not imply any intention to prescribe a single model of conducting assessment of library space. This essay asserts that multiple paths may be taken to conduct such assessments. A good assessment plan should itself be assessed for the usability of its results. Such a “meta assessment” is suggested through John Ory’s adaptation of standards for judging an evaluation developed by educators. He suggests standards organized into four factors important to the evaluation of assessment activities: utility, feasibility, proprietary, and accuracy.⁶⁶

Consideration of the assessment’s utility includes identification of the audience for its results, the credibility of its evaluator, the scope and selection of information, the protocols for interpreting results, the report [its clarity, dissemination, timeliness] and the impact of the assessment. Feasibility standards include consideration of practical procedures, political viability, and cost-effectiveness. Numerous standards guide the assessment’s propriety, intended to ensure legal, ethical and responsive conduct. These include such issues as the assessment’s formal obligations, conflict of interest, full and frank disclosure, public right to know, rights of human subjects, human interactions, balanced [complete and fair] reporting, and fiscal responsibility. Finally, consideration of the assessment’s accuracy is intended to guide delivery of adequate information about the object studied that will determine its worth or merit. Among the issues considered are the identification of the object [as a program, project, activity], context analysis, description of purpose and procedures, defensible information sources, valid and reliable measurements, systematic data control, appropriate analysis of quantitative and qualitative information, justified conclusions, and objective reporting. As with any well done applied research, these elements of design procedures and execution, should be addressed to improve the likelihood of the assessment to be responsibly completed, and worthwhile, and to ensure its results will be valid, reliable, and accurate.

6. Further research topics

Inquiry at the intersection of assessment and library space is dependent on the nature of the library role and the purpose of the research. There are a variety of research topics raised in the

literature,⁶⁷ that might be grouped in five broad topics:

- 1) Relation of space and learning:
 - What is the relationship between space and cognitive development or “deep learning”?
 - How will critical student learning outcomes be identified and realized in these learning spaces?
 - What new staff roles provided by both the library and campus partners are required to support and deliver the agenda of these spaces?
- 2) Economic return on space investment:
 - Are library learning spaces a factor in student decisions to remain in a college?
 - Do these spaces influence original decisions to select a college?
 - How much do library spaces and opportunities to name them influence donor contributions?
- 3) Integration with other academic functions:
 - Are library learning spaces unique? Does their proximity to other library resources such as collections, staff and equipment relate to their effectiveness in supporting learning?
 - How does the library’s web presence relate to its physical spaces in support of learning? In providing access to information services?
 - How will the information mission of the library be complemented and informed by these learning spaces?
- 4) Planning space design:
 - How might more libraries benefit from user-centered assessment applied to the design and programming phases of new learning spaces?
 - How will libraries create and improve learning spaces to address the specific needs of local constituents without falling into the trap of simply emulating what others have done, thus missing an opportunity for the library to engage the larger learning and research agendas of its institution?
 - What are best practices and effective methods of engaging students and faculty in the design of learning environments?
- 5) Assessment techniques:
 - What value do images or visualization

mappings selected by users have in assessing importance of space elements for learning?

How valid an indicator is quantity of use to the effectiveness of learning spaces?

What insights can be gained for design of physical spaces from virtual learning activities [e.g. gaming, Second Life]?⁶⁸

Research activities in observing the brain, ethnographic methods studying the workplace, knowledge organizations, and children behavior, student portfolio reviews, are among diverse directions where assessment of learning may stimulate topics related to libraries and learning.

7. Added implications

The exploration resulting in this essay involved a journey to unexpected topics. The topic how the assessment of space relates to libraries' ability and practice to perform their function seemed, on the surface [and when invited to prepare this chapter], fairly straightforward. As long as traditions of defining what librarians do [as a manifestation of library function] are linked to a building, this topical question has a long tradition of counting what a library has and what physical dimensions are needed to house it, and a more recent practice of identifying customer perceptions of the quality of delivering what they do. But when addressing the topic as a problem of applied research, the purpose of an assessment calls for articulation of what the library function is. Therein lies the winding path for addressing the topic, as the function of the academic library is evolving. Space has importance in discussing the newer role of the library [embodied by its librarians and other staff intentions and activities] as a collaborative partner or a facilitator in learning and creation of new knowledge. The possibilities and activities of discovery and utilization of information have broken beyond the boundaries of physical spaces. Similarly, the nature of assessment of space to enable and foster these activities stretch beyond the limited nature of library assessments. The profession adapted research and theory developed in other fields such as marketing and business for assessment of libraries as service organizations. It now is expanding its adaptability to work with research in such diverse fields as learning sciences, architecture and interior design, environmental studies, pedagogy, instructional design, and

anthropology. Exploring the relationship of space, and its design and use, to the functions of the academic library is a rich topic, but one only beginning to be addressed in the library literature and culture. This essay feels incomplete, in part because of uncertainty if it captures the state of research and practice on the topic across the various disciplines that contribute to it. It challenges the exploration to continue with discipline and thoroughness appropriate to applied research. The focused discussion of the topic of library space in a library assessment conference promises to generate new insights to augment this introductory essay.

The newest paradigm of the library and its roles to engage in teaching and learning, while continuing its support of research calls for transformation of the librarian's identity. As long as the profession limits its identify with what a building can do, it will remain as a service provider. The service is important, even likely to be universally valued in academia. But as a service provider, librarians are relegated to serve and thus be ultimately conceived as servants within the academy. They support the "real" work of the academic enterprise, whether that is teaching, research, or other service to society. A conception of the librarian as a partner, a collaborative facilitator, of learning to happen in a college or university, divorces the profession from its traditional roots with a building. Teachers are not "classroomarians," scientists are not "laboratorians," information technologists are not "computerians", and even basketball coaches are not "courtarians." Like these other academic professionals, librarians bring information, expertise, theoretical constructs, and practice to the advancement of learning and research. The space in which librarians have worked may have shaped their contributions to the academy – to accumulate information sources and provide services to utilize them. Assessment of library spaces for such roles has developed in fairly linear fashion. But a liberation of librarians from the buildings that house accumulated information resources and their customers may powerfully contribute to the transformation of embedding the profession into campus life. Assessment of library space may remain most relevant in terms of the library's role to house and to serve. Assessment of library spaces, likely moving more into the metaphoric virtual "spaces," may become more

an assessment of the needs, behavior and accomplishments of its inhabitants to learn and to create new knowledge with information. The library's added value will be evaluated not only in terms of its successful judgments and strategies to accumulate information encased in publications and Web links, and the services provided to access and effectively utilize them. The library's value will also need to be assessed in terms of the spaces and relationships surrounding learning it fosters, in part through interactions with librarians and other partners. Library space assessment is explored in association with the Japanese concept of "ba" thought of as a shared space to build relationships and advancing both individual and collective knowledge.⁶⁹ The concept of space in this perspective may be physical [e.g. offices], virtual [e.g. e-mails], or mental [shared experiences].⁷⁰ Methodologies for assessment of library spaces are becoming expansive and exciting and have potential to advance the conversations beyond the building to the very essence of the library.

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Longitudinal Assessment of “User-Driven” Library Commons Spaces

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Abstract

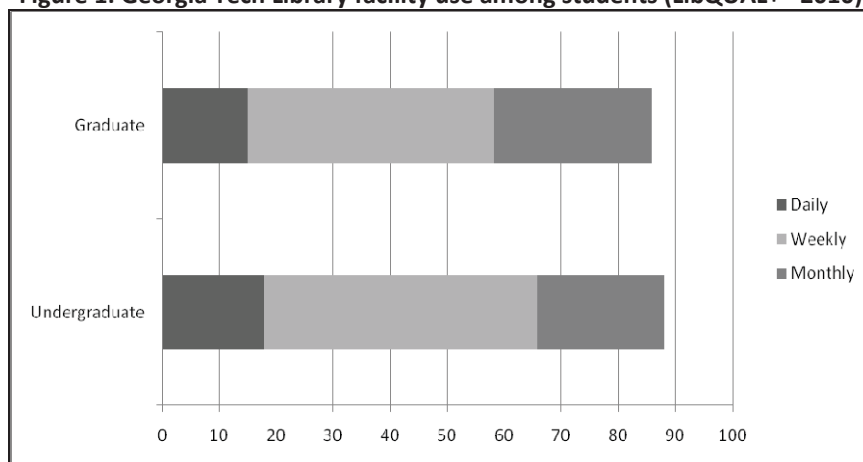
The Georgia Tech library opened its third commons space fall 2009 after a significant period of user engagement. Differing from previous renovations, this area was designed to support student-owned laptop computers rather than incorporate library-owned desktop computers. The design aligned with a new campus laptop ownership requirement and is a more financially sustainable model for the library.

This space utilization study used longitudinal data to determine how opening this commons space affected usage of the renovated area and what changes, if any, were noted in usage of other library spaces. A particular concern was any change in usage of a previously renovated space. The study also used a qualitative survey to determine whether the 2009 renovation met the core design criteria established for it.

Introduction

The Georgia Tech library serves over 26,000 students, staff and faculty. The main physical facility consists of two separate libraries (East and West) joined by a bridge. This facility is open 135 hours during the week closing only Friday and Saturday nights. Georgia Tech’s most recent LibQUAL+® survey, conducted in 2010, demonstrates heavy use of the facility by both undergraduate and graduate students with 88% of undergraduates and 86% of graduate students indicating at least monthly use of the facility. Furthermore, over 60% of undergraduates indicated daily or weekly use of the facility. The fact that over 80% of graduate students indicate regular use of the library facility was particularly surprising, leading us to believe that “Library as Place” remains a vibrant part of student life across demographics.

Figure 1: Georgia Tech Library facility use among students (LibQUAL+® 2010)



The Georgia Tech Library has completed three commons area renovations. The first, the Library West Commons (LWC) opened in 2002 with a large individual productivity lab, a multimedia studio, and a presentation rehearsal studio. Building on the success of the LWC, the library embarked on planning for the Library East

Commons (LEC) which opened in 2006. Designed to promote collaborative activities in a flexible, user-centered environment, this renovation was particularly successful due to the depth of user feedback gathered throughout the design process. The third and most recent renovation, the 2nd floor West Commons (“2 West”), was completed

fall 2009. The 2 West project continued and enhanced the level of user design input to the extent that it is described by all as a “student designed” library space. Fox and Stuart provide more comprehensive information on the planning and design of these spaces in their article.¹

While the 2 West project shares a design component with the LEC, namely that of user-informed collaborative spaces, it differs from the LEC in two significant elements. First, 2 West provides more open spaces for collaborative activities than the LEC promoting greater adaptability for group size variations and, in general, a sense of more flexibility. Second, other than four quick use walk-up terminals, 2 West does not provide library-owned desktop computers. In 2007, Georgia Tech enhanced its student computer ownership policy to require that all incoming first-year students own a personal laptop computer. This requirement is significant because it helped drive the decision not to include desktop computing spaces in 2 West but instead make the space more amenable to personal laptop use through abundant power outlets and wired data ports, an enhanced wireless network, wireless printing capability, and 42” monitors that can attach to multiple laptops simultaneously. Rather than continuing to create expensive, financially unsustainable and less flexible “computer lab” commons with stand-alone computer terminals, the 2 West renovation embraces the laptop and mobile-device oriented culture of the Institute.

Purpose of the Study

The purpose of this study is to conduct a longitudinal assessment of library spaces at the Georgia Tech Library and to determine the satisfaction of students with the most recent commons renovation. Our analysis focuses on the renovated collaborative spaces, while also investigating and commenting on how renovation impacts usage of other spaces in the library. By longitudinally assessing the impact of this most recent renovation, we hope to provide justification for future renovations and inform these projects with the most appropriate user-sensitive design.

This longitudinal study seeks to answer the following key questions: To what degree does renovation impact utilization of the renovated

space? How does usage of renovated spaces change over time particularly in light of subsequent renovations to library spaces with similar function? And, what effect is there on overall utilization of library spaces? Based on previous observations and gate count data, we anticipated that the creation of the new 2 West commons would substantially increase utilization of that particular space while also leading to an overall increase in library use. We also expected to find that the increased utilization of 2 West would come at some expense to usage of the LEC. Both of these commons areas provide collaborative spaces but the LEC was often very crowded prior to 2 West construction and we expected that 2 West would provide a “relief valve” for the collaborative space requested by students. As the final part of our study, we also seek to determine how satisfied students are with the renovation of the 2 West commons based on the original user-centered design criteria for that space.

Although there have been numerous commentaries and research articles written about library as place and commons spaces, no published work examines the effect of renovation on library space utilization over time. In a landmark study, Ethelene Whitmire examined the library-use patterns of over 1,000 undergraduate students over their first three years in college.² Although Whitmire’s research is very useful in providing a holistic understanding of how and why undergraduates use academic library resources, services and facilities, it does not specifically investigate the impact that renovation has on building use. Scott Bennett, writing in the 2005 Council on Library and Information Resources (CLIR) report *Library as Place: Rethinking Roles, Rethinking Space*, notes the importance of fostering social components of learning by creating a sense of community among students.³ We have found that creating a sense of community ownership empowers users to modify and govern the space based on their evolving needs. A major consideration for 2 West was to create a space where students felt comfortable moving furniture around to meet their needs and expectations. The success of this user dimension was assessed using a qualitative questionnaire which supplements the space utilization data. Potthoff and Weis, et al., illustrate a behavioral sciences approach to evaluating library spaces

called the “Role Repertory Grid Procedure.”⁴ While there is some overlap between our qualitative instrument and this comprehensive approach adopted by Potthoff, our instrument focuses on evaluating four specific themes that emerged from student focus groups involved with the initial co-design phase for 2 West. However, the Role Repertory Grid procedure may be useful for future iterations of the qualitative part of this study. In their article “Collaborative design: a learner-centered library planning approach,” Somerville and Collins write about the importance of collaborative, user-centered design principles in the planning process for renovation of library learning spaces.⁵ Though they discuss important components of user-driven library commons renovation, their work does not fill the research gap regarding longitudinal assessment of these spaces. Furthermore, there have not been any formal studies to investigate the internal impact that renovation has on other spaces within the library.

Methodology

The methodology for this longitudinal study involves quantitative and qualitative components. Initial observations were first performed fall 2008 by measuring usage of all library spaces for one week. Observations included counts at four times during the day of patrons using each space or zone. The number of groups in each space was recorded. Some but not all of the 2008 observations also noted group sizes. One of the 2008 observations collected data on laptop utilization.

A second set of comparative observational data was collected spring 2010 after the opening of the 2 West commons to more definitively determine the longitudinal impact of opening a new space on overall building usage, group usage versus individual usage by zone, and laptop utilization. As in 2008, observations were made of each student floor in the library at four times during the day. These times were labeled as morning, afternoon, evening, and night and were taken at approximately the same time each day Monday through Thursday. The observations for Friday

included only three data points as the library closes at 6:00 p.m. on Friday during most of the semester. For each count, the observer noted the number of individuals and groups in the zone, the sizes of each group, and the number of laptops employed. The 2010 observations were timed to coincide with the same period of the semester as when the 2008 observations were made. A copy of one of the 2010 data collection instruments used in this study is attached.

Additionally, feedback gathered from students during the initial design phase of 2 West informed specific areas for improvement. These themes included a desire for improved power and data access, improved lighting and aesthetics, and flexible spaces that could be student-owned. A qualitative instrument was administered spring 2010 to students using the 2 West commons space to confirm if the renovation met their needs. This survey included the following questions:

- *On a scale of 1-5, how well does the power in this space meet your needs? Why?*
- *On a scale of 1-5, how well does the lighting of this space meet your needs? Why?*
- *On a scale of 1-5, how well do the aesthetics, furniture and ambience of this space meet your needs? Why?*
- *During the initial planning for the design of this space, students noted a desire for a “defined yet open” space. They described a space that included well-defined areas for group study, while not limiting the option to move furniture around for their individual needs. On a scale of 1-5, how successful is this space in striking this balance of “defined yet open”? Why?*

In addition to the questions outlined above, the survey also included a general question asking for additional comments or suggestions for the Library. These qualitative comments are useful to describe the “lived experience” of the students within the 2 West space. They also inform the quantitative statistics to provide a better picture of how and why our users interact with the newly renovated area in the Library.

Findings and Observations

Figure 2: LEC, 2 West and Total Attendance % Change 2008-2010

MONDAY	1 st Floor East Commons (LEC)	2 nd floor West Commons (2 West)	TOTAL All Library Zones % Change (2008-2010)
Morning	-18.1%	+11.5%	-9.8%
Afternoon	+13.2%	+134.5%	+66.1%
Evening	-5.9%	+55.6%	+25.8%
Night	-17.6%	+46.2%	+12.8%
TUESDAY	LEC	2 West	TOTAL LIBRARY
Morning	-16.7%	+29.7%	+10.1%
Afternoon	-24.5%	+87.7%	+18.4%
Evening	+10.6%	+43.6%	+38.2%
Night	+17.5%	+57.3%	+65.0%
WEDNESDAY	LEC	2 West	TOTAL LIBRARY
Morning	+24.4%	+79.3%	+9.3%
Afternoon	-10.6%	+103.7%	+7.9%
Evening	+16.1%	+52.6%	+28.7%
Night	-5.4%	+72.4%	+41.7%
THURSDAY	LEC	2 West	TOTAL LIBRARY
Morning	-20.0%	+260.0%	+31.7%
Afternoon	-4.0%	+130.9%	+45.9%
Evening	-35.1%	+25.3%	-1.4%
Night	-45.7%	+15.7%	-12.1%
FRIDAY	LEC	2 West	TOTAL LIBRARY
Morning	+107.1%	+246.2%	+44.5%
Afternoon	+22.2%	+45.5%	+18.0%
Evening	+42.9%	+286.7%	+35.6%
OVERALL USAGE % CHANGE (2008-2010)	+2.7%	+94.0%	+25.1%

The figure above shows the percentage change in total number of individuals using the LEC and 2 West, as well as the total daily use from all zones (floors 1 through 6), from the 2008 to the 2010 observations. The 2 West space saw higher usage for each specific 2010 data collection when compared with the same period in the 2008

observation. Total usage of 2 West increased 94.0% between the 2008 and 2010 observations. For the LEC, some specific 2010 observations revealed higher usage while others declined when compared to 2008. Overall usage of the LEC during the observations increased only 2.7% thus lagging considerably behind the increase of 2

West. The data suggests that on the busiest days (Monday through Thursday), 2 West is attracting students away from the LEC space. Total usage of library spaces on all floors during the observations increased 25.1%, considerably higher than the increase in Georgia Tech student population between 2008 and 2010.

Space Utilization by Groups

The figure below provides the total number of groups observed in each space, and the percentage change for group utilization on each floor, over the course of the observation.

Figure 3: Space Utilization by Groups (% Change 2008-2010)

FLOOR	Total # of Groups (2008)	Total # of Groups (2010)	% Change (2008-2010)
1 West (LWC)	49	74	+51.0%
1 East (LEC)	237	218	-8.7%
2 West	207	450	+117.4%
2 East	36	46	+27.8%
3 West	8	23	+187.5%
3 East	36	37	+2.8%
4 West	30	63	+110.0%
4 East	16	22	+37.5%
5	18	31	+72.2%
6	16	25	+56.2%
GROUP UTILIZATION TOTAL % CHANGE, 2008-2010			+65.4%

By far, the greatest concentration of groups appears in the LEC and 2 West as these are the only areas of the library that have been renovated specifically to provide collaborative space. They are also located in the “talking allowed” floors rather than floors dedicated for quiet study. The increase of collaborative use of 2 West both in raw numbers and percentage change is quite high reflecting the popularity of this newly-renovated space. While still high, the number of groups using the LEC declined. Interestingly, the LEC was the only space to experience a decline in number of groups from 2008 to 2010 though it should be noted that the percentage change in other areas is based on smaller counts as these spaces are primarily dedicated to quiet study. Overall, the data illustrates that the 65.4% increase in group utilization of the library from 2008-2010 is driven primarily by the 2 West renovation.

Group Sizes

While the 2008 observations recorded the number of groups in each zone, only eight of the 2008 observations noted the sizes of each group. These eight observations were the evening and night observations Monday through Thursday. Group sizes were noted during each of the 2010

observations, but we can only make a direct comparison between the 2008 and 2010 data for the evening and weekend observations conducted Monday through Thursday. The number of group members in 2 West increased 67.4% but as the total number of groups more than doubled, the average group size decreased from 3.4 to 2.8 members. The number of group members in the LEC declined 1.8% with group size declining slightly from 2.7 to 2.5 members. With the exception of the LEC and one other zone, all observed spaces recorded increases in the total number of group members between the 2008 and 2010 observations while average group sizes fluctuated with some zones experiencing increases and some decreases.

When reviewing all 19 observations made during 2010 including the morning and afternoon times excluded from the comparisons in the paragraph above, variations in group sizes by zone seem to be minimal. Average group sizes by zone ranged from 2.2 to 2.9 with no apparent pattern by size of the space, floor level (i.e. floors closer or further away from the main entrance), whether a quiet or talking space, or whether the space had been renovated. One variable that may have provided

some impact on group size is the availability in certain zones of tables somewhat larger than in other zones, or specifically in the renovated 2 West area, of small tables that can easily be moved together to form larger groups.

Laptop Utilization

The following figure illustrates how laptop utilization has changed since the 2 West renovation. The number of students utilizing laptop computers was noted during each observation in 2010.

Figure 4: Laptop % Utilization (2008-2010)

FLOOR	2008	2010	% Change (2008-2010)
1 West (LWC)	0.0%	6.9%	+6.9%
1 East (LEC)	27.0%	35.6%	+8.6%
2 West	33.6%	70.5%	+36.9%
2 East	68.2%	52.2%	-16%
3 West	80.0%	62.0%	-18%
3 East	21.4%	68.2%	+46.8%
4 West	100.0%	68.9%	-31.1%
4 East	75.0%	62.4%	-12.6%
5	88.0%	65.7%	-22.3%
6	93.3%	72.6%	-20.7%
TOTAL LAPTOP % UTILIZATION	40.5%	49.0%	+8.5%

Laptop utilization varied significantly based on zone but the lowest rates were observed in the LWC and LEC with rates of 6.9% and 35.6% respectively. This result was expected for these areas since most seating areas in the LWC and about half those in the LEC are outfitted with desktop computers. Other spaces in the library saw laptop utilization rates from just over 50% to just over 70% with the 2 West commons, specifically designed to support laptops, being one of two zones with a rate over 70%. Total laptop utilization for all library spaces during the study was 49.0%. As there was only one observation in 2008 that noted laptop usage, it is not possible to fully report trends in this area. Still, it can be noted that from the 2008 observation to those in 2010, laptop use in the 2 West commons more than doubled (33.6% to 70.5%) and that laptop use in the entire library increased from 40.5% to 49.0%. Both of these results would be expected given the laptop

friendly renovation to 2 West and the addition of a new freshman class subject to the laptop requirement.

2 West Qualitative Survey

Also significant are the results of the survey regarding the four core design themes for the 2 West renovation: power/data, lighting, aesthetics, and a "defined yet open" space. For this survey, the scale was centered so that a response of "3" indicated satisfaction with the renovation efforts for that theme. A "4" indicated that the renovation more than met the desired outcome for that space while a "5" indicated that the student felt the renovation effort had been great. As noted in the figure below, over 100 students using the 2 W commons space participated in the survey. With all theme scores ranging between 4.0 and 5.0, it appears that students are quite satisfied with each aspect of the renovation.

Figure 5: Qualitative Survey Results

THEMES	AVERAGE SCORE (n=103)
Power	4.28
Lighting	4.49
Furniture, Aesthetics, Ambience	4.44
"Defined Yet Open"	4.43
TOTAL AVERAGE	4.41
SCALE:	
	5 = Great
	4 = More than adequate
	3 = Meets needs
	2 = Not very well
	1 = Totally inadequate

Convenient and ample power and data access was a primary concern since the 2 West renovation would not include desktop computers, but rather be marketed as a "laptop friendly" commons space. Specific comments from the qualitative survey reflect student satisfaction with regards to power and data access:

- "It's real easy to plug in almost anywhere."
- "Not having to search/fight for outlets makes the library much easier to study in."
- "Plenty of power outlets scattered throughout."
- "Points are well placed."

Prior to the renovation, lighting levels in 2 West were described as unbalanced and generally harsh. The survey results show that students reacted positively to the refreshed lighting for the space:

- "Perfect for computers and work."
- "Outside light and inside light work well together to create an aesthetically pleasing environment."
- "Love the bright lights! Doesn't feel like a prison like before."
- "I feel like the lighting is great for reading, studying, etc. Lighting is subtle as to not distract from work but sufficient enough to function. It almost seems that there is a lot more of natural lighting."

We asked students how well the "aesthetics, furniture, and ambience" of this space met their needs. Their scores and comments reflect an enthusiasm for the comfortable furniture,

contemporary look and feel, and practical aesthetics to maximize collaborative activities:

- "Oh my god, it is the perfect studying chair ever."
- "Effective for both group studying and studying alone."
- "Good comfortable chairs, nice tables, good group work atmosphere."
- "Furniture is nicer; doesn't have the feel of a dungeon."
- "Comfortable yet can focus."
- "Love the new set up, especially white boards. Booths are comfortable."
- "The modern and minimalist style helps me to concentrate on my work in a relaxed environment."
- "Very nice contemporary feel."
- "Simply much more appealing than before."

The final theme we assessed was the flexibility of the space. During the co-design phase, students described a space that included well-defined areas for group study, while not limiting the option to move furniture around for their individual needs. The comments from the 2010 survey demonstrate that the space allows for such flexibility and openness:

- "Good, can easily move furniture to meet group needs."
- "The present environment is one of the best places to study on campus due to how easily it can adapt to a student's needs."
- "The objective is well met. The central space and other long tables are good for group

studies, and the corners are quiet enough for individual studiers.”

- “You have your own space, but can still not be isolated from the rest of the library.”
- “This really is the perfect place to do group work, because there is so much freedom to move around and use various resources.”
- “The white board areas are great for group study, but the option remains open to rearrange furniture to an extent to accommodate larger groups of people.”
- “The white boards are a wonderful feature and it helps that most of the furniture is lightweight and moveable. It strikes a great balance.”
- “The spaces are less cubicle-like and are open. The rolling chairs make it easy to add more people to a group.”

Finally, the survey provided an opportunity to gather feedback about improving services overall, and included an open-ended question about how to improve the library, generally. Many students indicated a shortage of dry erase markers and erasers. This information was communicated to the Commons coordinator who increased supplies during final exams. Other students asked for improved power access in other library spaces. A power audit was conducted by the library facilities manager, and though it is not currently feasible to overhaul the entire electrical grid for the building, broken or non-functioning outlets can be repaired. A very common request was to “keep renovating up to the next floors.” Although the present budget climate will not allow for an immediate comprehensive renovation, the quantitative and qualitative data suggests that adopting a user-driven approach for future refreshments correlates well with student satisfaction.

Summary and Conclusions

The longitudinal data suggests the following:

- The 2 West commons is attracting more students and groups subsequent to its renovation.
- The 2 West commons is attracting students and groups away from the previously renovated LEC.
- Overall usage of the library increased subsequent to the 2 West renovation (figure 2).

- The need for collaborative spaces in the library continues to grow. Even with the most recent 2 West renovation, the number of groups and group members continues to increase in other areas of the library including those designated as quiet space (figure 3).
- Laptop utilization is up somewhat for the whole library and significantly for 2 West (figure 4).

Data on student usage indicates that the most recently renovated 2 West spaces are successful. It appears that the most recent renovation increased use of that commons space, as well as overall usage of the library. Results of the qualitative survey regarding the 2 W renovation indicate a very high degree of satisfaction with the project results across each of the core design themes. This level of satisfaction is most likely attributable to the intensive user engagement process undertaken prior to renovation. The high scores on the survey corroborate the large increase observed in usage data for the 2 W commons space. The 2010 data also support the concept that students will embrace a laptop-friendly commons renovation and that all commons renovations do not require library-supplied desktop computers.

Future iterations of this longitudinal study should prove illuminating and practical for space planning and budgeting. In order to conduct a successful inquiry, we have found it useful to adopt the following practices to help ensure smooth data collection and analysis. As with all longitudinal research, using a consistent survey instrument and communicating data gathering guidelines is important to maintain integrity and consistency of results. In addition, it is vital to recognize the need to have knowledge transfer mechanisms in place to deal with changes in personnel. Finally, a method for archiving raw data and results, preferably in an institutional repository or other centralized digital warehouse, can make the data analysis process more efficient and robust.

This study is unique because it assesses how renovating spaces impacts overall usage of the library over time. Based on our literature review, this type of longitudinal study of library space utilization has not yet been published. This research also illustrates how renovating one space has the potential to attract users away from other

library spaces. The data suggests that user-centered refreshment or renovation of library commons spaces can have a profound impact on utilization, and that this utilization can increase with the addition of financially sustainable laptop friendly spaces and not just the addition of commons spaces providing desktop computers. Results from this study will be used to guide and inform future renovations at the Georgia Tech library. Additionally, future observations may be able to more fully assess changes in the utilization of laptop computers. Although this study concerns the Georgia Tech library, our experience may provide a useful roadmap for other institutions as they seek to transform spaces or assess existing ones.

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Notes

1. Robert Fox and Crit Stuart, "Creating Learning Spaces through Collaboration: How One Library Refined its Approach," *Educause Quarterly* 32, 1 (2009), [http://www.educause.edu/EDUCAUSE+](http://www.educause.edu/EDUCAUSE+Quarterly/EDUCAUSEQuarterlyMagazineVolum/CreatingLearningSpacesThroughC/163850)
2. Scott Bennett, "Righting the balance," in *Library as Place: Rethinking Roles, Rethinking Space* (Washington, DC: Council on Library and Information Resources, 2005), 17-18.
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Appendix A:

Sample Space Utilization Data Collection Instrument

Georgia Tech Library :: 1st Floor http://www.library.gatech.edu/about/floorplans/1.htm

DATE: Mon. 3/15/2010 10-11p. TIME: 10:30pm

	TOTAL #	GROUPS	CAFE	TOTAL #	GROUPS
LWC	(85)	11 (2) 1 (3)	8	11 (2) 1 (3)	
LAPTOPS #		(4) (5)	LAPTOPS #	3 + 4 + 1	(5) (6)
	(10) (all in horseshoe areas)	(6) (7)	ZONE 1	Total #	111 (2) 11 (3) 11 (4)
	4 + 3 + 78		LAPTOPS #	(24)	(5) (6)
MM	(17)	11 (2) (3)	ZONE 2	Total #	11 (2) (3) 1 (4)
LAPTOPS #		(4) (5)	LAPTOPS #	(19)	(5) (6)
	13 + 4	(6) (7)	ZONE 3	Total #	11 (2) 11 (3) (4)
Q → (4)			LAPTOPS #	(15)	(5) (6)
Quick Use Area → (4)			ZONE 4	Total #	111 (2) (3) (4)
1 laptop			LAPTOPS #	(19)	(5) (6)
			ZONE 5	Total #	11 (2) (3) (4)
			LAPTOPS #	(4)	(5) (6)
				(3)	(8) (9)

INCLUDE QUICK USE WITH LWC
DO NOT COUNT VISITORS

LibQUAL+® and the Information Commons Initiative at Buffalo State College: 2003 to 2009

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Abstract

In 2003, the E. H. Butler Library at Buffalo State College (SUNY) prepared to engage in its first LibQUAL+® assessment initiative. After receiving its first dataset and analyzing results as compared against the instrument's national norms, Butler Library discovered that levels of user satisfaction fell short in all 3 service areas (i.e., Affect of Service, Information Control, and Library as Place) by up to 10 percentile points. Using these results as a guiding framework for service restructuring and departmental reorganization, Butler Library implemented a long-term plan to develop the Information Commons in an attempt to improve patrons' perceptions of library service.

After development of the Information Commons, post-test results (2006 and 2009) showed a significant increase in overall perceptions of library service quality and in all three LibQUAL+® dimensions. Results of these analyses are discussed along with results related to differences in the impact of the Information Commons model of service delivery on undergraduate and graduate students' perceptions of library satisfaction.

Introduction

Across numerous types of service businesses and organizations, of which libraries are a part, evaluation and measurement of service methodologies and outcomes has become a common, multifaceted necessity. The era of accountability has arrived, and libraries are no longer viewed simply as separate entities providing "inputs" into larger systems. Rather, library systems naturally are *part* of these systems, and they must be defined and evaluated accordingly, including their processes, outputs, and outcomes in relation to larger systemic structures.

Library measurement and evaluation evolved significantly throughout the 20th century and especially into the 21st century. Several key contributors, as individuals and as members of larger library associations, enriched the field of library measurement and evaluation, and their contributions will be discussed briefly to provide a chronological context to undergird a portion of the literature review, particularly as it relates to the selection of the LibQUAL+® survey instrument. More importantly, though, their contributions led to the recognition and acceptance of the need for library evaluation, which helped spur attempts to strengthen library evaluation research. One such attempt stemmed from an initiative from the Association of Research Libraries (ARL): a pilot project designed to examine and assess service quality among academic and research libraries. This project led to the development of LibQUAL+®, a psychometric survey instrument designed to measure the relationship between perceived library service delivery and library user satisfaction. Successive attempts to strengthen and expand the research base in this field continue today.

Throughout the past six years, LibQUAL+® played a special evaluative role at Butler Library at Buffalo State College. In 2003, Butler Library engaged in an extensive physical and virtual reorganization of service provision and delivery. Specifically, the library initiated the development of and transition to an Information Commons model of service organization. Prior to this transition, however, Butler Library collected LibQUAL+® data from its user groups for two primary reasons: 1) to establish a baseline (i.e., pre-test) for measurement of changes to users' perception of library service quality over time, and 2) to receive concrete feedback from its constituencies to help guide the direction of

development of the Information Commons. After completion of the Information Commons, LibQUAL+® surveys were administered again in 2006 and 2009 for purposes of benchmarking, self-benchmarking, and post-testing differences.

This paper will present the evaluative, practical findings related to E. H. Butler Library's journey of developing an Information Commons. A literature review will be presented, which will cover: 1) a brief acknowledgement of key contributors to the field of library evaluation research, and 2) an overview of LibQUAL+®. Further literature about the Information Commons model will be touched upon in the methodology section of this paper. The purposes of this research are simple: 1) to provide other academic libraries with a documentation of our successes and challenges in developing an Information Commons; 2) to illustrate changes in users' perceptions of library services between 2003, 2006, and 2009; and 3) to contribute to the bodies of practice-based library research and service evaluation, particularly in relation to Information Commons case studies and LibQUAL+® research.

Literature Review

Library Evaluation

Most fields respectfully acknowledge the early works its key contributors, and the field of library evaluation should be no exception. Three prominent individuals wove a common thread in this field throughout the past century: James Thayer Gerould, a library administrator; F. Wilfrid Lancaster, a library educator, and Duane Webster, a library association executive¹. The efforts and contributions of these people highlight the evolution of library evaluation practices, and each person brought different perspectives into the assessment and measurement of library services. Briefly, their contributions will be acknowledged, including how future research would not only supplement their practices and findings but further improve upon library service evaluation models and methodologies.

SERVQUAL: The Origins of LibQUAL+®

ARL reports of descriptive statistics fill a critical need in evaluative library research, even today. Decades of statistics pinpoint practices of collection investment, (in)stability of library funding, and declines and improvements in

resource allocation. Trends in these areas can be monitored, and initiatives can be instituted when deemed important or necessary to the ARL membership organization. However, these trends and practices make an assumption which has yet to be proven empirically: the relationship between expenditures and service quality.² "A measure of library quality based solely on collections has become obsolete."³

Recognizing the lack of instruments that directly measure service quality from the user point of view, ARL approved a membership-centered pilot project in 1999 to respond to college and university administration demands nationwide for accountability.⁴ Part of ARL's New Measures Program, this project represented a paradigm shift away from descriptive, collection-input driven measures toward service evaluation, user satisfaction, and formalized, standardized measurement initiatives grounded in scientific methodology. These efforts promoted the need to rely less on the *ARL Index* (ARL Statistics) as the primary, most important assessment tool; rather, this project represented a collective, collaborative effort of many ARL-member libraries and librarians to adopt a new way of conceptualizing and conducting library evaluation.

To begin the collaborative efforts, ARL accepted the adoption of Texas A&M University's research in SERVQUAL (SERVice QUALity), a psychometric survey instrument which addressed user assessments of service delivery.⁵ Although it is beyond the scope of this paper to address SERVQUAL in-depth, one important notation must be referenced. The SERVQUAL instrument was designed in the 1980s to assess service quality in the for-profit business world.⁶ Thus, in order to utilize and incorporate this research into the field of library evaluation, ARL requested the instrument be reconceptualized, redesigned and retested to better address service delivery to users of libraries. The new instrument would need to be tailored to library users, rightly presumed to be a distinctly different population than traditional "business customers." Also, the instrument needed to be grounded in college and university library settings and environments; after all, libraries typically are non-profit entities focusing more on service provision (as compared to for-profit settings, possibly focusing on resource provision or production). Nevertheless,

SERVQUAL represented a promising survey model, a foundation from which a more library-oriented survey could be developed.

LibQUAL+®: An Overview

In general terms, LibQUAL+® is a 22-core-item “total market” survey instrument designed to assess library service quality of an academic library from the point of view of the library user.⁷ Factor analytic studies and item analyses reveal that LibQUAL+® measures the single overarching dimension of perceived library service satisfaction and quality.⁸ However, this should not be confused with its three subscales: Affect of Service, Information Control, and Library as Place. These three “dimensions” measure components of library service satisfaction.

Affect of Service

This aspect of user satisfaction examines the helpfulness and responsiveness of library employees to users. Early LibQUAL+® research indicates three components to this subscale dimension.⁹ *Assurance* is “the knowledge and courtesy of employees and their ability to convey confidence and trust.”¹⁰ *Empathy* includes the caring, compassionate, individualized attention of employees toward their users. *Responsiveness* is the ability and willingness to provide efficient service to its users.

Information Control

This aspect of user satisfaction examines the availability, timeliness and appropriateness of library resources. Components of this subscale dimension include user perceptions of the *comprehensiveness of collections*, *barrier-free access* to information at the time of need, and *information formats*¹¹ (e.g., print, digital, etc.).

Library as Place

The final subscale measurement examines how well the physical library facility(ies) serve users’ needs for space and technology. This concept assesses the ability to meet needs for *community socialization*, *utilitarian space* (e.g., for study, collaboration, etc.), and space for *creative and scholarly inquiry and rumination*¹².

Although validity issues will be discussed later, it is important to note two potential shortcomings of these subscale areas. First, the *Library as Place* is a continuously changing phenomenon, especially as

technology demands force a shift from print-based resources to digital resources. Loudly and clearly, users have expressed an overwhelming need for resources to be available anytime, anywhere, from any location.¹³ This demand has fostered technological changes in the ways in which resources are accessed, particularly from remote locations utilizing computers and the internet. Thus, the *Library as Place* is becoming less “physical.” As more resources become available as online digital full-text, the “dependency” on the library’s physical space becomes lessened. In fact, it may become possible in the not-so-near future for users to complete library research activities entirely in an online, digital environment. If this becomes the case, this aspect of user satisfaction may shift dramatically, if not eliminated altogether.

Secondly, and on a similar note, information formats are shifting toward digital, electronic versions. However, one particular item in the *Information Control* subscale inquires about “the printed library materials I need for my work.”¹⁴ Again, this item may become less relevant given the shift toward digital formats. If the question is asked, it may “plant the seed” in the mind of the surveyee that printed materials *should* be a part of the library’s collection. If a library shifts to a digital-based collection (which Butler Library has done—90% of journals are digital), then the surveyee may perceive the library is deficient in this area. Consequently, this item could threaten the validity of LibQUAL+® data. This is why it is important for LibQUAL+® researchers to monitor these trends and make necessary item modifications or deletions accordingly (e.g., delete the word “printed”).

LibQUAL+®: Psychometric Properties and Integrity

In 2007, LibQUAL+® collected data from the 1 millionth library user and the 1 thousandth institution, and since its conception in the early 2000s surveys have been administered to library users in 20 countries in 12 different languages.¹⁵ The sheer number of data collected is massive and expansive, lending to a richly diverse longitudinal collection of statistical information. What started out as a need for stronger evaluative measures in American academic libraries has expanded literally to global proportions, a truly remarkable

representation of libraries both nationally and internationally.

Validity

Some LibQUAL+® studies have engaged in rigorous statistical testing to determine criterion-related validity.¹⁶⁻¹⁷ However, since LibQUAL+® was a unique instrument, *convergent validity*, or statistical comparisons between instruments measuring the same or similar concepts, could not possibly be tested.¹⁸ Instead, Heath et al. investigated LibQUAL+®'s *concurrent validity*, or the distinct ability to distinguish concepts from one another in order to measure each concept separately, as compared to ARL Index, a predominantly collection-and-expenditure-based reporting instrument.¹⁹⁻²⁰ As expected, the "strongest" correlation between LibQUAL+® and ARL Index involved *Information Access* ($r^2 = .147 = 2.2\%$), and this correlation was small. The reason the two instruments did not correlate presumably is due to each instrument measuring distinctly different concepts—LibQUAL+® measures user satisfaction, and ARL Index measures collection holdings and expenditures. Thus, in a fascinating way, this study showed and strengthened LibQUAL+®'s validity by disproving its correlation with a conceptually different measure.

One other potential threat to validity is *self-selection bias*. LibQUAL+® surveys rely on the voluntary completion of the survey. Due to confidentiality, a library would not be able to access personally identifiable information (such as email addresses) for the purposes of conducting research with random-sampling methods. Instead, libraries market the survey to its users utilizing whatever means available to them. Libraries rely on these marketing efforts to "attract" users (and non-users) to participate in the typically web-driven survey. Self-selection is not a random sampling method and, thus, carries with it the potential flaws of such a bias—the most general of concerns being: "do respondents differ from non-respondents?" For example, a user who is greatly satisfied with library services may be more than willing to complete a survey "to help the library." Alternatively, a user who is greatly dissatisfied may be more likely, too, to complete a survey to voice their concerns. However, what about users who are "in the middle"—maybe only somewhat satisfied? Are they more, less, or just as likely to

participate in this survey? Also, what about the likelihood of *non-users* to complete the survey? Are library non-users just as likely to complete the LibQUAL+® survey (or not complete it) than library users? These questions and concerns inherently could impact the validity of any research findings, including those of LibQUAL+®.

Reliability

A plethora of research studies have examined the stability of LibQUAL+®'s reliability, including longitudinally, and most reliability correlation coefficients reach at least .85, .90, or even higher.²¹⁻²⁴ Although it is beyond the scope of this paper to cover all reliability studies in-depth, the research of Thompson et al. is most indicative of LibQUAL+®'s reliability.²⁵ Their research reported a Cronbach's alpha coefficient of .948, a remarkably high internal reliability indicator.²⁶

Item Response Scoring—The "Gap Measurement" Model

Given its roots in attitude measurement, LibQUAL+® utilizes a *gap-measurement model* for item response scoring. For each survey item, respondents provide three different ratings; these ratings include:

- The *minimum* level of library service that is deemed acceptable
- The *perceived* level of library service seen as being offered
- The *desired* level of library service²⁷

Gap measurement relies on the *perceived* scores of respondents as indicators of service quality.²⁸ Specifically, the difference between perceived levels of service and minimum and desired levels of service is calculated to determine positive and negative scores. If levels of perceived service are greater than or equal to minimum levels of services, users typically are "tolerant" and accepting of the library's service in that area. If it falls below that minimum, however, then the user believes the library is not performing up to their minimal expectations in that area, which typically results in dissatisfaction. Similarly, if perceived service meets or exceeds their desired level of service, then typically a user is "satisfied." Anything below desired levels of service may be an indication of dissatisfaction. However, LibQUAL+® posits that service quality may still be acceptable as long as the library meets users'

perceived minimal levels of service, even if they are not functioning at the desired level. This “gap” indicates a threshold known as the *zone of tolerance*. Ideally, libraries should attempt to meet users’ desired levels of service, but, even if they meet their minimal levels of service, libraries generally will be met with at least somewhat satisfied users.

Gap measurement carries its own set of pros and cons. One positive outcome of gap measurement is an inherent “lie detection” and random response scale. “Logically . . . a user’s rating of desired performance should never be below . . . minimally acceptable performance [ratings].”²⁹ If so, especially if persistent throughout a respondent’s cumulative scores, it likely is an indication of random response (and, thus, a threat to score validity). Consequently, such aberrances are determined through simple counting, and once aberrances for an individual survey reach a predetermined threshold, that survey is deemed invalid and subsequently is deleted from data inclusion.

Another positive outcome also happens to be related to multiple ratings. Gap measurement carries an “intuitive” appeal, a “complex simplicity,” if you will. Assuming a respondent understands the nature of the rating methods and how they are related to one another, a respondent can provide very important, powerfully reliable data.³⁰

One con of gap measurement involves the user directly. Instead of responding to one 22-item Likert-type scale, the gap measurement model “forces” users to complete three Likert-type scales, one for each perceived service rating. This results in, minimally, a user completing over 60 responses. This reality may have been beyond their expectation and, consequently, may result in mid-completion respondent attrition, which typically is another threat to validity.

Similarly, another con involves the user’s comprehension of an item’s concepts and/or constructs. For example, a respondent reaches the item: “Library space that inspires study and learning.” If they do not understand the concept “library space” (or if it is not applicable to them, such as only accessing the library through remote digital access), they may be confused as to how to

answer. Then when they attempt to provide a score for *each* rating, the chances of computing imperfect scores are compounded.³¹ Interpretation problems magnify inaccuracies when multiple ratings for one item are involved.

The Information Commons Initiative at Buffalo State College

Historical Background

2003 was the year of the perfect bad news storm for E. H. Butler Library, Buffalo State College. As was the case in hundreds of academic libraries across the country, 2003 was the year of an unprecedented decrease in gate counts, reference desk statistics, and library material circulation. In Butler Library it also was the year of an unprecedented increase in technology-related questions and technology-related complaints: usernames did not work, e-mail accounts needed to be activated, passwords needed to be reset, printers were jammed, work was not saved, discs were lost, and software could not be loaded. Students with these types of problems had such a confusing time resolving them that the process was given a name—“The BuffState Shuffle.” In 2003 users’ frustration levels were high on all fronts, and staff morale seemed to be at an all-time low. Library administrators were scrambling to justify filling vacant lines in a department that appeared to be in decline. As Scott Carlson noted in his 2001 article in the *Chronicle of Higher Education*, “Gate counts and circulation of traditional materials are falling at many college libraries across the country, as students find new study spaces in dorm rooms or apartments, coffee shops, or nearby bookstores.”³² New technologies, increased automation, and of course the Web, improved access to information and empowered users. It also made users stay away. The silence was deafening . . . but only for a while. We needed to find a way to get our users back.

Our first formal step was to confirm what we suspected: users were staying away because they were unsatisfied with the library on many fronts. Hence, in 2003, we administered the LibQUAL+® survey to formally measure library patron satisfaction and, according to the data we received, library user groups perceived Butler Library as falling short in all 3 dimensions/service areas. Scores for overall satisfaction, affect of service, information organization, and library as place ranged from the

40th to the 42nd percentiles. (Baseline percentiles were determined through comparisons against 2003 LibQUAL+® norms.)

William M. Sullivan, senior scholar at the Carnegie Foundation for the Advancement of Teaching, stated, “Thinking of a library as an information center is the first step toward losing it.”³³ What really was the library then if not an information center? The disappointing results of LibQUAL+® served as a wake-up call for Butler Library to redefine itself. What resulted was the creation of the Information Commons and, seven years later, a library that had reclaimed its place as the academic and cultural heart of the Buffalo State College campus.

College & Library Overview

Buffalo State College, a Carnegie Master’s-L level institution, is the largest 4-year urban college in the State University of New York (SUNY) system. Enrollment for fall 2009 was 11,714 students: 9822 undergraduate and 1892 graduate students. Five schools, the School of Arts and Humanities, the School of Education, the School of Natural and Social Sciences, the School of the Professions, and the Graduate School, offer 162 undergraduate programs with 11 honors options and 60 graduate programs including 17 post-baccalaureate teacher certification programs. First-year undeclared students are enrolled in University College which provides support programs and specific opportunities to foster student success. The top five majors at the college are business, elementary education & reading, technology, criminal justice, and history.

E. H. Butler Library is a medium-sized academic library which houses more than 675,000 printed books, over 174,000 electronic books, and access to full-text articles from over 57,000 unique print and electronic journals. The library is open 110 hours each week during regular semesters and within our building we have two extended-hours facilities, StudyQuad and QuietQuad, which are open and staffed 24/7 during regular semesters. Butler Library is the largest open computer lab on the campus, housing more than 200 new computers, which provide full access to library resources, the Web, the Microsoft Office Suite, and various specialized software applications. Access to the wireless network and secure networked printing is also available in the library.

The library has a café and several lounge areas. Security cameras are installed for safety and the building is routinely patrolled by University Police Student Assistants.

The Beginning of a Developmental Plan

Credit must be given to the seminal article by Donald Beagle, *Conceptualizing an Information Commons*, for giving librarians at Butler Library a vision for the future. Librarians by nature tend to be excellent organizers, visionaries, and adept at seeing the bigger picture.³⁴ The road to revitalization of the library required a new way of defining the library’s purpose and its responsibility to provide support to the greater academic community. The Information Commons concept defined by Donald Beagle provided an excellent framework. Of particular interest were Beagle’s new descriptions for use of library space and his redefinitions of library services. Butler Library’s front line staff could clearly articulate many instances of poor or confusing service on campus. If we could consolidate the provision of essential services within the library itself, students would be better served by a “one-stop shop.” The plan was for that one-stop shop to become an Information Commons.

Implementation: Building an Information Commons

The look and feel of the Butler Library of seven years is but a distant memory—so much has changed. Below is a summary of the major highlights of the library’s reorganization:

The Computing Help Desk moves into the library

A review of the literature on restructuring academic libraries is full of information and case studies about the marriage of computing services and library services. In Butler Library this was the most obvious service to include in the Information Commons. This move allowed for support to be available at the point of need—most students discover they need password resets or specialized computer assistance when they using library computers. Having the Computing Help Desk in the library also raised their user satisfaction level as they were physically more accessible and visible. The help desk staff instantly became supportive partners, fully participating in technology and customer service planning within the Information Commons.

Continuous Assessment/Continuous Improvement

Two librarians participated in a year-long CA/CI training workshop during which public service areas were evaluated and a structure for change was developed. Continuous improvement continues to be the philosophy within the Information Commons.

Use of an outside facilitator

The entire library staff needed to come together around an understanding and vision for the creation of an Information Commons. An outside facilitator was hired and helped us aggregate input to create a newly envisioned mission statement of the Information Commons:

The Information Commons provides quality service, expert help, and seamless access to information in a supportive high-tech environment that empowers the Buffalo State community to access, evaluate, and ethically use information to promote academic excellence.

During times of change staff can become nervous or concerned about their future role in the organization. In our session, the facilitator did an excellent job of rallying the staff around a common goal. In retrospect, this step was by far the most worthwhile.

Library reorganization

Physical units in the library, such as microforms, media services, interlibrary loan, were reorganized around functional service areas. Librarians had responsibility for functional areas but were encouraged to develop interdisciplinary partnerships and scholarship. The Associate Director for Information Commons position was created to oversee all public areas of the library including the library's Web page and online and print resources. An Information Commons supervisor was appointed to oversee all clerical and student staff. All clerical staff were cross-trained in all functional service areas.

Perhaps the most visible change, and the most controversial, was the move of the reference desk from the back reference room to the library lobby. Librarians initially disagreed with this move, indicating the potential of compromised privacy and that the area was too noisy and too visible. However, within a week, reference desk statistics

in all categories increased. Reference librarians were busy again and librarians' concerns soon subsided.

Financial investment

The library purchased an "Information Commons" sign for \$500, our only financial investment in the creation of this new area.

Managing expectations

With little additional, direct fiscal expense, the concept of the Information Commons seemed to be a risk worth taking. This implementation, in a sense, could even be considered a trial phase, if necessary—enabling the library to try something new, yet leaving open the option of returning to the previous structure of services. Even with some resistance and dissension, expectations remained cautiously optimistic. However, all agreed that increased visibility and aligning with user expectations was a positive step in the right direction.

Post-Implementation Evaluation: The Second Data Collection Point (2006)

The year-long process of creating an Information Commons was well-grounded and justified by the disappointing results of the 2003 LibQUAL+® data. In 2006, Butler Library administered a second collection point of LibQUAL+® data. Although detailed results will be presented later in the paper, it is worth noting that users' perception of overall library service quality changed significantly and in a positive direction. Across the board, LibQUAL+® scores showed improvement in all 3 service dimensions. These user-driven results helped justify and confirm the direction of library service reorganization into the Information Commons model.

The Services

Almost immediately after the Information Commons was opened formally and publicly acknowledged and marketed, the typical library usage statistics (e.g., reference desk; gate counts; circulation) indicated the library was becoming busier, and campus offices and departments seemed to realize that conducting their business in the library could be more practical, more efficient and effective, and could reach more students. Hence, the Information Commons became the site for new services such as:

- The Writing Help Center

- Academic Skills Remote Location
- Advisement
- Bengal ID Card Office
- Transfer and new student orientation
- The Application Support and Training Desk (a new technology and software service which the library itself decided to oversee and incorporate into the Information Commons)

As a direct result of the success of the Information Commons, the library received funding to create and staff this area to provide software and application support and training for students, faculty, and campus staff. This is the only area on campus that provides this much-needed service, its value indicated by the over 16,500 questions that were answered by this area in 2009.

Equipment Loan

Students need to borrow equipment for use in their coursework. Previous to the library taking on this service, equipment loan was located in a secluded office which provided limited hours of service. The library identified space adjacent to the Application Support and Training Desk, purchased new equipment, created a Web site to reserve and track this equipment, created video tutorials for proper use of this equipment, and as a result have logged over 3,000 loans this past year.

The Bengal ID Card Office

Along with agreeing to print ID cards and bus passes for all faculty, staff, and students, the library has become the site for the administration of all ID card functions, including dining, vending, and printing.

Professional Development Center

This new space opened in September 2010 and is the site for faculty and professional staff development programming and training. Requests for space in the library continue to be made, again indicative of the excellent reputation of the Information Commons.

StudyQuad and QuietQuad

These areas were constructed in the library specifically because of student requests for late night collaborative and quiet study spaces. These areas are open 24/7 during regular semesters and are extremely popular for those students who have jobs or cannot study in the dorms.

Research Design

Methodology

This non-experimental, practice-oriented research study utilized the well-established LibQUAL+® survey instrument as the primary means of collecting baseline data in 2003 and for two subsequent tri-annual data points (2006 & 2009). Then, after the 3-year initiative to develop the Information Commons, the 2006 data point, hypothetically, would highlight positive changes in users' perceptions of overall service quality as measured by the LibQUAL+® instrument. Finally, the 2009 data point would indicate whether or not users' satisfaction with the development of the Information Commons could be sustained or if it simply was the result of a dramatic short-term effect.

Although LibQUAL+® provides numerous demographic variables worthy of additional study, additional analyses were narrowed solely to differences between undergraduate and graduate students. Examination of these differences happened quite serendipitously, mostly due to one of the researcher's statistical background. Such "data mining" techniques typically are frowned upon in the scholarly community as most sound research is perceived as deriving from theories or models and the development of research questions hypotheses before data collection and analysis (i.e., experimental research). However, for the purposes of practice-oriented library service evaluation, examination of data from a multitude of facets, dimensions, and variables truly gives practitioners a greater understanding of their users' needs. Ultimately, greater insight into user needs could equate to better provision of library services. Thus, this data, despite being discovered through happenstance, will be presented, too.

Participants

Beginning in 2003, Butler Library utilized a cross-sectional sampling plan to collect LibQUAL+® survey data from its constituents in three-year intervals, the most recent in 2009. Recruitment of volunteers occurred through three primary channels: direct outreach (reference desk interactions; classrooms; student & faculty contacts), marketing (campus newspapers; announcements on website; bookmarks; departmental and campus emails), and incentive (the chance to win an iPod). Volunteers were

asked to visit the library's LibQUAL+® survey page to complete the survey. Only fully completed surveys were used for data analysis; imputation of missing data was not utilized. With the exception of undergraduate and graduate student status, most sampling demographic variables were not as crucial for the purposes of

these evaluations. Thus, they will not be reported in this paper. However, Table 1 illustrates frequencies of undergraduate and graduate student participation based on year; this demographic variable was found to be important in some analyses.

Table 1: Undergraduate and Graduate LibQUAL+® Participation – 2003 to 2009

	<u>2003</u>	<u>2006</u>	<u>2009</u>
Undergraduate	266	423	380
Graduate	50	54	76
Total	316	477	456

Formal analyses of other demographic differences for each tri-annual data collection point were never calculated, but demographics in LibQUAL+® reports were reviewed and, roughly estimating, showed no outrageous differences from the overall Buffalo State College population.

All participants were from various user groups of Buffalo State College: students, faculty and staff. Library staff members were excluded from all analyses due to the potential for biased results (i.e., vested interests). Faculty were included in analyses related to changes in perceived library service quality over the development of the Information Commons, but they were excluded from other analyses relating to undergraduate and graduate student groups.

Testing Instrument (LibQUAL+®)

Despite methodological flaws inherent to almost any testing instrument, including LibQUAL+®, library faculty at Buffalo State College selected LibQUAL+® based upon its well-documented psychometric properties, which was discussed previously in the literature review, and for its value in collecting the same data over time, longitudinally. Beagle, Bailey, and Tierney point out the lack of explicit evaluative instruments focusing specifically on the effectiveness of Information Commons services.³⁵ Instead, like LibQUAL+®, most evaluative instruments implicitly, or indirectly, measure said services. Technically, LibQUAL+® measures perceptions of *library* service quality, not Information Commons

service quality, yet Beagle and other scholars tend to accept the administration of LibQUAL+® for such a purpose.

Score Data

Only the mean adequacy gap scores were selected from LibQUAL+® data for use in most statistical analyses. These scale scores reflect the difference between the user's expected minimum level of service and their perceived level of service. Larger, positive adequacy gap scores indicate greater satisfaction, while negative scores indicate dissatisfaction.

Results

Research Interest #1

A one-way, between-subjects ANOVA was conducted to compare the effect of the development of an Information Commons model of service provision on users' perceptions of library service quality between three tri-annual data collection points (2003, 2006, and 2009). The Levene Test of Homogeneity of Variances indicated equal variance and, thus, supports the usage of ANOVA ($F[2, 1598] = 2.62, p > .05$). Results of the one-way ANOVA revealed significant differences between the tri-annual data collection points ($F[2, 1598] = 7.07, p = .001$). Post-hoc comparisons using Scheffe's test indicated significantly more positive perceptions of library service quality for the 2006 data point ($M = .32, 95\% \text{ CI } [.09, .55]$) and the 2009 data point ($M = .307, 95\% \text{ CI } [.07, .54]$) as compared to the 2003

data point. Comparisons between the 2006 and 2009 data points were not statistically significant at $p < .05$.

Research Interest #2

The impact of the Information Commons separately on undergraduate and graduate student groups' perceptions of service quality was explored also using one-way ANOVAs. (Post-hoc comparisons will not be necessary due to having only 2 factorial conditions: undergraduate or graduate student status. Statistically significant differences will be between those two groups only.) In 2003, results of one-way ANOVA indicated no significant differences between undergraduate and graduate students and their perceptions of library service quality ($F[1, 314] = .014, p < .05$). The Levene Test of Homogeneity of Variance indicated equal variance and supported the usage of ANOVA ($F[1, 314] = .724, p > .05$).

However, in 2006, results of one-way ANOVA indicated that undergraduate students' perceived higher levels of service quality after the development of the Information Commons than graduate students ($F[1, 475] = 5.024, p = .025$). Equal variance was indicated through the Levene Test ($F[1, 475] = .553, p > .05$). This difference was maintained in 2009 as well, as shown through one-way ANOVA ($F[1, 454] = 4.013, p = .046$) (Levene Test: $F[1, 454] = .163, p > .05$).

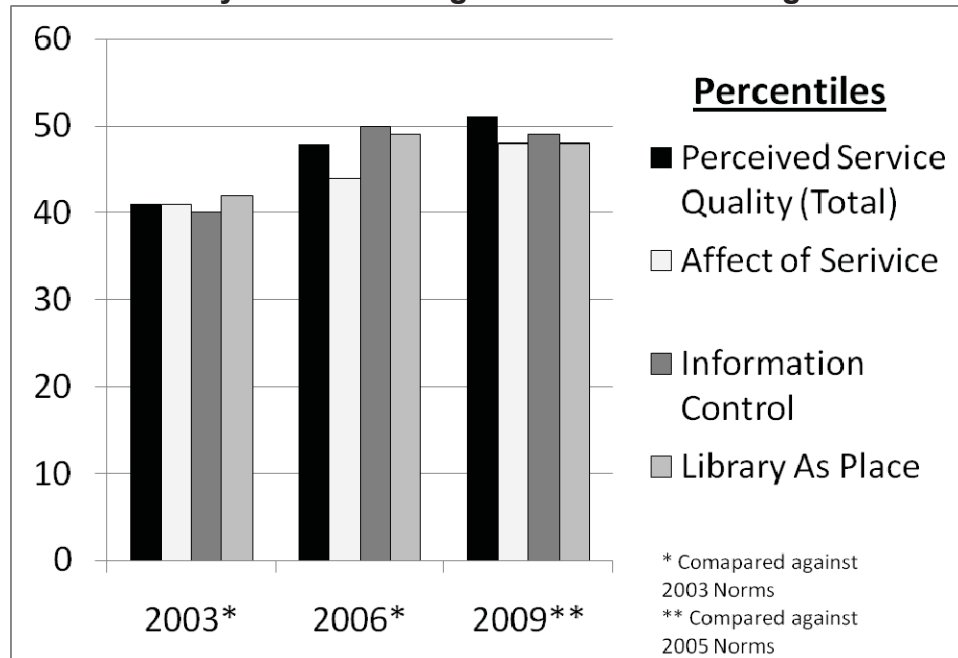
Interpretation of Results

Research Interest #1

As hypothesized, the development of the Information Commons between 2003 and 2006 had a significantly positive impact on its users'

overall perceptions of service quality, including in each of LibQUAL+®'s three service dimensions. Interestingly, the Information Commons model would seem to fit more into the "Library as Place" dimension of LibQUAL+®, yet scores in Affect of Service and Information Control also improved significantly. Perhaps the physical, virtual and cultural "repackaging" of services indirectly affected users' perceptions of these two areas. For example, a medical office seen as clean, comfortable, nurturing, etc. may influence patients' *expectations* of the quality and competence of staff there (i.e., affect of service), whereas a less cleanly, uncomfortable environment would result in a different opinion or expectation of staff and service. A similar effect may have happened with Butler Library patrons. After revitalizing the environment with the Information Commons model of service organization and delivery, patrons' perceptions of library staff and interactions with them (i.e., Affect of Service) may have improved as an indirect coincidence. A similar phenomenon may have occurred with the dimension of Information Control (e.g., perceptions of having better ability to access and retrieve information).

Besides the inferential statistics applied in this paper, the scores for all three data sets were compared against LibQUAL+® norms.³⁶⁻³⁷ This enabled Butler Library to benchmark their data to that of other libraries as a means of comparison. Also, it enabled them to self-benchmark longitudinally every three years utilizing the same testing instrument. Table 2 illustrates this data:

Table 2: Butler Library Benchmarking & Self-Benchmarking from 2003 to 2009

This data further supports the findings from the statistical analysis section. Butler Library showed significant, positive gains in percentile scores between 2003 and 2006.

Results between 2006 and 2009 were not statistically significant. Although the percentile for overall perceived service quality increased slightly, statistical analysis indicates that it could not be ruled out due to chance. However, one very important point should be noted: perceived service quality did not decrease. Despite the economic downturn and subsequent fiscal “crunching” between 2006 and 2009, users’ satisfaction with service quality did not diminish significantly. The gains resulting from the development of the Information Commons were maintained, which suggests a long-term, sustained impact from developing such a model of service delivery. The Butler Library staff and administration were pleased overall with this result since it was hoped this model would not be a one-time “shot in the arm” or a dramatic fad.

Results from 2006-2009 comparisons support sustained, positive gains.

Research Interest #2

The second research interest occurred less intentionally. Statistical analyses for undergraduate and graduate students revealed no differences in their perceptions of service quality prior to the development of the information commons; without disagreement, it was apparent they were both equally dissatisfied with library services in 2003. However, for both the 2006 and 2009 data, analyses revealed that the development of the Information Commons had more of an impact on undergraduate students’ perceptions of service quality than graduate students. To help understand this difference, correlations between all 2009 LibQUAL+® survey items and the overall LibQUAL+® mean adequacy gap score were computed for both undergraduate and graduate student groups. For each group, Table 3 illustrates the five LibQUAL+® items that most highly correlate with the mean adequacy gap score:

Table 3: Top Five LibQUAL+® Items for Undergraduate and Graduate Students

Service Element	Service Dimension	Pearson r Coefficient*
<i>Undergraduate Students</i>		
Employees who are consistently courteous.	Affect of Service	0.756
A comfortable and inviting location.	Library as Place	0.755
Library space that inspires study and learning.	Library as Place	0.739
A getaway for study, learning, or research.	Library as Place	0.724
Employees who have the knowledge to answer user questions.	Affect of Service	0.71
<i>Graduate Students</i>		
A library website enabling me to locate information on my own.	Information Control	0.827
Readiness to respond to user questions.	Affect of Service	0.781
A getaway for study, learning, or research.	Library as Place	0.779
Employees who have the knowledge to answer questions.	Affect of Service	0.776
Employees who are consistently courteous.	Affect of Service	0.774
The electronic information resources I need.	Information Control	0.769

The development of an Information Commons best fits with the Library as Place LibQUAL+® service dimension. Using Table 3 as a guide, this dimension appears to be of more value to undergraduate students than graduate students. For undergraduates, three of the top five items stem from this service dimension. One explanation is that undergraduate students see the Information Commons and/or library as a necessity for their learning, study, and research. With a multitude of information, technological, cultural, and recreational services and activities, they may view the Information Commons as a place to “get away” and relax and/or a place to be nurtured when they need assistance.

Library as Place seems to be less relevant to graduate students, as evidenced in Table 3; only one item stems from this service dimension. Instead, more of their items relate to Information Control and Affect of Service. Many graduate students have families, careers, and other large responsibilities outside of the college environment and, thus, might be less reliant on the Information Commons to fill the role of a “second home.” Also, since many of their responsibilities and activities may center more on advanced research than undergraduates, the Information Control dimension is more important to graduates.

These findings sparked much debate among library faculty and staff, and they likely will guide future planning and services for the Information commons. After all, graduate students are a very important user group, too, and the planning of

services must take into account their unique needs and interests, particularly in relation to their research interests and information requests. These findings would not have been noted if had not been for LibQUAL+® data and methods related somewhat to data mining. Certainly this information is of critical importance and will be addressed in future endeavors.

Conclusion

Reflections Six Years Later: New Initiatives & the “Library as Place”

The Information Commons has become a popular place for new programming, exhibits, workshops, and cultural events on campus. One exciting new initiative which has received extensive local and national recognition, was the creation of the Rooftop Poetry Club. Other new initiatives are the implementation of a Digital Commons, the library green initiative, the software virtualization project, Google docs workshops, and the library blog.

Beagle describes three *manifestations* integral to an Information Commons: the Physical Commons, the Virtual Commons, and the Cultural Commons.³⁶ In Butler Library, the physical and virtual had been deliberately and consciously created. However, it was the cultural component which developed last, almost naturally or inherently, and likely a result of our physical and virtual changes. Beagle lists creative expression, public speech, popular and academic publishing, and scholarly inquiry as pieces of the cultural commons. Butler Library’s cultural

developments and progressions include examples like:

- new programming
- new exhibits (e.g., a faculty publications showcase; campus and community art exhibits)
- workshops (e.g., Google docs; software programs)
- the implementation of a Digital Commons for scholarly works and publications
- the creation of a Rooftop Poetry Club (which has received extensive local and national recognition)
- the library's Green Initiative
- a software virtualization project
- the library blog and newsletter

... **New partners**

The Information Commons now partners with Student Affairs, Graduate Studies, Orientation, Instructional Resources, College Relations, Events Management, University College, the Registrar and Computing and Technology Services to provide ancillary services to the campus.

... **Recognition**

Since the creation of the Information Commons, E. H. Butler librarians have been awarded a Chancellor's Award for Excellence in Librarianship, an Excellence in Library Service Award, and a Library of the Year Award. Our library director was promoted to Associate Vice President for Library and Instructional Technology. A new reporting structure, split between the provost and the CIO, reflects the collaborative nature and common goals of computing and technology services and the library.

... **Benefits for Students**

Seven years ago, a student coming to the library to complete a homework assignment would need to log into the library's computers with his/her assigned username. If this student forgot his/her username, he/she needed to walk across campus to a different building to get assistance at the computer help desk. At this desk the student would be asked to show his/her ID card. If this student did not have an ID card, he/she needed to walk back to the library to the ID card office where he/she might have to wait until the next business day for an ID card. The student would then have to walk back across campus to the help

desk for a username and then finally back to the library to access the library's computers and use the library's resources.

Seven years ago there was no place to go for word processing assistance nor was there any equipment such as voice recorders, projectors, or laptops available for loan. There was no place for quiet study during late night hours as the library closed at 11:00 pm. Meal plan services were in another building, the writing center was across campus, and coming to the library for a sandwich and a quick look at e-mail was unheard of.

Today every student has access to all the following services in Butler Library:

- ID cards
- Bus passes
- Meal/Dining/Vending plans and funds
- Computing help, including username look-ups and password resets
- Class registration assistance
- Advisement
- Research paper writing assistance
- Equipment loan
- Specialized software assistance
- Microsoft Office assistance and instruction
- Google Docs assistance and instruction
- Printing assistance
- Library instruction
- And lunch!!

The process of revitalizing E. H. Butler Library through the implementation of an Information Commons has been an immensely rewarding experience for the entire staff. Not only has the Butler Library staff and administration regained the respect of the campus community, they also have regained an invaluable appreciation for user-driven input and feedback and for ongoing assessment and evaluation, including the well-established, multidimensional LibQUAL+® instrument. Most importantly, though, the users of the Information Commons have responded loudly and clearly—they approved of the changes in service structure, and their satisfaction with the Information Commons and its service quality has been sustained into 2009.

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An Assessment of the Bass Library as a Learning Commons Environment

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Abstract

This case study is an assessment of Yale University's recently renovated Bass Library's spaces and collaborative services as a learning commons (LC) environment, explored through three research questions on the themes of teaching, learning, technology and collaborating. This study employed both qualitative and quantitative methodologies including surveys for students and faculty, focus group interviews with librarians and course supporters, and observations in Bass Library. The findings indicate that of the first-year students surveyed, most [88%] use the library for studying and [66%] perceive that these spaces support their learning. All faculty surveyed after attending a research education session indicated that they would recommend one to a colleague and most [83%] indicated increased satisfaction with the quality of student papers and [71%] were satisfied with these spaces for instruction. Librarians and course support staff attending focus group interviews indicated that research sessions enhanced teaching and learning in these spaces by collaborating with faculty and partners in the Collaborative Learning Center (CLC); but they also acknowledged the need to clarify the service desk. A total of 8,751 observations of people using Bass Library spaces were recorded in 37 sweep counts over one week. Data analysis revealed that students congregate to study, meet, socialize, and work independently or in small groups in Bass Library spaces and its Thain Café throughout the day and evening. The data results show students fully engaged and working in all three seating areas almost to capacity and almost in equal numbers for studying alone, for studying alongside, and for studying in groups with a slight preference for studying alongside at

wooden tables with peak hours in late afternoon and evening. Thus, the Bass Library reflects the concepts of both social and individual learning as addressed by the design of learning commons.

Introduction

The academic library's evolving roles to enhance learning in new spaces requires innovative assessment methods. The learning commons (LC) as "far-reaching change" or "transformational change" have evolved from the information commons (IC) as "adjustment" or "isolated change" as defined by Donald Beagle.¹ The LC has emerged as a metaphor for a renovated library as place, emphasizing integration of campus wide partners with individual and sharable spaces for study, collaborative learning, instructional services, access to technology, media, print and online resources and services. LC in academic libraries are becoming the virtual and physical places on campus where faculty and students go to create new knowledge and for social networking. Urban sociologist Ray Oldenburg coined the term, "the third place" to describe informal public gathering spaces where people go to create community between home (the first place) and work (the second place).² The third place on college campuses is community space where students gather when not in classrooms or dorms to connect and engage in cultural, informational, educational and social activities. Academic library planners have begun to apply this notion of community spaces to the design of LC as "the third place" and accentuate the library's role to nurture the diversity of human contact and to build a learning community beyond the classroom. Thus, LC enrich campus life and embrace the institutional mission of

lifelong-learning. In turn, these library spaces should be assessed for their impact on student learning outcomes. These concepts were central to the renovation design of the Bass Library, opened in fall 2007 on the Yale University campus.

Problem Statement

Joan Lippincott challenges the assumption “that brand-new, beautiful learning spaces in and of themselves can change learning. . . . [believing instead] that it has to be a combination of the space and the pedagogy and the technology;” she advocates making managerial decisions in libraries based on assessment data by measuring the effectiveness, efficiency and extensiveness of learning spaces in libraries.³ However, one report stated out of twenty-five IC visited, “few libraries have done formal assessments of their IC; even fewer did a formal information gathering of potential users before implementing the IC.”⁴ Meanwhile, accrediting agencies require that academic institutions evaluate the impact of library information resources, technology, and services and “use the findings to improve and increase the effectiveness of these services.”⁵ Thus, the time is ripe for universities to evaluate the effectiveness of LC for the library’s impact on student learning.

This study will begin to fill this assessment gap by examining student, faculty, librarians and staff experiences and perceptions relating to the use of the Anne T. and Robert M. Bass Library for studying, teaching and learning. Results of this research are of interest to academic librarians and space planners at Yale and elsewhere, contributing to the emerging body of empirical information about learning spaces and the library as a LC.

Literature on the Assessment of Learning Commons (LC)

Much has been written about planning, designing and implementing IC or LC in academic libraries, however, little has been written about assessment of them. This summary of the literature, since 2000, focuses on assessment of LC.

Numerous case studies describing and evaluating LC in academic libraries with lessons learned are provided in two books, *Transforming Library Services Through Information Commons: Case Studies for the Digital Age*, and *Learning Spaces*

as well as in other notable individual reports.⁶ Duke University’s Perkins Library has established a culture of assessment emphasizing collaboration by providing reports as well as outreach to academic departments.⁷ Some recent reports indicate increased use statistics in LC by comparing data.⁸ Others have discussed the importance of assessment in *Learning Spaces*.⁹ Although Joan Lippincott advocates assessing the impact of three aspects of LC, (learning goals, community, and culture) in these spaces,¹⁰ no such comprehensive study has been identified. This gap may be attributed to the complexity of such assessments, affected by a lack of a common theoretical framework relating learning outcomes and environment. Scott Bennett has defined the evolving LC as designated spaces in libraries or even whole libraries which provide resources, services, instruction, and technology with collaborative partnerships that “enact” the institution’s mission with support from other “academic units that establish learning goals for the institution.”¹¹ Tim Held’s selective guide to sources on IC and LC shows the development of best practices in the evolution of these facilities based on learner-centered service models with technology in IC and extended collaborative partnerships with learner-centered pedagogy in LC.¹²

In a plenary presentation paper for this conference, Danuta Nitecki identified a framework and research design for assessing the alignment between the design of informal learning spaces with institutional values and missions, which is evolving through research Scott Bennett is undertaking.¹³ He links questions related to effective education and learning experiences with student and faculty perceptions about their favored learning spaces. In the first phase of his project he suggests six questions that colleges or universities should answer during the design of learning spaces.¹⁴

Laurie MacWhinnie speculates that “perhaps an impediment to assessment in general is the inability to evaluate the multiple features of this new learning resource” because the service delivery is beyond the scope of the traditional library and will therefore require new methods of assessment to determine its effectiveness.¹⁵ Three themes of collaboration, instruction, and integration of new technologies consistently

appear in the literature to support student learning with “one-stop shopping” to enable students to create new knowledge.

A number of methodologies to gather data are reported in the assessments of LC. At a Coalition for Networked Information meeting, quantifiable use statistics were presented by John Culshaw and Anu Vedantham as indications of “success” at two institutions’ LC showing increases in the following: unique logins on library computers, loans of laptops [almost more than books], student foot traffic, room reservations, workshop attendance, use of mobile devices, hours of research services to meet demand, faculty requests for assistance with research assignments and visual literacy projects. More qualitative evidence was also captured through staff observations of activities and how space is used, including various technologies [e.g., webcams for Skype, DVD production equipment] and media labs for ambitious activities across disciplines at Weigle Information Commons (WIC). Furthermore, YouTube videos and faculty interviews as “success stories” were broadcast to promote services at WIC. Student feedback also has been solicited in a variety of ways including rolling whiteboards, comment boxes [paper and online], first-year writing assignments involving space utilization study with observations, surveys and analysis at Norlin Library Commons at the University of Colorado, Boulder, and contest entries at WIC encouraged student created videos, podcasts, comics, and posters.¹⁶

Many academic libraries use and report results from a LibQUAL+® survey to assess “library as place” with usage and satisfaction through patrons’ perceptions of physical, aesthetic, and intellectual comfort in library spaces as well as the appropriateness of space design and usage for varied patron needs.¹⁷ Results of LC reports shared online offer local insights into LC success for student learning for example, “It is clear that the student-centered resources, facilities and attractive spaces in the . . . Information Commons have greatly improved student life.”¹⁸ “Comprehensive support, cutting-edge technology, and inspiring environments . . . help students do their best work.”¹⁹

The literature on assessment of LC has progressed from gathering quantitative data about usage

such as foot-traffic and transactions, to qualitative data on user satisfaction, collaborations to support teaching and learning, and explorations on the relationship of learning environments to learning outcomes. This progression may lead to a change of concept in LC of the future with the emphasis on knowledge creation. Their very name may be evolving into “knowledge commons” as evidence in planning documents for the “Davis Library Knowledge Commons as a flexible and dynamic environment for information discovery, utilization and management, and knowledge creation . . .”²⁰

Study Setting

At Yale University, the Bass Library offers a dynamic environment to enhance teaching and learning components of the academic mission. Its Collaborative Learning Center [CLC] is an experimentation in ways to converge partners from across campus in technologies, pedagogy, and information content to work with faculty and students to improve teaching and learning. From its planning inception, the Bass Library created this environment through a variety of individual and group study areas, a mix of individual carrels, wooden tables with seats, leather chairs in groupings around two naturally lit courtyards, an informal space with a café, as well as two-storey study rooms to suggest natural light in an underground facility. Two campus classrooms, as well as two flexibly defined library teaching rooms offer a variety of programs and individual consultations involving faculty, librarians, and other expert staff from units on campus to create tools and provide course support.²¹

A grant-supported project examined the impact of using digital images in teaching and created rubrics between 2001-04 with faculty repeatedly expressing their frustrations with facilities for both teaching and course preparations.²² This insight informed design decisions in creating the Collaborative Learning Center (CLC) to provide centralized course support services. The result is a flexible, energetic and stimulating place, experienced in an open and engaging environment. One might posit that the Bass Library is becoming the *third place* for many students because of the welcoming and aesthetically appealing facility with services, resources, research education, and partnerships in the CLC. Personal Librarians have been assigned

to all incoming undergraduate students beginning in fall 2008 to help first-year students connect to library resources while subject-based librarians offer consultations for more advanced researchers in their discipline.

Identifying the renovated Bass Library's contribution to educational outcomes, however, remains a challenge. As part of renovation planning, librarians at Yale in collaboration with other campus stakeholders, have reflected on how the academic experience is changing, what services are helpful to enable such innovations, and how to design spaces that facilitate teaching, learning, and research.²³ Moreover, to improve access to services for research, the Library created the Library Access and Integration Services program (LAIS) in October 2008. Data are now needed on the impact of these renovated Bass Library spaces on teaching and learning to make future decisions.

Research Questions and Methodology

Three research questions guided this study and both qualitative and quantitative methodologies were utilized to gather data to address them:

Question (#1): What are first-year student perceptions of the impact of library spaces on their learning experiences? A survey instrument with 5 questions was given at the end of each research education class to 87 first-year undergraduate students who attended a session in Bass Library with a librarian as part of their required English course.

Question (#2): How do faculty perceive the impact of Bass Library spaces, classrooms, and course support services on teaching and learning? Three separate surveys were created for faculty who used Bass Library in fall 2009 in one of three ways: to teach in its classrooms, to attend instruction sessions for first-year students in English, or to use the CLC's support services. Survey Monkey questionnaires for each group were created, pre-tested, and linked to customized email messages that invited faculty to participate in this study. In addition, the outside evaluator conducted and recorded focus group interviews with both teaching librarians and other course support staff who work closely with the faculty in CLC spaces. Descriptive statistics were used to analyze responses to most of the survey

questions. Content analysis addressed open-ended questions in the surveys, as well as interview transcripts with faculty and course supporters to identify and compare the perceptions of these groups.

Question (#3): To what extent does student use of the Bass Library's spaces foster a learning community and extend the concept of a Learning Commons? (Which spaces do students prefer to use for studying alone, studying alongside and studying in groups?)

Quantitative assessment was used to measure the amount of use and extensiveness of services offered in the Bass Library. The outside observer [assisted by nightly security guards] performed a sweep count using a space observation use survey to identify the number of users at randomly selected hours during reading week [December 7-16], which is historically a period of heavy library use at the end of the semester. The number of people in the Bass Library during each sample hour was recorded on survey sheets. Counts of occupancy of preferred spaces and of observations of activities were also recorded and analyzed to identify the extent to which spaces are used to reflect the LC concepts as well as preference in using these spaces.

Validity and Reliability

All survey questions, focus group interview questions and observation sheets were pre-tested and revised as needed to test their internal validity so that the questions asked were clear and reflected what was intended. To ensure the reliability of data analysis, both the outside evaluator and the co-author analyzed the data for consistency and reliability of results.

Findings

A large amount of data was assembled in this study, but due to the space limitations of this conference proceedings, only selected findings on the impact of library spaces and services on learning experiences, teaching, and LC environment are summarized here.

1. Student perceptions:

Response rate by the first-year student survey was 100% [n=87], with most students [86%] indicating that they had used the library before the research education session, and had consulted library resources, which most found very helpful [60%].

Of 70 handwritten comments, 62 [88%] indicated their main purpose for using library spaces was for studying, with most [84%] identifying use of group study spaces to meet others and to prepare for exams. The majority of students [66%] indicated that they were very satisfied with the Bass Library spaces to support their learning. Thus, most students indicate satisfaction with Bass Library spaces for study especially with others.

2. Faculty perceptions:

Only 17% [7] of faculty who brought classes to Bass Library for a research education session [n=42] responded to the survey but 100% indicated that they would recommend one of these to a colleague. Most faculty [83%] indicated increased satisfaction with the quality of their students' papers compared to the past and [71%] were satisfied or highly satisfied with these spaces for instruction but two recognized the limitations for teaching larger class sizes in these spaces. Others requested that students need more instruction from librarians with database searching and navigating, especially with "hands-on exploration and repetition," and the need "to offer drop-in independent research assistance." Respondents suggested that the space itself had not influenced their pedagogy, except that now they "leave basic research instruction up to the library."

Of the faculty who teach courses in classrooms located in Bass Library [n=42] only 14% [6] responded, and none had scheduled a library research session or used Bass Library resources except for electronic course reserve assistance. Only two faculty responded to how the space affected teaching, one was pleased with the ease of using films while the other liked the pleasant room to teach. One faculty reported that s/he reserved space for a TA to offer weekly review sessions but only one student came. Another faculty responded negatively to these classroom spaces, finding the "classroom to be a difficult space for a regular seminar. The lighting was poor, the windows onto library space were distracting, and the tables were not configured for a collegial seminar."

Twelve faculty who had received course support services in fall 2009 [n=23] [with technology, media production and information resources]

responded. The need for faculty to apply what was learned was repeatedly expressed: "It can be exciting to see this material in action, but imagining how it could work in your classroom and figuring out the multiple steps for implementing a new approach to teaching with technology can be daunting." Technology sessions were seen by some as "too . . . high tech for me." One suggested that "efforts should be made to encourage faculty participation in the audience for these." Help was also sought "to learn simple ways to create and then use short video clips." One vision for course support was expressed as: "A one-stop shopping model where someone could go online and based on their teaching need or question, get a referral to and/or information about appropriate resources here. Getting the word out is the most important part!"

Six faculty expressed the following perceptions of how the space or course support affected their teaching, but few observed an impact of either on pedagogy: "I go to the library more." "I have enjoyed bringing students to work in the electronic classroom where they receive introductions to research methods . . . I find that this has been a very helpful way to get students started on projects." "The Bass Library space really hasn't changed the way I teach (but the equipment and chairs are better)." The Library "has enhanced my informal interaction with my students," and "it provides a much better locus for meeting students for conferences, etc."

When asked about future services in the library, three respondents indicated the need to promote services, for example through advertising, dedicated branch library portals, and perhaps, "a student 'library fellow' at each college (like the writing tutors)." Three faculty requested faculty training using: "Powerpoint . . . Office" . . . or "GPS in the humanities . . . specialized technology (smart boards, etc.)" or incorporating technology by "circulating examples of assignments or teaching units, and possibly even 'lesson plans' where types of technology are incorporated . . ." Support of LC principles was indirectly expressed through recognition of library functions to address educational changes as: "Very little is done at Yale to improve teaching of faculty and teaching fellow. I wonder if the Library could help here." One requested expanding the café for more informal gathering space with students.

Thus, faculty seem satisfied with the spaces, instruction, and support services but would welcome more support with pedagogy and integrating technology into their teaching.

3. Librarians and course supporters perceptions:

Teaching librarians' and course supporters' perspectives on Bass Library spaces were identified through two separate focus group interviews. One-third of the teaching librarians [5 of n=15] participated in one session and 56% of the course supporters [13 of n=23] participated in the other. All teaching librarians welcomed the renovations in Bass by transforming spaces and services including the following comments: spacious, open, welcoming, and flexible spaces; opportunities for "social networking" with more relaxed space; reconfiguring one space by moving tables into group settings with a laptop cart; proximity to CLC services and video editing equipment for media based projects. Librarians have witnessed how the teaching spaces enhance their interactive sessions because they provide more opportunity for hands-on with technology, however, the electronic classroom has limited space for circulating. More time is needed for set-up and reconfiguring and scheduling can be challenging although several acknowledged assistance from the Research Education Librarian. All agreed that the spaces and time to consult with expert colleagues and to collaborate with faculty in planning research sessions have been very valuable with noticeable impacts on both teaching and learning during the research sessions especially when teachers provide students with a topic or assignment ahead of time. Librarians observed that faculty were more involved with research education sessions than in the past and that they also learned about library resources along with their students, while showing increased experimentation with technologies in collaboration with librarians.

Librarians perceive the impact of classroom spaces and collaborations with faculty as increasing relevance for student learning in Bass Library.

CLC course support staff attending the focus group interview acknowledged the positive impact of the new spaces on teaching and learning but also elaborated on ways to further enhance these spaces for more efficient use of the LC. The course supporters in media, technology, and language study acknowledged their preferences for the classrooms with reliable and up-to-date equipment, identifying what equipment needs updating and the need for wheels on tables for reconfiguring spaces. All agreed that the co-location of course supporters with librarians for joint consultation with faculty as well as for simple "relationship building" worked well in the CLC spaces. Gathering in the central location of Bass Library for planning by identifying faculty objectives but returning to other work areas was viewed as an improvement over the past "outdated" approach of expecting faculty to find them across campus. The design of the service desk however remains a work-in-progress. With an alternative service desk design being tested, ideas are emerging to staff it with diverse course supporters as well as find workspaces for them to use while in the library. Other suggestions include improvements in signage and room scheduling to match faculty requests with their technology needs.

4. Students' use and seat preferences:

Observed behaviors was the third source of data gathered in this study. Observations of people using Bass Library spaces [n=8,751] were recorded through 37 sweep counts over one week. Hourly counts were combined into types of seating for totals and percents; a summary is offered in Table 1.

Table 1. Seating patterns in Bass Library observed December 7-16, 2009 [n=8751]

Group Study Combined classrooms and group study rooms		Working Alongside in soft seat clusters		Working Alongside at wooden tables and wooden seats		Individual Study in individual study rooms or carrels		Computer use either stand up or cluster workstations and printers	
# people	%	# people	%	# people	%	# people	%	# people	%
1561	17.84	1868	21.35	2543	29.05	2121	24.24	658	7.52

People use the various environments in almost equal distributions, with slightly greater tendencies to gravitate to the larger wooden tables with 8–12 wooden seats, even when soft seats are available; here, they work alongside others with their own laptops, books, or writing materials. Privacy at these large tables is frequently created with laptops, left open or with printed materials. When individuals are reading or only using laptops, they tend to gravitate to the soft seat areas both on the concourse and the lower level. Students enjoy meeting in group study rooms and empty classrooms (usually in small groups of 2-5) although most have not reserved them in advance. Formal groups such as language review sessions, chess club meetings, or tutoring sessions do tend to reserve classrooms. Some frequent activities observed in the classrooms or group study rooms include writing on whiteboards, using laptops or computers and LCD projectors, watching videos, reading, writing, and talking. Some students arrive in small groups in the evening searching for a group study room but when not available, they choose seating at tables or soft seat clusters.

Bass Library use grows steadily during the day with peak times in the late afternoon [3-5pm] and then again in the evening [8-9 pm and 11pm-midnight] but drop after 1am in the Thain Café, students congregate to study, meet, socialize, and work individually, in pairs or in small groups throughout the day and evening, with peak occupancy in the late afternoon and evening. Staff, librarians, faculty, teaching assistants and students appear to meet informally, socialize, tutor, and network here. Often students are working alongside others at small round tables or in soft seating groups of 2-4. One student seemed

to sum up the essence of the Thain Café as: “This is a great place to study and be seen.”

Discussion

Yale students, through their consistent behavior and selective responses to a questionnaire confirm that the Bass Library is a popular place to be and to study. From observations of how students are using spaces, students affirm the projected LC design features to support multiple learning behaviors. Three modes of working observed in almost equal numbers include: alone in individual study rooms or carrels; alongside others especially at the large wooden tables or in soft seating clusters; or in groups in group study rooms or unused classrooms. One cannot generalize from this case study to the whole faculty, but 100% indicated that they value assistance and research education through its collaborative course support resources for their students and some would also welcome more assistance with pedagogy and integrating technology. Comments from librarians and course support staff note greater faculty engagement with research education, experimentation and openness to technology, as well as more involvement with librarians especially in interactive teaching sessions. Although most teachers did project improvement in the quality of student output and class participation, it appears that the library as space was not recognized as having an impact on their pedagogy.

Thus, planning the Bass Library as a *learning commons* environment has been successfully implemented and anticipated use of its collaborative spaces and facilities has been confirmed by this study. A self-consciousness, however, was not expressed among its occupants that the space and activities within it go beyond

the “doing” of teaching and studying. These activities are undertaken in universally acknowledged inviting, flexible, and aesthetically welcoming community environments. At all hours of day and night, students use the Bass Library spaces productively, purposefully, and quietly. One security guard noted that since the renovations, students have been more respectful in using these spaces. When taking prospective students on a campus tour, one student guide stopped at Thain Café and showed students the entrance to the Bass Library and said “this is the best place to study” on campus. While students were observed actively participating in research education sessions and actively studying, there was little evidence uncovered indicating whether students consciously see themselves as intentionally learning or faculty changing pedagogy or shaping learning outcomes as a result of the new Bass Library LC model. Both faculty and students, however, do recognize that the research education sessions and collaborations with librarians and course supporters have been valuable for their learning and using technology and information resources to succeed with their research.

Conclusions and Recommendations:

This case study could be used as a practical model for other academic libraries for planning and assessing their newly renovated LC with faculty and students’ use and perceptions of the impact of these spaces on teaching, learning and technology. Its findings contribute to the emerging conversations about collaborations of librarians and LC partners with faculty and the impact these learning environments have on students. Investigations of learning outcomes in LC needs further study but this study helps to frame questions for assessment of what happens in a campus “third place” and what are contributions of LC to learning and the role of librarians to help shape them.

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Notes

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Canada Lite: Impact of LibQUAL+® Lite on the Members of the LibQUAL+® Canada Consortium

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Abstract

This paper assesses the impact of the new LibQUAL+® Lite survey format implemented in 2010 as experienced by the members of the LibQUAL+® Canada Consortium. LibQUAL+®'s largest consortium did the survey with 53 academic libraries in 2007 and 47 academic members in 2010. This paper will compare the consortium's completion rate, proportion of valid surveys, and mean aggregate scores between the 2007 and 2010 LibQUAL+® surveys. The paper will also offer an assessment of LibQUAL+® Lite and its value for the libraries in the province of Quebec, Canada's francophone province.

The bi-lingual nature of the consortium presented LibQUAL+® with a number of challenges in 2007. This paper will see how well these challenges have been met.

Background

This paper focuses on the impact of the changes to the LibQUAL+® survey, implemented fully in 2010, on the participants in the 2010 LibQUAL+® Canada Consortium. The 2007 LibQUAL+® Canada Consortium was an historic achievement in the development of library assessment practice in Canada. As the largest ever LibQUAL+® consortium, with 53 participants covering the majority of Canada's university libraries, the LibQUAL+® Canada Consortium had taken a very large first step in collecting service quality

data for benchmarking on a national and regional level.

While the vast majority of participants agreed that they wanted to participate again in the survey as part of the Consortium,¹ they also concurred on the need for some key changes that would improve the experience for Canadian academic libraries. These suggested improvements were reported in a paper presented at the 2008 Library Assessment Conference.² The major suggested changes were:

1. **Alternative, Briefer LibQUAL+® Surveys.** The length of the full survey services as a potential deterrents both to respondents and to librarians who must review, analyze and act on the results. Shorter surveys, perhaps focusing on specific service dimensions, may make more effective use of staff resources and provide more timely feedback on program and service changes. Increasingly, libraries will have to use new channels and approaches for delivering surveys to spam-weary patrons and users who rely increasingly on mobile communication devices. LibQUAL+® will have to adapt accordingly if it is to remain relevant.
2. **Standardised User Categories.** Like the standardized discipline groups that a participating library may link to its own set of

local disciplines, LibQUAL+® should allow for a fully customizable set of user types linkable to a set of standard user categories. This approach would allow libraries to define their own set of user classifications without necessarily having to negotiate the addition of yet another completely new LibQUAL+® Demographic.

3. **Language of Survey Questions.** Having to deal with a bilingual Consortial environment, revealed a significant limitation in the design of the LibQUAL+® program which ARL is committed to addressing. While a participating library can elect to take the survey in more than one language, there was no direct program link between the library's corresponding survey questions in the chosen languages. This meant that there was no automatic link between the local or optional questions in English and the equivalent French. English members of the Consortium were able to select the consortium's package of optional question in English by simply selecting the Consortial package when configuring their survey. However, for a member library to select the French version of the same questions, the library had to choose them individually from the list and know which individual French language questions corresponded to the consortium's package of English optional questions. The consortium had to compile and post a table of equivalents for all of the English and corresponding French optional questions. The latter was complicated by the fact that ARL's lists of French and English optional questions did not correlate and the numbering of the in both lists changed from the previous year as new questions were added.

Because the corresponding questions in both languages are not linked in the system, the original consortial report generated by ARL's program could only provide separate aggregate scores for the French language and English language surveys. To generate total aggregate scores of the survey results from both languages, ARL had to regenerate the Consortium's report notebooks manually which, as expected, took much longer than the machine generated reports and had to be corrected a few times.

A majority of 2007 participants also preferred to repeat the Consortial survey in three years time.³

2010 LibQUAL+® Canada Consortium

The Canadian Association of Research Libraries (CARL) agreed to sponsor the Consortium again in 2010. While there were fewer total participants in the 2010 Consortial survey (47 vs. 53 in 2007), there were only two fewer academic members. 43 of the 47 2010 members were universities and 4 members were community colleges (see Table 1; tables are appendices to this paper). Eight 2010 members had not participated in the 2007 survey while ten 2007 members were unable to participate in the 2010 Consortial survey. The 2007 government library participants decided that a standard LibQUAL+® survey did not meet their specialised needs and opted out in 2010. Two other universities and four other community colleges are planning to participate in the survey as members of the consortium in the second LibQUAL+® 2010 session.

The 2010 LibQUAL+® Canada Consortium continued the strongly multi-lingual character of the 2007 consortium, including 8 French-language universities and another 7 offering the survey in both English and French. More than 40% of all university respondents took the French-language survey (Table 4).

LibQUAL+® 2010 Changes

Members were pleased to see the Consortium's major wish list for improvements reflected in both the 2010 survey registration process and the format.

- **Shorter Survey Format** After much discussion within the Consortium, ¾ of all members decided to choose the Lite survey,⁴ with one university and one community college opting for both formats. As more members of the consortium announced that they were opting of the Lite format, some of the members who may have been uncertain, as to the format, chose the Lite survey. The desire to compare their results with peer institutions was certainly a motivating factor. Of the French-language universities, 7 of 8 chose the Lite format. Overall, 80% of total respondents took the Lite survey, rising to 94% in the case of the French language surveys. Most of the libraries that opted for

the long form were concerned about new variables that might affect comparison with their earlier LibQUAL+® surveys. Another concern discussed on the Consortium's listserv was the possible loss of granularity in analyzing the results when tracking particular questions or survey dimensions across multiple surveys, e.g., Library as Place and "Library that you use most often." More than half of the participating libraries, 25 or 53%, are research libraries (CARL members).

A survey of Consortium members planned for the fall of 2010 will test the anecdotal information in this paragraph, derived from the LibQUAL+® Canada Discussion List. In the case of libraries who have taken the LibQUAL+® survey in past years, the member survey will also report individual member valuation of the Lite survey results compared to their past full survey results.

- **Language of Survey Questions**

The biggest changes in 2010 survey structure were to consolidate key data elements. Prior to 2010, if a library elected to do the survey in more than one language, they were assigned a separate institution ID, even though there already was a language field in the survey. Similarly, language variants for user groups, such as graduate students, had separate codes and translations of survey questions had no links to the English original. Consequently, libraries doing the survey in more than one language and multilingual consortia such as LibQUAL® Canada could not get consolidated survey results for both languages without contracting with ARL for custom reports.

In the 2010 survey, each registered participant is assigned a single institution ID, a single user group code for each corresponding group and the survey questions in each language are linked. All results from an institution or a consortium can be consolidated quite easily into one results set in the standard notebook.

With 2010, LibQUAL+®'s new interface made registration for our bi-lingual consortium and for French language and bi-lingual member libraries much easier and more efficient. Our French language members were able to

automatically select the French language version of the Consortial local questions package, during registration, instead of having to select them individually from the whole list of local questions, in 2007 because the consortium's package of English and French local questions were not linked.

LibQUAL+® Full vs. Lite—Consortial Results

*"LibQUAL+® Lite minimizes the response burden on individual survey participants, lessens overall the amount of person-costs expended in creating service quality information, and improves response rates, without sacrificing score integrity."*¹⁵

1. Purpose of Study

- To assess the expected benefits in using the Lite format
- To assess any possible differences between the full and Lite format of the survey to ascertain whether the format might be a significant variable in comparing 2010 results with previous results for the LibQUAL+® Canada Consortium.
- To assess whether there were notable differences between the English and French-language results. French language students and faculty face unique challenges in learning and research within a North American academic context.
- To assess the possible impact of the Lite format on granularity of analysis.

2. Design/Methodology/Approach

- Analyze the raw Consortial data sets for 2010 and 2007 using SPSS.
- The SPSS data sets received from ARL were not identical. The original 2007 data set required some changes to allow for comparison with the 2010 results. The key differences that had to be adjusted were discussed above under **LibQUAL+® 2010 Changes**.
- To maximize comparison of like institutions, the study focuses on a single institution type, "University or College," since it represented the vast majority of Consortial members in both 2007 and 2010.

- d. The study focuses only on the university's primary clients: faculty, graduate and undergraduate students.
- e. The authors looked at three factors, the completion rate, the valid survey rate, and the variation by language as a potential indicator of the difference between LibQUAL+® in 2007 and 2010. In order to compare these two populations, the authors examined each factor in three stages; 2007 full vs. 2010 full, 2010 full vs. 2010 Lite, and 2010 Lite vs. 2007 full. Since the data set represents two survey formats in 2010, the authors use the notation of "07f" to indicate 2007 full, "10f" to indicate 2010 full, and "10t" to indicate 2010 Lite. To ascertain statistical significance in differences between 2007 and 2010 mean aggregate scores, the authors applied Z tests for the comparison of the proportions (completion rate, valid survey rate, groups by language type) and T-tests for the comparison of the mean scores. Cohen's D test was applied to check the effect size.
- f. In calculating the **completion rate**,⁶ the authors included both valid and invalid surveys.
- g. In calculating the **Valid survey**⁷ rate, authors included only complete surveys.

3. Findings

a. *Completed Surveys*

For the most part,⁸ this analysis confirms the findings in studies performed to date by Colleen Cook, Bruce Thompson and Martha Kyrrilidou⁹ with a large increase in completion rate for the 2010 Lite format, 61.7%, compared to the 2007 results, 48.8%. It is interesting to note that the completion rate of the full format, 54.3% in 2010 was also significantly higher than 48.8% in the 2007 (Table 2).. This factor points to other possible variables as having notable impact on the higher 2010 completion rates, such as more local experience and more effective local marketing for libraries that had taken part in the 2007 survey.

b. *Valid Surveys*

The consortium was also interested in

seeing what impact the format of the survey had on the quality and dependability of the overall surveys. With the analysis of the data sets by 2007 full vs. 2010 full, 2010 full vs. 2010 Lite, and 2010 Lite vs. 2007 full formats, the authors were to infer that the valid survey rate is higher for the Lite format than the full format (Table 2).

While a bit less dramatic than the difference in the completion rates, there were still significant improvements in the ratio of valid surveys among the Consortium's 2010 Lite survey results, 57.9%, compared to the ration of valid surveys in the 2007, 46.7%, and 2010, 51.8%, full survey results (Table 2).

c. *Language Variation*

The authors compared the valid survey rate between English and French language responses in 2010 Lite and 2007 full. They compared English responses and French responses separately. The authors used "a" as a notation for language, "e" as English and "fr" as "French."

From Table 7, the authors concluded that there is a statistically significant difference in the valid survey rate between English and French respondents. In 2010 Lite version, French respondents showed a higher valid survey rate than English respondents while in 2007 English respondents showed a higher valid survey rate. Thus, the authors could conclude that while there is no consistency in the valid response rate by the language, between 2010 Lite vs. 2007, 2010 Lite has a higher valid survey rate among both English and French respondents.

d. *Mean Values—2010 Lite vs 2007 Full Format*

The authors acknowledge that there are limitations to the inferences that can be drawn from the data sets supplied by ARL, as opposed to experimental data in a controlled environment. While fully cognizant that many variables, beyond

this study, may affect the mean aggregate scores of the Canadian survey participants, the authors wanted to analyze whether the survey format could be a contributing factor in the mean aggregate scores. The analyses of the 2010 and 2007 data were limited to the 24 libraries that participated in both surveys, further analyzed by user group and by language. The study did not attempt to delve further into the possible causes of such differences, if any.

- e. The study indicates that the aggregate gap scores for the consortium are generally higher in 2010, for both full and Lite survey respondents, for undergraduate, graduate and faculty users (Table 6) and both English and French respondents (Table 7). Table 6 indicates that some differences between the Lite and full format mean gap scores are statistically significant. However, after applying Cohen's D test to check the Effect Size, these differences did not appear to be meaningful.

One notable fact is that while undergraduate mean scores show little differences between two years, both faculty and graduate students mean scores are generally higher in 2010 than 2007.

So, all things being equal, Canadian libraries should be able to choose between the two formats without concern that the format will impact on their overall results—beyond a likely increase in complete, valid surveys for the Lite format. Furthermore, with the Lite format, participating libraries can have

more consistent data in the future by having possibly more participants.

f. **Granularity**

While the increased number of completed and valid surveys was valuable, there are some possible downsides to the Lite format. The reduced number of respondents for individual questions in the Lite survey may limit the library's ability to perform more granular analysis of some data in 2010. For Queen's University, this limitation was particularly evident in analyzing the Library as Place results. Each respondent was presented with only two questions from a service dimension with five total questions—compared to three of eight and three of nine in the other two dimensions. As a consequence, the Lite survey yielded too few total responses in the Library as Place service dimension to produce reliable analysis for individual campus libraries at Queen's, other than the largest ones in 2010. Among the smaller campus libraries was the Education Library, very highly regarded by the faculty and students in the Faculty of Education. Education respondents had consistently recorded among the highest Adequacy Gap scores, at Queen's, in 2004 and 2007 across all three service dimensions. In the 2010 survey results, their aggregate Library as Place Adequacy Gap score was one of the lowest on campus—despite continued high praise among the survey comments from Education students and faculty and continued enhancement to the physical library during the past few years (Figure 1).

Figure 1

	2010	2007	2004
Education Library LP Mean Adequacy Gap	0.31	0.90	1.00
Queen's LP Mean Adequacy Gap	0.74	0.89	0.82

McGill University offers another similar example below.

4. McGill University

McGill University's results presented something of an anomaly compared with the Consortial finding presented in the paper. McGill was one of the 2010 Consortium members that opted for the Lite survey format. While McGill was not a participant in the 2007 Canadian Consortium, they did carry out a full version of the survey in 2008. McGill also has a long record of LibQUAL+® use,

having carried out its first LibQUAL+® survey in 2001.

At McGill, the 2010 survey completion rate was lower than in 2008 when the full-format LibQUAL+® survey was last administered (Figure 2). Given the consistency of the increase in the completion rate across the Consortium, this is a surprising result. Only one other university member of the Consortium experienced a similar decline in 2010 Lite format completion rate.

Figure 2

	McGill: Complete Surveys			
	2010 - Lite		2008 - Full	
Complete	N	% of total	N	% of total
no	1709	52.5	902	44.6
yes	1544	47.45	1122	55.4

Highlighting the introduction of a shorter version (Lite) of the survey in the email invitation to potential participants was likely a main cause of a substantial increase (61%) in the number of participants who actually opened the survey. However, there was no comparable gain in the completion rate, as was seen elsewhere. Sample size for the two years compared in this study was analogous. The only change was the addition of 545 faculty to the faculty sample in 2010. The undergraduate and graduate samples remained the same at 5000 and 3250 respectively.

Speculation about the causes would be just that: speculation. But it does indicate that the completion rate advantage of administering a Lite survey can be sidelined by other, likely strong factors.

Another Granularity Issue

In analyzing past LibQUAL+® surveys, McGill largely focused on responses to individual questions. The survey results usually had sufficient responses for a reasonable analysis of each question at the level of the nine 'Faculty-level' Libraries. With the Lite version this is no longer the case. There were too few responses for question-

level analysis, except for the three largest libraries.

This is a considerable loss of information. For example, in the 2010 Lite survey, one of McGill's mid-size libraries generated a negative mean Adequacy Gap score of -0.43 in response to the question "Quiet space for individual activities" based on 21 responses. In 2008, this library's mean Adequacy Gap score for that question was 0.33, based on 69 responses. Such sizeable swings in scores had not occurred in previous years. Can such a swing be interpreted as meaningful, or are useful analyses at the individual question level with LibQUAL+® Lite unreliable except for large populations?

The potential loss in granularity will be a consideration in McGill's decision about whether to use the full or Lite format in the future.

Originality/Value

This paper is the first large-scale Canadian study of the new LibQUAL+® system implemented in full production for the 2010 Session I survey. The study assesses the major changes, recommended in the final report of the 2007 LibQUAL+®

Canada Consortium, and their impact on the 2010 LibQUAL+® Canada Consortium, most notably the introduction of the LibQUAL+® Lite format. The results of the study may help Canadian academic libraries decide how they might use LibQUAL+® in the future.

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Notes

1. Sam Kalb, "LibQUAL Canada Survey," 11/07/07, http://library.queensu.ca/webir/canlibqual/consortial_survey/SurveySummary.html.
2. Sam Kalb, "Bench-Marking on a National Scale: The 2007 LibQUAL+® Canada Experience," (Paper presented at the 2008 Library Assessment Conference, Seattle, Washington, August. 2009), 323-330, <http://hdl.handle.net/1974/1416>.
3. Sam Kalb, "LibQUAL+® Canada Survey."
4. LibQUAL+® Canada, "From LibQUAL+® to LibQUAL+® Lite," <http://library.queensu.ca/webir/canlibqual/libqual-lite.htm>.
5. Bruce Thompson, Martha Kyrillidou, and Colleen Cook, "Does Using Item Sampling Methods in Library Service Quality Assessment Compromise Data Integrity?: A *LibQUAL+® Lite Study*," (Paper presented at the 2nd Qualitative and Quantitative Methods in Libraries (QQML 2010) International Conference, Chania (Crete), Greece, May 27, 2010), 8.
6. Completed Survey: The LibQUAL+® software monitors whether a given user has completed all items. On each of these items, in order to submit the survey successfully, users must provide a rating of (a) minimally-acceptable service, (b) desired service, and (c) perceived service or rate the item "not applicable" ("N/A"). In the data set supplied by ARL, the Completed variable = "1" for complete and "0" for incomplete.
7. Valid Surveys: Long version of the survey containing more than 11 "N/A" responses and/or more than 9 logical inconsistencies and Lite versions containing more than 4 "N/A" responses and/or more than 3 logical inconsistencies. The Active variable = "1" for valid and "0" for invalid.
8. Two Consortium members experienced higher completion rates in their previous full format LibQUAL+® surveys. See McGill Results.
9. Bruce Thompson, Martha Kyrillidou, and Colleen Cook, "LibQUAL+® Lite," http://www.libqual.org/about/about_lq/LQ_lite.

Tables Appendix

Table 1

Total LibQUAL+® Canada Members 2010		Full	Lite	Total
Universities	Count	11	33	43*
	% of Protocol	84.6	91.7	
	% of Total Cases	23.4	70.2	91.5*
Community Colleges	Count	2	3	4*
	% of Protocol	15.4	8.3	
	% of Total Cases	4.3	6.4	8.5*
Total <i>(by Survey Protocol)</i>	Count	13	36	47*
	% of Protocol	100	100	
	% of Total Cases	27.7	76.6	100*

* 1 university & 1 community college opted for both Long and Lite.

Table 2

Analysis of Complete & Valid Surveys by Format						
	Comparison	Valid Survey Rate	Hypothesis	Z value	P value	Conclusion
Complete Surveys	2007 Full	48.8%	H0c : $\mu_{07f} = \mu_{10f}$	13.24	.01	Reject Null: H0c
	2010 Full	54.3%	H1c: $\mu_{07f} \neq \mu_{10f}$			
	2010 Full	54.3%	H0c : $\mu_{10f} = \mu_{10}$	17.603	.01	Reject Null: H0c
	2010 Lite	61.7%	H1c: $\mu_{10f} \neq \mu_{10t}$			
Valid Surveys	2010 Lite	61.7%	H0c : $\mu_{10t} = \mu_{07f}$	51.44	.01	Reject Null: H0c
	2007 Full	48.8%	H1c: $\mu_{10t} \neq \mu_{07f}$			
	2007 Full	46.7%	H0v : $\mu_{07f} = \mu_{10f}$	12.06	.01	Reject Null:H0v
	2010 Full	51.8%	H1v: $\mu_{07f} \neq \mu_{10f}$			
	2010 Full	51.8%	H0v : $\mu_{10f} = \mu_{10t}$,	14.398	.01	Reject Null:H0v
	2010 Lite	57.9%	H1v: $\mu_{10f} \neq \mu_{10t}$			
2010 Lite	57.9%	H0v : $\mu_{10t} = \mu_{07f}$	44.258	.01	Reject Null:H0v	
2007 Full	46.7%	H1v: $\mu_{10t} \neq \mu_{07f}$				

Table 3

Consortium - Completed Surveys		2010		2007	
Full or Lite	Met criteria for survey completion	N	% of Total	N	% of Total
Full	Incomplete	7,728	45.7%	47,167	51.2%
	Complete	9,196	54.3%	44,957	48.8%
	Total	16,924	100.0%	92,124	100.0%
Lite	Incomplete	26,132	38.3%		
	Complete	42,173	61.7%		
	Total	68,305	100.0%		
Total	Incomplete	33,860	39.7%	47,167	51.2%
	Complete	51,369	60.3%	44,957	48.8%
	Total	85,229	100.0%	92,124	100.0%

Table 4

Completed Surveys by Language	2010 - Lite		2007 - Full	
	N	% of Total Languages	N	% of Total Languages
English (American)	40,819	59.8%	67,124	72.9%
French (Canada)	27,486	40.3%	25,000	27.1%
Total	68,305	100%	92,124	100%

Table 5

Survey Analysis by Format and Language							
	Year /Format	Comparison	Valid Survey Rate	Hypothesis	Z value	P value	Conclusion
A	2010 Lite	English French	56.2% 59.0%	H0a : $\mu_{10e,t} = \mu_{10f,t}$ H1a: $\mu_{10e,t} \neq \mu_{10f,t}$	7.234	.01	Reject Null: H0a
	2007 Full	English French	47.9% 43.5%	H0a : $\mu_{07e,f} = \mu_{07fr,f}$ H1a: $\mu_{07e,f} \neq \mu_{07fr,f}$	12.300	.01	Reject Null: H0a
B	English	2007 full 2010 Lite	47.9% 56.2%	H0a : $\mu_{07e,f} = \mu_{07e,t}$ H1a: $\mu_{07e,f} \neq \mu_{07e,t}$	34.331	.01	Reject Null: H0a
	French	2007 full	43.5%	H0a : $\mu_{07f,f} = \mu_{07fr,f}$ H1a: $\mu_{07e,f} \neq \mu_{07fr,f}$	20.754	.01	Reject Null: H0a

Table 6

Version		Undergraduate mean score					Graduate Mean Scores					Faculty Mean Scores				
2007 FULL + 2010 Lite		N	Mean	Std.D.	T	P	N	Mean	Std.D	T score	P	N	Mean	Std.D.	T	P
Average Desired	2010	20627	7.804	1.024	4.394	0.000	9159	7.852	1.011	5.558	.000	3309	7.529	1.203	3.133	.002
	2007	20900	7.755	1.273			6753	7.749	1.312			4630	7.424	1.637		
Average Minimum	2010	20627	6.479	1.303	3.804	0.000	9159	6.627	1.279	6.230	.000	3309	6.472	1.351	3.917	.000
	2007	20900	6.427	1.458			6753	6.491	1.458			4630	6.335	1.646		
Average Perceived	2010	20627	6.902	1.166	11.242	0.000	9159	6.940	1.128	10.240	.000	3309	6.783	1.199	8.264	.000
	2007	20900	6.763	1.337			6753	6.738	1.356			4630	6.509	1.610		
Adequacy Gap	2010	20627	0.423	1.422	6.270	0.000	9159	0.314	1.424	2.957	.003	3309	0.311	1.469	4.279	.000
	2007	20900	0.336	1.399			6753	0.247	1.363			4630	0.174	1.359		
Superiority Gap	2010	20627	-0.903	1.215	7.695	0.000	9159	-0.911	1.225	5.194	.000	3309	-0.747	1.376	5.770	.000
	2007	20900	-0.991	1.131			6753	-1.011	1.155			4630	-0.915	1.210		
2007 full + 2010 full		N	Mean	Std.D.	T	P	N	Mean	Std.D	T score	P	N	Mean	Std.D.	T	P
Average Desired	2010	6194	7.884	0.951	7.388	0.000	1532	7.935	0.940	5.243	.000	871	7.915	0.921	8.583	.000
	2007	20900	7.755	1.273			6753	7.749	1.312			4630	7.424	1.637		
Average Minimum	2010	6194	6.543	1.290	5.663	0.000	1532	6.717	1.270	5.616	.000	871	6.824	1.240	8.320	.000
	2007	20900	6.427	1.458			6753	6.491	1.458			4630	6.335	1.646		
Average Perceived	2010	6194	6.930	1.127	8.903	0.000	1532	6.918	1.108	4.833	.000	871	7.073	1.133	9.886	.000
	2007	20900	6.763	1.337			6753	6.738	1.356			4630	6.509	1.610		
Adequacy Gap	2010	6194	0.386	1.411	2.452	0.014	1532	0.201	1.320	-1.244	.214	871	0.249	1.405	1.465	.143
	2007	20900	0.336	1.399			6753	0.247	1.363			4630	0.174	1.359		
Superiority Gap	2010	6194	-0.954	1.163	2.452	0.023	1532	-1.017	1.167	-1.183	.855	871	-0.841	1.232	1.626	.104
	2007	20900	-0.991	1.131			6753	-1.011	1.155			4630	-0.915	1.376		
2010 Full or Lite		N	Mean	Std.D.	T	P	N	Mean	Std.D	T score	P	N	Mean	Std.D.	T	P
Average Desired	Full	6194	7.884	0.951	5.426	0.000	1532	7.935	0.940	3.015	.003	871	7.915	0.921	8.799	.000
	Lite	20627	7.804	1.024			9159	7.852	1.011			3309	7.529	1.203		
Average Minimum	Full	6194	6.543	1.290	3.462	0.000	1532	6.717	1.270	2.587	.010	871	6.824	1.240	6.954	.000
	Lite	20627	6.479	1.303			9159	6.627	1.279			3309	6.472	1.351		
Average Perceived	Full	6194	6.930	1.127	1.668	0.000	1532	6.918	1.108	-.729	.466	871	7.073	1.133	6.435	.000
	Lite	20627	6.902	1.166			9159	6.940	1.128			3309	6.783	1.199		
Adequacy Gap	Full	6194	0.386	1.411	-1.793	0.269	1532	0.201	1.320	-2.907	.004	871	0.249	1.405	-1.105	.269
	Lite	20627	0.423	1.422			9159	0.314	1.424			3309	0.311	1.469		
Superiority Gap	Full	6194	-0.954	1.163	-2.938	0.065	1532	-1.017	1.167	-3.146	.002	871	-0.841	1.405	-1.845	.065
	Lite	20627	-0.903	1.215			9159	-0.911	1.225			3309	-0.747	1.469		

Figures in **bold** are not statistically significant based on T-testing

Table 7

English Language Means Scores					French Language Mean Scores		
	2007 + 2010 Lite	N	Mean	Std. Deviation	N	Mean	Std. Deviation
Average Desired	2010 Lite	20351	7.6887	1.11178	12744	7.9515	.90018
	2007 Full	26560	7.6967	1.34702	5723	7.7492	1.33155
Average Minimum	2010 Lite	20351	6.4234	1.33585	12744	6.6712	1.23288
	2007 Full	26560	6.4072	1.49433	5723	6.5197	1.45144
Average Perceived	2010 Lite	20351	6.7701	1.17497	12744	7.1083	1.10348
	2007 Full	26560	6.7050	1.38367	5723	6.7978	1.39576
Adequacy Gap	2010 Lite	20351	.3468	1.45279	12744	.4371	1.38748
	2007 Full	26560	.2978	1.39300	5723	.2782	1.36064
Superiority Gap	2010 Lite	20351	-.9185	1.28517	12744	-.8432	1.15024
	2007 Full	26560	-.9917	1.15071	5723	-.9514	1.13623
	2007 + 2010 Full	N	Mean	Std. Deviation	N	Mean	Std. Deviation
Average Desired	2010 Full	7683	7.8879	.95347	914	7.9625	.87731
	2007 Full	26560	7.6967	1.34702	5723	7.7492	1.33155
Average Minimum	2010 Full	7683	6.5707	1.28510	914	6.8717	1.25317
	2007 Full	26560	6.4072	1.49433	5723	6.5197	1.45144
Average Perceived	2010 Full	7683	6.8974	1.12600	914	7.3168	1.04704
	2007 Full	26560	6.7050	1.38367	5723	6.7978	1.39576
Adequacy Gap	2010 Full	7683	.3267	1.39070	914	.4451	1.44021
	2007 Full	26560	.2978	1.39300	5723	.2782	1.36064
Superiority Gap	2010 Full	7683	-.9905	1.17230	914	-.6457	1.11839
	2007 Full	26560	-.9917	1.15071	5723	-.9514	1.13623
	2010 Full or Lite	N	Mean	Std. Deviation	N	Mean	Std. Deviation
Average Desired	Full	7683	7.8879	.95347	914	7.9625	.87731
	Lite	20351	7.6887	1.11178	12744	7.9515	.90018
Average Minimum	Full	7683	6.5707	1.28510	914	6.8717	1.25317
	Lite	20351	6.4234	1.33585	12744	6.6712	1.23288
Average Perceived	Full	7683	6.8974	1.12600	914	7.3168	1.04704
	Lite	20351	6.7701	1.17497	12744	7.1083	1.10348
Adequacy Gap	Full	7683	.3267	1.39070	914	.4451	1.44021
	Lite	20351	.3468	1.45279	12744	.4371	1.38748
Superiority Gap	Full	7683	-.9905	1.17230	914	-.6457	1.11839
	Lite	20351	-.9185	1.28517	12744	-.8432	1.15024

Figures in **bold** are not statistically significant based on T-testing

Does Using Item Sampling Methods in Library Service Quality Assessment Compromise Data Integrity or Zone of Tolerance Interpretation?: A LibQUAL+® Lite Study¹

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Abstract

The present study was conducted to investigate the psychometric integrity of scores on the new LibQUAL+® Lite protocol. Specifically, we conducted analyses of LibQUAL+® Lite data to evaluate (a) the reliability and (b) the validity of LibQUAL+® Lite scores, and (c) the behavior of the zones of tolerance boundaries in the LibQUAL+® Lite context. In the present study we collected randomized control trial (RCT) data at 16 diverse institutions from around the world. A total of 13,383 participants provided data.

Introduction

As Rowena Cullen noted, "focusing more energy on meeting . . . [library] customers' expectations"² is critical in the contemporary environment, in part because

the emergence of the virtual university, supported by the virtual library, calls into question many of our basic assumptions about the role of the academic library, and the security of its future.³

In this environment, as Danuta Nitecki has observed, "A measure of library quality based solely on collections [counts] has become obsolete."⁴

The LibQUAL+® protocol is a "total market survey" intended to help library staff understand user perceptions, and thereby improve library service quality and better meet users' information needs. A total-market survey is one of the 11 ways of listening to users elaborated by Leonard Berry.⁵

To date, LibQUAL+® has been used to collect service quality assessment perceptions from 1,294,674 participants at 1,164 institutions around the world. LibQUAL+® has been implemented so far in 17 language variations: American English, Afrikaans, British English, French (France), Chinese, Danish, Dutch, Finnish, French Canadian, German, Greek, Hebrew, Japanese, Norwegian, Spanish, Swedish, and Welsh.

Thompson described the origins of the LibQUAL+® protocol.⁶ The development of the protocol, and evidence for the integrity of LibQUAL+® scores, have both been quite extensively documented in the refereed journal literature⁷ and elsewhere in two dissertations.⁸

LibQUAL+® was developed within a philosophy perhaps best communicated by a set of three quotations. First, in the words of French philosopher and moralist François de La Rochefoucauld (1613-1680), "Il est plus nécessaire d'étudier les hommes que les livres." Second, in the words of Bruce Thompson, "We only care about the things we measure",¹⁰ so we do not seriously care about service quality unless we listen to library users in various systematic ways. Third, within a service quality orientation, "only customers judge quality; all other judgments are essentially irrelevant."¹¹

Item Sampling

When we collect library service quality assessment

perception data from our users, we ought to take into account the overall cost of the information we collect. Two fundamental considerations bear upon this accounting.

First, a major cost in surveying users about their perceptions is the time that users invest in completing the survey. For example, if all 43,000 students at Texas A&M University spent 10 minutes completing a service quality survey, a total of approximately 7,167 person hours were spent producing the assessment information! Obviously, a common way to mitigate these costs is to not collect data from all library users, but rather do so only for a random sample of the users. Every quadrennial election in the United States, national polling organizations gather data from only 2,000 or 3,000 potential voters to discern with surprising accuracy what the likely presidential election outcome for all 133,000,000 voters may be. Clearly, such person sampling methods have great potential utility.

Second, we can minimize these costs by using fewer items in our assessment protocols, which thereby shortens response times. An important incidental benefit of shorter response times is higher response rates.¹²

Item sampling (also known as split-questionnaire design, and matrix sampling¹³) is an assessment technique in which "(a) all users answer a few, selected survey questions (i.e., three core items), but (b) the remaining survey questions are answered ONLY by a randomly-selected subsample of the users. Thus, (a) data are collected on all questions, but (b) each user answers fewer questions, thus shortening the required response time."¹⁴

Gonzalez and Eltinge¹⁵ provided an overview of the

origins of item sampling, and the fields where it has been applied. For example, item sampling has been applied in the context of the Consumer Expenditure Quarterly Interview Survey (CEQ), an ongoing panel survey of spending within U.S. households. Item sampling has also been used in the 2000 Decennial Census, within Internal Revenue Service (IRS) applications in the 1980s, and in the 1995 Cancer Risk Behavior Survey.

An heuristic example may be useful in making the idea of item sampling¹⁶ fully concrete. Presume that a library service quality assessment instrument had 6 items, with 2 items measuring each of 3 subscales (i.e., Affect of Service [AS], Information Control [IC], and Library as Place [LP]), but that rather than ask all 7 library users to answer all 6 items, each user completed only a subset of items. Note that in real situations we normally would have more than 6 items if we were invoking item sampling, because with only 6 items we might just as well collect data from all 7 users on all 6 items.

In our example, all 7 users are asked to complete 3 of the items, called linking items, one from each of the 3 subscales, because these 3 items are deemed the most important of all the survey items (i.e., LP01, AS02, and IC04). Each of the 7 library users is also asked to complete 2 items randomly selected from among the remaining 3 items (i.e., 6 - 3 linking items). In this manner, each user completes exactly 5 items, but data are collected on every item (here 6).

In the example below, Carol completed only items LP01, AS02 LP03, IC04, and IC06. Shawn completed the same 5 items as Carol. Deborah completed only items LP01, AS02, IC04, AS05, and IC06. Everyone completed linking items LP01, AS02, and IC04.

User	Survey Items						Total Items
	LP01	AS02	LP03	IC04	AS05	IC06	
Carol	X	X	X	X		X	5
Deborah	X	X		X	X	X	5
Geri	X	X	X	X	X		5
Kathy	X	X	X	X		X	5
Murray	X	X		X	X	X	5
Wendy	X	X	X	X	X		5
Shawn	X	X	X	X		X	5
<u>n</u>	7	7	5	7	4	5	

LibQUAL+® Lite

The LibQUAL+® Lite protocol is a form of the LibQUAL+® protocol on which each participant completes only 8 of the 22 core items. This results in dramatically shorter survey completion times, and also improved survey response rates.¹⁷

Three linking items are completed by all Lite participants (i.e., item 13 of the 22 core items, which is an item from the Affect of Service subscale [AS13]; item 10, which is an item from the Information Control subscale [IC10]; and item 3, which is an item from the Library as Place subscale [LP03]). Each Lite participant also completes 5 additional items randomly selected from the remaining 19 LibQUAL+® core nonlinking items (i.e., $22 - 3 = 19$). Specifically, each Lite participant also completes 2 items randomly selected from the remaining 8 Affect of Service nonlinking items (i.e., $9 - 1 = 8$), 2 other items randomly selected from the remaining 7 Information Control nonlinking items (i.e., $8 - 1 = 7$), and 1 item from the remaining 4 Library as Place nonlinking items (i.e., $5 - 1 = 4$).

Purpose of the Present Study

The psychometric integrity of scores from the original LibQUAL+® long-form protocol has been thoroughly investigated.¹⁸ The present study was conducted to investigate the psychometric integrity of scores on the new LibQUAL+® Lite protocol. Specifically, we conducted analyses of LibQUAL+® Lite data to evaluate (a) the reliability and (b) the validity of LibQUAL+® Lite scores and (c) the behavior of the zones of tolerance boundaries in the LibQUAL+® Lite context.

Participants

In the present study we collected randomized

control trial (RCT) data at 16 diverse institutions from around the world. LibQUAL+® was administered in several different languages (e.g., English, Hebrew) across these 16 institutions. A total of 13,383 participants provided data. The study participants included (a) undergraduate students (64.0%), (b) graduate students (26.4%), and (c) faculty (9.8%). The average number of participants from whom data were collected at each of the 16 libraries was 836.4, with the institutional sample sizes ranging from 251 to 2,536.

Each library randomly selected the participants to whom they sent invitations to participate, and then each user who responded was randomly assigned to receive either the full LibQUAL+® protocol, or the LibQUAL+® Lite protocol. The personnel at each library selected what percentage of participants would receive Lite, and these percentages ranged from 50% to 90%.

Results

Score Reliability

Thompson explained the concept of score reliability using the metaphor of a bathroom scale, noting that many of us begin our day by stepping on a scale to measure our weight. Some days when you step on your bathroom scale you may not be happy with the resulting score. On some of these occasions, you may decide to step off the scale and immediately step back on to obtain another estimate. If the second score is half a pound lighter, you may irrationally feel somewhat happier, or if the second score is slightly higher than the first, you may feel somewhat less happy. But if your second weight measurement yields a score 25 pounds lighter than the initial measurement, rather

than feeling happy, you may instead feel puzzled or perplexed. If you then measure your weight a third time, and the resulting score is 40 pounds heavier, you probably will question the integrity of all the scores produced by your scale. It has begun to appear that your scale is exclusively producing randomly fluctuating scores. In essence, your scale measures "nothing."¹⁹

Scores are (perfectly) unreliable when the scores measure nothing (i.e., fluctuate randomly). Unreliable scores are useful in casinos, or when we want to randomly select survey participants. But perfectly unreliable measurement of library user service quality perceptions would be perfectly useless, because randomly fluctuating scores cannot reasonably be considered to measure the library reality. If we ask library user Martha to rate the Oxford University Bodleian Library at 10am on April 11, 2010 using a 9-point scale, and she rates the library 7, and we ask her to repeat the rating at 10:01am, we reasonably expect her second rating to be 7, or approximately 7, because we cannot conceive that the Bodleian Library has changed appreciably within only one minute.

The APA Task Force on Statistical Inference emphasized that

It is important to remember that a test is not reliable or unreliable. Reliability is a property

of the scores on a test for a particular population of examinees. . . Thus, authors should provide reliability coefficients of the scores for the data being analyzed even when the focus of their research is not psychometric. Interpreting the size of observed effects requires an assessment of the reliability of the scores.²⁰

Similarly, the Joint Committee on Standards for Educational Evaluation,²¹ which developed the first standards for professional conduct that were ever certified as American standards by the American National Standards Institute (ANSI), emphasized that, "the generalizability of previous favorable reliability results may not be simply assumed. Reliability information should be collected that is directly relevant to the groups and ways in which the information gathering procedures will be used . . ." ²²

Table 1 presents the Cronbach's²³ alpha coefficients for both LibQUAL+[®] Lite and long-form total and subscale scores. These coefficients approach 1.0 as the items have greater internal consistency.²⁴ If scores were unreliable, the alpha coefficient would be near-zero. However, although alpha is in a squared metric, alpha can also be negative, or can even be less than -1.0, which would be especially troubling.

Table 1
Cronbach's α for LibQUAL+[®] Lite and Long Form Scores

Score	Long	Lite
Affect of Service	0.939	0.943
Information Control	0.903	0.897
Library as Place	0.861	0.867
Total	0.956	0.955

Item analysis can also be employed to investigate the performance of individual items.²⁵ Table 2 presents item-analysis statistics for the LibQUAL+[®] Lite data. Alpha-if-deleted statistics are one key indicator of item quality. An item that

is performing badly is an item for which the alpha coefficient improves when the item is discarded from the total score. Conversely, the best item is the item for which the alpha coefficient most worsens when the item is discarded.

Table 2
Item Analysis Statistics for LibQUAL+® Lite Data

Name	Item	Item-Total Statistics		
		Corrected Discrimination	R^2	α if Deleted
AS01	Employees who instill confidence in users	0.700	0.635	0.952
IC02	Making electronic resources accessible from my home or office	0.635	0.563	0.953
LP03	Library space that inspires study and learning	0.636	0.673	0.953
AS04	Giving users individual attention	0.765	0.794	0.952
IC05	A library Web site enabling me to locate information on my own	0.657	0.605	0.953
AS06	Employees who are consistently courteous	0.723	0.855	0.952
IC07	The printed library materials I need for my work	0.652	0.655	0.953
LP08	Quiet space for individual activities	0.594	0.693	0.954
AS09	Readiness to respond to users' questions	0.765	0.818	0.952
IC10	The electronic information resources I need	0.642	0.557	0.953
AS11	Employees who have the knowledge to answer user questions	0.709	0.750	0.952
LP12	A comfortable and inviting location	0.636	0.538	0.953
AS13	Employees who deal with users in a caring fashion	0.718	0.685	0.952
IC14	Modern equipment that lets me easily access needed information	0.708	0.642	0.952
AS15	Employees who understand the needs of their users	0.777	0.878	0.952
IC16	Easy-to-use access tools that allow me to find things on my own	0.665	0.727	0.953
LP17	A getaway for study, learning, or research	0.675	0.689	0.953
AS18	Willingness to help users	0.753	0.858	0.952
IC19	Making information easily accessible for independent use	0.671	0.676	0.953
IC20	Print and/or electronic journal collections I require for my work	0.668	0.564	0.953

Table 2 (continued)

Item Analysis Statistics for LibQUAL+® Lite Data

Name Item	Item-Total Statistics		
	Corrected Discrimination	R^2	α if Deleted
LP21 Community space for group learning and group study	0.645	0.666	0.953
AS22 Dependability in handling users' service problems	0.722	0.724	0.952

Table 2 also presents the "corrected" item-total correlation coefficients, also called corrected item discrimination coefficients. These are correlations between scores on an individual item, each in turn, with a score computed from the remaining LibQUAL+® core items. More favorable corrected discrimination are positive and larger in magnitude.

Score Validity

If scores measure something (as opposed to nothing), then questions of score validity arise. Score validity raises issues as to whether the scores measure the correct something the scores are intended to measure, and only what the scores are intended to measure.

The present study used factor analysis to investigate the validity of LibQUAL+® Lite scores. Factor analysis and construct validity have long been associated with each other. For example, historically "construct validity has [even] been spoken of as . . . 'factorial validity.'"²⁶

Nunnally emphasized that "factor analysis is intimately involved with questions of validity."²⁷

Table 3 presents the varimax-rotated pattern/structure coefficients from a principal components analysis of the LibQUAL+® Lite data.²⁸ The expected three-factor structure was retrieved for the LibQUAL+® Lite data.

Table 3

Varimax-rotated Pattern/Structure Coefficients for LibQUAL+® Lite Data

Name Item	Factor			h^2
	I	II	III	
AS13 Employees who deal with users in a caring fashion	<u>0.805</u>	0.237	0.200	74.4%
AS18 Willingness to help users	<u>0.801</u>	0.255	0.246	76.7%
AS06 Employees who are consistently courteous	<u>0.796</u>	0.215	0.246	74.1%
AS09 Readiness to respond to users' questions	<u>0.733</u>	0.345	0.250	71.9%
AS11 Employees who have the knowledge to answer user questions	<u>0.725</u>	0.350	0.156	67.3%
AS15 Employees who understand the needs of their users	<u>0.714</u>	0.305	0.338	71.8%
AS04 Giving users individual attention	<u>0.710</u>	0.309	0.324	70.4%

Table 3 (continued)

Varimax-rotated Pattern/Structure Coefficients for LibQUAL+® Lite Data

Name Item	Factor			\underline{h}^2
	I	II	III	
AS01 Employees who instill confidence in users	<u>0.684</u>	0.328	0.212	62.0%
AS22 Dependability in handling users' service problems	<u>0.592</u>	0.452	0.222	60.5%
IC10 The electronic information resources I need	0.234	<u>0.746</u>	0.188	64.6%
IC16 Easy-to-use access tools that allow me to find things on my own	0.264	<u>0.701</u>	0.246	62.1%
IC20 Print and/or electronic journal collections I require for my work	0.281	<u>0.691</u>	0.237	61.2%
IC05 A library Web site enabling me to locate information on my own	0.340	<u>0.682</u>	0.156	60.5%
IC19 Making information easily accessible for independent use	0.358	<u>0.641</u>	0.208	58.2%
IC02 Making electronic resources accessible from my home or office	0.283	<u>0.637</u>	0.237	54.2%
IC14 Modern equipment that lets me easily access needed information	0.259	<u>0.567</u>	<u>0.481</u>	62.0%
IC07 The printed library materials I need for my work	0.269	<u>0.561</u>	0.372	52.6%
LP03 Library space that inspires study and learning	0.174	0.227	<u>0.840</u>	78.7%
LP08 Quiet space for individual activities	0.242	0.163	<u>0.753</u>	65.2%
LP17 A getaway for study, learning, or research	0.273	0.276	<u>0.734</u>	68.9%
LP12 A comfortable and inviting location	0.337	0.222	<u>0.647</u>	58.0%
LP21 Community space for group learning and group study	0.225	0.368	<u>0.637</u>	59.2%

Note. Pattern/structure coefficients greater than |0.4| are presented in italics.

Zones of Tolerance Stability Across Protocols Three Service Quality Assessment Interpretation

Frameworks. One way to conduct library service quality assessments is to collect survey ratings data from users. Presume that ratings were collected on a 1 to 9 rating scale, with 9 being the most favorable rating of perceived service quality, and that a mean was computed across all the survey items for each user. Then the mean of these means might be computed to be 6.3. Is 6.3 a favorable rating, and if so, how favorable?

One way to interpret the 6.3 is to compare the 6.3 against the rating scale midpoint of 5.0. From this perspective, 6.3 seems like a somewhat favorable rating. However, this basis for interpretation is quite limited.

Three interpretation frameworks can be invoked to help interpret library service quality assessment data. Some service quality assessment protocols actually invoke a combination of these three frameworks, so that library personnel can determine whether different interpretation frameworks corroborate each other with respect to conclusions.

First, service quality data can be interpreted by benchmarking against the results achieved by peer institutions, assuming that one or more peer institutions contemporaneously completed the same protocol, and results are openly shared across libraries. This interpretation framework has the appeal that institutions may also be able to identify libraries with extremely favorable results, and libraries can then share best practices with each other.

Second, service quality data can be interpreted longitudinally at a given library, if the library has administered the protocol previously. For example, with a mean rating of 6.3, the library may offer the interpretation, "6.3 is better than last year's mean rating of 6.0, and it may not be entirely clear what 6.3 or 6.0 mean, but certainly we are doing better."

Third, service quality data can be interpreted within "zones of tolerance," if on each item the participants were asked to rate not only the current level of perceived service quality, but also on each item the desired level of service quality, and what level of service would be acceptable, although only minimally. The difference between the desired rating and the minimally-acceptable rating is the

zone of tolerance.

We prefer mean perceived ratings (e.g., 6.3) to be above minimally-acceptable means (e.g., 5.4). This difference is called the adequacy gap (i.e., $6.3 - 5.4 = 0.9$). We also would like the mean perceived ratings ideally to approach or even exceed the mean desired ratings (e.g., 6.5). The difference between the perceived ratings and the desired ratings is called the superiority gap (e.g., $6.3 - 6.5 = -0.2$). In this example the zone of tolerance has a width of 1.1 (i.e., $6.5 - 5.4 = 1.1$).

Research has previously been conducted to explore the effects of item sampling strategies in the library service quality assessment context.²⁸ However, these previous studies focused on only the perceived service quality scores. The present study was undertaken to explore item sampling impacts on the desired and the minimally-acceptable ratings that create the zones of tolerance used to help interpret the service quality perception data. *If perception scores on the LibQUAL+® protocol tend to be somewhat more positive than perception scores of the long protocol, but the zones of tolerance also shift slightly higher on the Lite form, then gap scores remain comparable across the LibQUAL+® Lite and long forms.*

Descriptive Statistics for Desired and Minimum Ratings. Appendix B presents means, standard deviations, and *n*'s for LibQUAL+® total, subscale (Affect of Service, Information Control, Library as Place), and the 3 linking items (AS13, IC10, and LP03) for both the long and the Lite protocols at each of the 16 institutions on the Desired ratings. Appendix C presents means, standard deviations, and *n*'s for LibQUAL+® total, subscale (i.e., Affect of Service, Information Control, Library as Place), and the 3 linking items (i.e., AS13, IC10, and LP03) for both the long and the Lite protocols at each of the 16 institutions on the Minimum ratings. All LibQUAL+® total, subscale, and item scores are scaled from 1 to 9, with 9 being the highest rating.

Confidence Intervals About Means. The most apples-to-apples comparison of differences in score means due solely to random protocol assignment occurs on the three linking items (i.e., AS13, IC10, and LP03), *because all respondents in both protocol groups completed these 3 items.* For other scores, different subsets of people were involved for every different set of comparisons. Thus, on the Lite protocol some of the same people on a given

campus responded to nonlinking item #1 and nonlinking item #2, but some of the people randomly asked to respond to item #1 were not asked to respond to item #2, and *vice versa*.

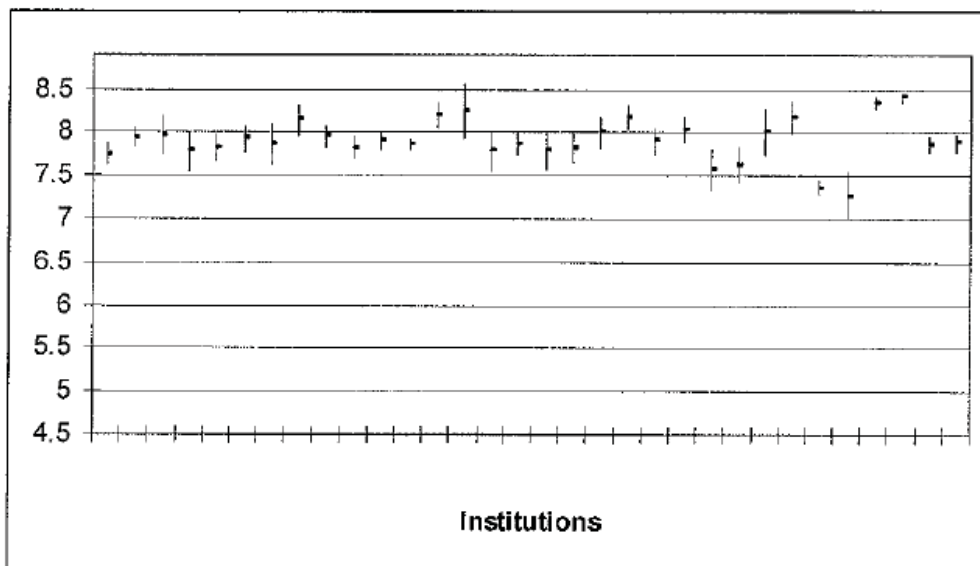
Figure 1 presents 95% confidence intervals about

means on linking item **AS13** for **Desired** ratings on the Long (leftmost) and the Lite (rightmost) forms across the 16 institutions. If protocol form itself had no effect in the ratings at a given institution, the two means would be equal, and the confidence intervals would overlap.

Figure 1

95% Confidence Intervals About Means on Linking Item **AS13** for **Desired** Ratings on Long (Leftmost) and Lite (Rightmost) Forms Across 16 Institutions

"c:\lq_gr_2\AS13_des"



Note. The 95% confidence intervals about the means are presented for each of the 16 institutions (i.e., 3, 4, 5, 84, 107, 433, 440, 446, 450, 453, 459, 461, 467, 1443, 1857, 1861) with CIs for the Long form present leftmost and CIs for the Lite form presented rightmost within each of the 16 pairs of confidence intervals.

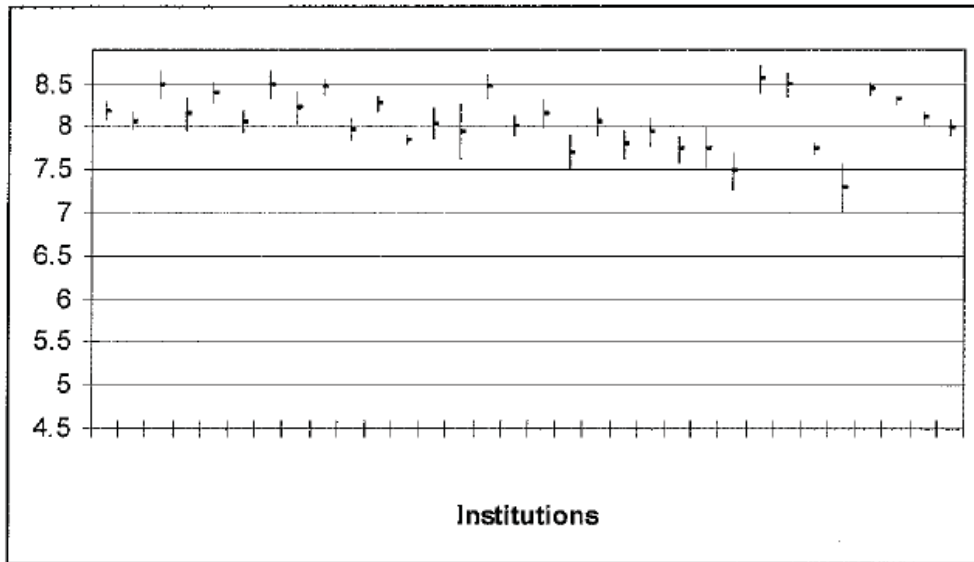
Figures 2 and 3 present 95% confidence intervals about means on linking items **IC10** and **LP03**, respectively, for **Desired** ratings on the Long (leftmost) and the Lite (rightmost) forms across the 16 institutions. Figures 4 through 6 present 95%

confidence intervals about means on linking items **AS13**, **IC10** and **LP03**, respectively, for **Minimum** ratings on the Long (leftmost) and the Lite (rightmost) forms across the 16 institutions.

Figure 2

95% Confidence Intervals About Means on Linking Item **IC10** for **Desired** Ratings on Long (Leftmost) and Lite (Rightmost) Forms Across 16 Institutions

"c:\lq_gr_2\IC10_des"

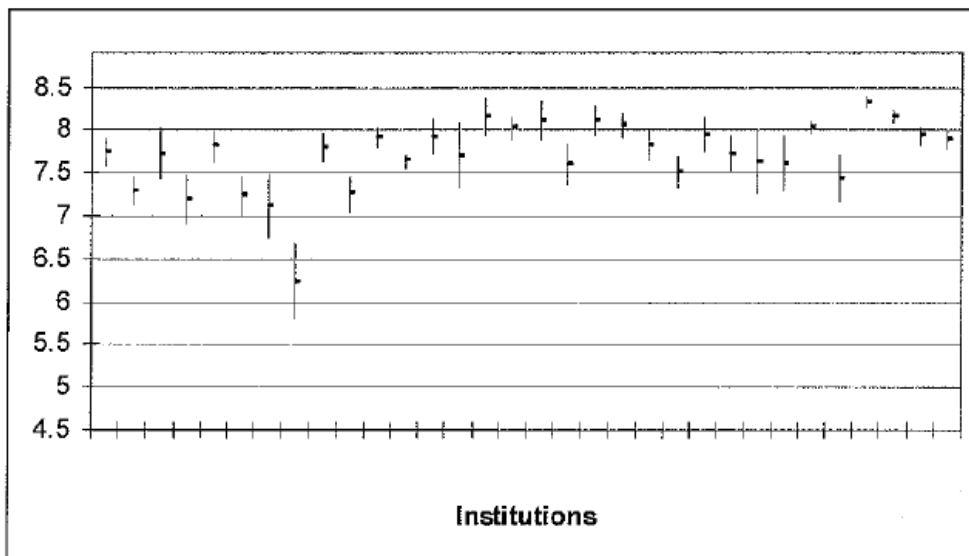


Note. The 95% confidence intervals about the means are presented for each of the 16 institutions (i.e., 3, 4, 5, 84, 107, 433, 440, 446, 450, 453, 459, 461, 467, 1443, 1857, 1861) with CIs for the Long form present leftmost and CIs for the Lite form presented rightmost within each of the 16 pairs of confidence intervals.

Figure 3

95% Confidence Intervals About Means on Linking Item **LP03** for **Desired** Ratings on Long (Leftmost) and Lite (Rightmost) Forms Across 16 Institutions

"c:\lq_gr_2\LP03_des"

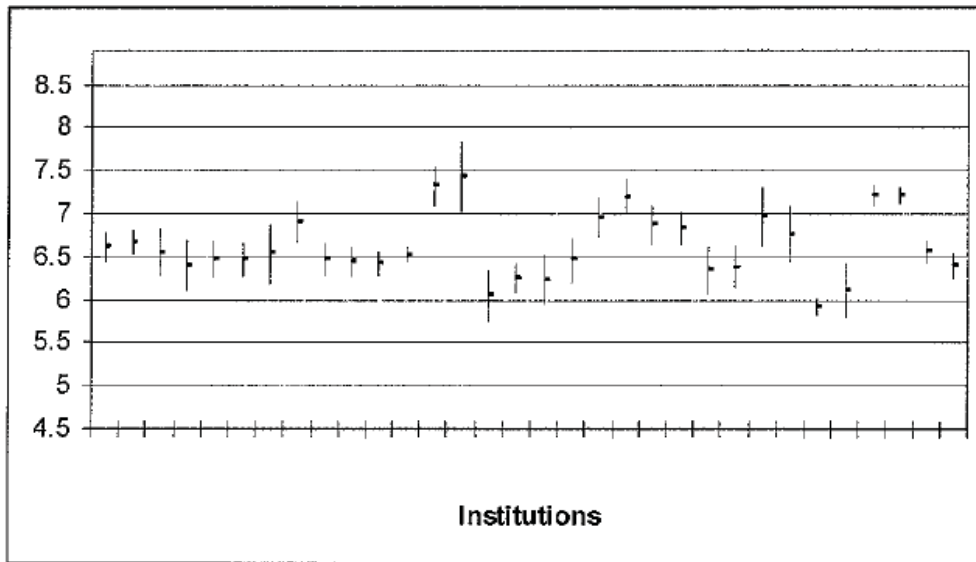


Note. The 95% confidence intervals about the means are presented for each of the 16 institutions (i.e., 3, 4, 5, 84, 107, 433, 440, 446, 450, 453, 459, 461, 467, 1443, 1857, 1861) with CIs for the Long form present leftmost and CIs for the Lite form presented rightmost within each of the 16 pairs of confidence intervals.

Figure 4

95% Confidence Intervals About Means on Linking Item **AS13** for **Minimum** Ratings on Long (Leftmost) and Lite (Rightmost) Forms Across 16 Institutions

"c:\lq_gr_2\AS13_min"

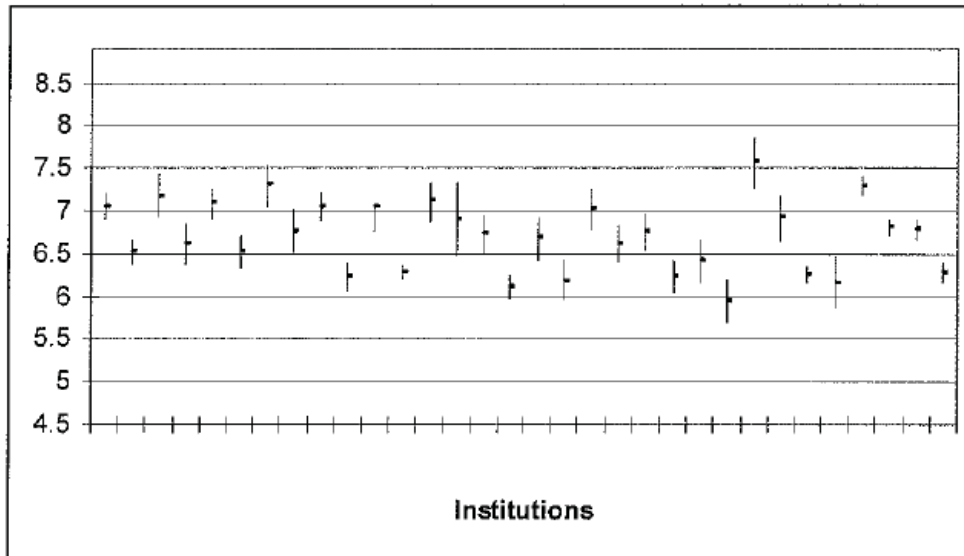


Note. The 95% confidence intervals about the means are presented for each of the 16 institutions (i.e., 3, 4, 5, 84, 107, 433, 440, 446, 450, 453, 459, 461, 467, 1443, 1857, 1861) with CIs for the Long form present leftmost and CIs for the Lite form presented rightmost within each of the 16 pairs of confidence intervals.

Figure 5

95% Confidence Intervals About Means on Linking Item **IC10** for **Minimum** Ratings on Long (Leftmost) and Lite (Rightmost) Forms Across 16 Institutions

"c:\lq_gr_2\IC10_min"

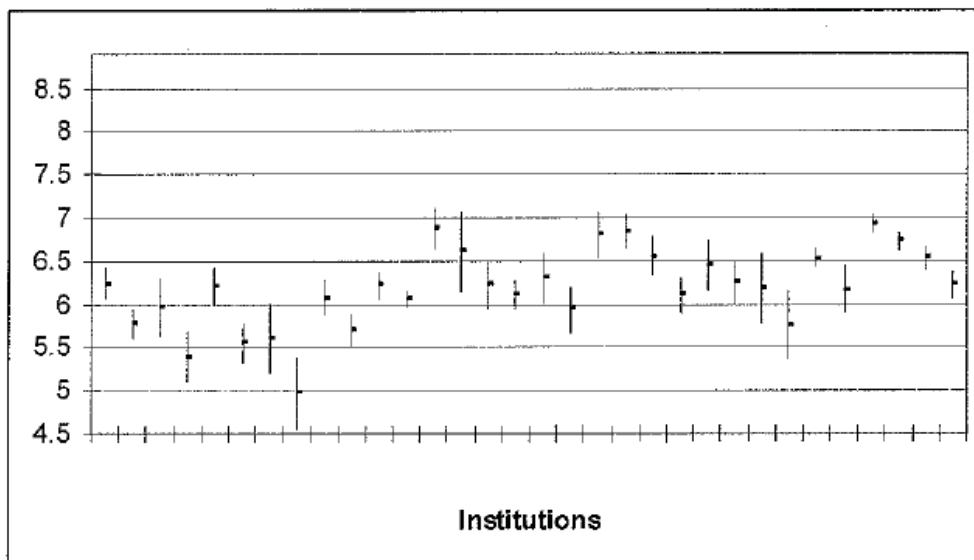


Note. The 95% confidence intervals about the means are presented for each of the 16 institutions (i.e., 3, 4, 5, 84, 107, 433, 440, 446, 450, 453, 459, 461, 467, 1443, 1857, 1861) with CIs for the Long form present leftmost and CIs for the Lite form presented rightmost within each of the 16 pairs of confidence intervals.

Figure 6

95% Confidence Intervals About Means on Linking Item **LP03** for **Minimum** Ratings on Long (Leftmost) and Lite (Rightmost) Forms Across 16 Institutions

"c:\lq_gr_2\LP03_min"



Note. The 95% confidence intervals about the means are presented for each of the 16 institutions (i.e., 3, 4, 5, 84, 107, 433, 440, 446, 450, 453, 459, 461, 467, 1443, 1857, 1861) with CIs for the Long form present leftmost and CIs for the Lite form presented rightmost within each of the 16 pairs of confidence intervals.

Standardized Effect Size Differences. One way to quantify the degree of difference in two means is to compute the effect size called Cohen's d .³⁰ Cohen's d can be computed as $(M_{LITE} - M_{LONG}) / [(SD_{LITE}^2 + SD_{LONG}^2) / 2]^{0.5}$. If means for LibQUAL+® Lite and the LibQUAL+® long protocol were equal, Cohen's

$d = 0$. The Cohen's d will be positive when the long protocol mean is smaller than the Lite mean on a given score, and the Cohen's d will be negative when the long protocol mean is larger than the Lite mean on a given score. For example, at institution #3, for the total score, Cohen's d was computed to be:

$$\begin{aligned} & (7.425 - 7.418) / [(1.055^2 + 0.869^2) / 2]^{0.5} \\ & 0.007 / [(1.055^2 + 0.869^2) / 2]^{0.5} \\ & 0.007 / [(1.113 + 0.756) / 2]^{0.5} \\ & 0.007 / [1.870 / 2]^{0.5} \\ & 0.007 / 0.935^{0.5} \\ & 0.007 / 0.967 = 0.008, \end{aligned}$$

or 0.01 when rounded to two decimal places.

Table 4 presents the Cohen's d values for total, the three subscale, and the three linking item (i.e., AS13, IC10, and LP03) means for Desired ratings across the two randomly-assigned protocols at the 16 institutions in our randomized control trial (RCT) experiment. Table 5 presents the Cohen's d

values for total, the three subscale, and the three linking item (i.e., AS13, IC10, and LP03) means for Minimally-Acceptable ratings across the two randomly-assigned protocols at the 16 institutions in our randomized control trial (RCT) experiment.

Table 4

Cohen's d Standardized Effect Size for Mean Differences in **Desired** Ratings

ID	Total	Service Affect	Information Control	Library as Place	All Respondents		
					AS13	IC10	LP03
3	0.01	0.08	-0.12	-0.14	0.14	-0.09	-0.23
4	-0.24	-0.17	-0.17	-0.18	-0.11	-0.24	-0.26
5	-0.07	0.01	-0.16	-0.28	0.07	-0.25	-0.31
84	-0.14	-0.05	-0.09	-0.22	0.23	-0.24	-0.36
107	-0.23	-0.16	-0.30	-0.28	-0.09	-0.41	-0.28
433	-0.11	-0.03	-0.25	-0.20	-0.02	-0.31	-0.17
440	0.00	0.03	0.06	-0.11	0.04	-0.06	-0.14
446	-0.24	-0.10	-0.34	-0.19	0.06	-0.41	-0.09
450	-0.26	-0.13	-0.32	-0.32	0.03	-0.33	-0.31
453	-0.06	0.02	-0.16	-0.03	0.13	-0.18	-0.03
459	-0.05	0.10	-0.17	-0.22	0.10	-0.13	-0.19
461	-0.03	0.00	-0.14	-0.04	0.03	-0.17	-0.15
467	0.08	0.18	-0.05	0.04	0.13	-0.07	-0.01
1443	-0.46	-0.29	-0.47	-0.47	-0.07	-0.35	-0.47
1857	-0.09	-0.01	-0.16	-0.11	0.06	-0.12	-0.15
1861	-0.04	-0.03	-0.03	-0.04	0.01	-0.08	-0.03

Note. Negative Cohen's d values are presented in bold.

Table 5

Cohen's d Standardized Effect Size for Mean Differences in **Minimum** Ratings

ID	Total	Service Affect	Information Control	Library as Place	All Respondents		
					AS13	IC10	LP03
3	-0.06	0.09	-0.21	-0.16	0.03	-0.32	-0.23
4	-0.14	-0.05	-0.15	-0.17	-0.08	-0.34	-0.26
5	-0.07	0.07	-0.15	-0.29	-0.01	-0.34	-0.32
84	-0.05	0.07	-0.12	-0.20	0.20	-0.35	-0.27
107	-0.12	0.03	-0.25	-0.17	-0.01	-0.49	-0.18
433	0.02	0.11	-0.14	-0.08	0.05	-0.34	-0.08
440	-0.03	0.10	-0.05	-0.22	0.06	-0.11	-0.14
446	-0.08	0.10	-0.24	-0.12	0.12	-0.43	-0.07
450	-0.10	0.04	-0.18	-0.23	0.12	-0.30	-0.19
453	-0.03	0.07	-0.13	-0.02	0.13	-0.22	0.02
459	-0.15	0.01	-0.26	-0.26	-0.02	-0.29	-0.23
461	-0.08	0.03	-0.22	-0.09	0.02	-0.26	-0.10
467	-0.18	0.00	-0.28	-0.22	-0.11	-0.40	-0.20
1443	-0.09	0.02	-0.16	-0.16	0.12	-0.06	-0.24
1857	-0.09	0.04	-0.22	-0.14	-0.01	-0.30	-0.12
1861	-0.14	-0.10	-0.16	-0.18	-0.08	-0.28	-0.16

Note. Negative Cohen's d values are presented in bold.

Discussion

Score Psychometric Integrity

The tabled results suggest that LibQUAL+® Lite scores have reasonable psychometric integrity. With respect to score reliability, the alpha coefficients for both Lite and long-form scores are very similar (e.g., 0.955 and 0.956, respectively, for Total scores), as reported in Table 1. Scores on the Library as Place subscale have the lowest alpha coefficients (i.e., 0.867 and 0.861, respectively), but this result is expected given that the Library as Place subscale has only 5 items, as opposed to 9 and 8 items, respectively, for the Affect of Service and the Information Control subscales.

The item analysis statistics reported in Table 2 also are favorable. All 22 alpha-if-deleted statistics are smaller than the alpha (i.e., 0.955) for the LibQUAL+® Lite Total scores, indicating that deletion of any item lowers score reliability. And there is no item which, when deleted, improves score reliability.

Finally, the Table 3 results indicate that the factor structure for the LibQUAL+® Lite data is similar to that repeatedly reported for long-form data.³¹ Thus, the same three subscales (i.e., Affect of Service,

Information Control, and Library as Place) underlie LibQUAL+® Lite responses.

Score Interpretation: Zones of Tolerance

We have previously documented³² that LibQUAL+® Lite service quality perception scores tend to be somewhat lower than scores on the full LibQUAL+® protocol, at least with respect to Information Control and Library as Place. Theoretically, because participants are randomly assigned protocols, the participants at a given institution should rate the same institution similarly, unless the composition of the two participant groups differs due solely to which protocol was randomly assigned.

Indeed, more people who receive the invitation to complete the survey do complete the survey when they receive the invitation for the Lite protocol. Apparently, the participant samples for the Lite protocol include more people who are somewhat less satisfied with library service quality, and therefore the Lite protocol yields somewhat lower perception ratings.

However, the current results reported in Tables 4 and 5 and Figures 1 through 6 suggest that

LibQUAL+® Lite service quality desired and minimum ratings also tend to be somewhat lower than scores on the full LibQUAL+® protocol, at least with respect to Information Control and Library as Place. Thus, these results raise the possibility that zone of tolerance widths, and both service quality adequacy and superiority gap scores, may be relatively comparable across the two LibQUAL+® protocols.

Summary

In summary, the present results suggest that at least from a psychometric score-integrity point of view the LibQUAL+® Lite protocol is a reasonable alternative to the original LibQUAL+® long form. LibQUAL+® Lite minimizes the response burden on individual survey participants, lessens overall the amount of person-time costs expended in creating service quality information, and improves response rates, without sacrificing score integrity.

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Notes

1. This paper contains content first presented at the 2nd Qualitative and Quantitative Methods in Libraries (QQML 2010) International Conference, Chania (Crete), Greece, May 25-28, 2010.
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**APPENDIX A:
Pearson r Matrices for Lite (Bottom Triangle) and Long (Top Triangle) Protocols**

AS01	IC02	LP03	AS04	IC05	AS06	IC07	LP08	AS09	IC10	AS11	LP12	AS13	IC14	AS15	IC16	LP17	AS18	IC19	IC20	LP21	AS22
AS01	.403	.540	.391	.412	.499	.422	.342	.511	.384	.472	.408	.502	.390	.491	.392	.352	.501	.388	.370	.341	.477
IC02	.437	.342	.528	.345	.388	.419	.309	.434	.554	.437	.334	.391	.462	.409	.491	.325	.386	.475	.485	.252	.403
LP03	.370	.367	.416	.402	.472	.422	.374	.538	.365	.478	.404	.523	.371	.516	.372	.350	.516	.384	.364	.373	.473
AS04	.605	.436	.455	.378	.447	.460	.328	.476	.551	.484	.381	.451	.535	.479	.568	.353	.456	.542	.523	.281	.492
IC05	.492	.523	.350	.466	.391	.446	.584	.419	.350	.411	.511	.401	.392	.381	.370	.539	.389	.366	.345	.465	.393
AS06	.543	.418	.400	.696	.489	.517	.401	.602	.449	.581	.460	.604	.494	.549	.490	.390	.578	.468	.443	.367	.554
IC07	.476	.514	.458	.498	.436	.372	.437	.527	.516	.526	.454	.495	.506	.505	.517	.453	.497	.511	.519	.384	.504
LP08	.411	.344	.652	.469	.341	.367	.402	.472	.376	.427	.526	.412	.414	.386	.389	.599	.401	.369	.362	.505	.420
AS09	.647	.514	.442	.673	.534	.621	.447	.450	.540	.649	.492	.622	.532	.621	.539	.434	.629	.523	.514	.408	.597
IC10	.397	.546	.417	.483	.524	.423	.487	.322	.474	.559	.425	.489	.584	.524	.602	.410	.493	.591	.614	.327	.524
AS11	.615	.444	.357	.571	.490	.668	.500	.368	.740	.456	.534	.638	.593	.639	.573	.482	.636	.582	.537	.407	.634
LP12	.442	.389	.628	.516	.445	.462	.411	.459	.502	.378	.403	.555	.524	.508	.460	.576	.500	.462	.423	.514	.507
AS13	.623	.437	.390	.672	.459	.749	.434	.371	.674	.431	.648	.437	.579	.702	.524	.470	.709	.536	.492	.440	.616
IC14	.426	.518	.503	.534	.516	.487	.557	.468	.510	.581	.503	.508	.461	.606	.646	.500	.567	.617	.570	.422	.588
AS15	.604	.462	.432	.667	.482	.760	.539	.497	.704	.459	.633	.496	.498	.565	.602	.470	.695	.585	.550	.417	.638
IC16	.511	.450	.410	.524	.566	.435	.454	.317	.444	.518	.469	.447	.428	.512	.602	.485	.555	.690	.632	.386	.585
LP17	.463	.462	.670	.466	.398	.518	.470	.605	.459	.399	.455	.567	.419	.430	.465	.485	.511	.504	.473	.566	.489
AS18	.681	.523	.395	.759	.404	.693	.436	.351	.657	.449	.637	.470	.476	.716	.410	.470	.511	.610	.543	.458	.664
IC19	.493	.479	.411	.490	.520	.505	.461	.388	.564	.535	.417	.354	.460	.520	.648	.425	.525	.663	.663	.409	.612
IC20	.452	.519	.425	.522	.538	.419	.547	.428	.486	.606	.514	.376	.451	.474	.518	.432	.447	.499	.421	.374	.548
LP21	.366	.449	.590	.462	.417	.389	.494	.497	.410	.395	.332	.472	.406	.601	.478	.536	.523	.452	.421	.476	.476
AS22	.588	.434	.407	.609	.619	.569	.478	.440	.628	.490	.592	.428	.588	.439	.488	.466	.667	.562	.498	.447	.447

Note. The 6 underlined values for the Lite protocol were imputed from the Long data, because no Lite protocol respondents receive these 6 combinations of items.

APPENDIX B:
Descriptive Statistics for Total, Subscale, and Three Linking Items for
Desired Scores for Both the Long and Lite Protocols

Library	Total		Service Affect		Info Control		Lib as Place		AS13		IC10		LP03								
	M	SD	n	M	SD	n	M	SD	n	M	SD	n	M	SD	n						
3 Long	7.42	0.87	426	7.75	1.08	422	8.21	0.81	426	7.53	1.35	422	7.75	1.35	400	8.19	1.22	420	7.74	1.70	412
Lite	7.43	1.06	627	7.84	1.23	617	8.09	1.04	626	7.29	1.86	606	7.95	1.42	597	8.07	1.30	611	7.29	2.07	588
4 Long	8.11	0.92	161	7.99	1.08	160	8.44	0.78	161	7.63	1.51	158	7.97	1.37	146	8.48	1.09	161	7.73	1.83	149
Lite	7.87	1.11	224	7.76	1.51	216	8.28	1.04	224	7.30	1.99	206	7.79	1.68	210	8.16	1.48	221	7.20	2.10	199
5 Long	7.54	0.97	309	7.84	1.10	308	8.30	0.90	309	7.74	1.27	302	7.83	1.45	290	8.40	1.18	301	7.81	1.53	291
Lite	7.46	1.18	382	7.86	1.35	374	8.13	1.12	382	7.28	1.91	362	7.93	1.51	365	8.07	1.38	375	7.23	2.12	352
84 Long	7.93	0.90	130	7.99	1.04	130	8.36	0.84	130	7.00	1.69	125	7.86	1.37	125	8.49	0.94	130	7.11	2.06	114
Lite	7.79	1.01	159	7.94	1.21	158	8.28	0.87	159	6.55	2.28	144	8.15	1.18	157	8.22	1.25	158	6.24	2.64	135
107 Long	7.59	0.90	369	7.93	0.96	367	8.32	0.81	369	7.78	1.30	361	7.96	1.26	353	8.46	0.92	360	7.79	1.61	342
Lite	7.35	1.12	451	7.74	1.29	442	8.02	1.14	448	7.34	1.80	427	7.83	1.44	430	7.97	1.41	436	7.26	2.08	416
433 Long	7.57	1.08	668	7.82	1.18	665	8.21	0.98	668	7.90	1.18	658	7.91	1.44	637	8.27	1.19	654	7.92	1.50	647
Lite	7.44	1.17	1868	7.77	1.27	1834	7.94	1.17	1866	7.63	1.51	1790	7.87	1.42	1783	7.85	1.43	1835	7.64	1.71	1757
440 Long	8.05	0.99	230	8.10	1.00	230	8.07	1.06	230	7.99	1.16	230	8.20	1.16	229	8.04	1.38	224	7.92	1.56	225
Lite	8.05	1.07	69	8.13	1.32	69	8.13	0.99	68	7.83	1.46	69	8.25	1.34	69	7.95	1.30	64	7.70	1.58	69
446 Long	8.11	0.66	130	7.84	0.88	130	8.40	0.61	130	8.11	0.84	130	7.79	1.28	123	8.46	0.86	129	8.15	1.24	129
Lite	7.92	0.89	430	7.73	1.21	420	8.12	0.94	429	7.90	1.30	430	7.87	1.34	410	8.01	1.25	418	8.03	1.41	428
450 Long	7.95	0.90	165	7.84	1.00	165	8.11	0.89	165	7.98	1.05	164	7.79	1.34	156	8.15	1.04	155	8.11	1.45	160
Lite	7.68	1.05	236	7.69	1.26	231	7.77	1.16	235	7.54	1.60	230	7.83	1.34	226	7.70	1.56	228	7.60	1.81	225
453 Long	8.04	1.00	225	8.01	1.06	225	8.09	1.02	225	8.03	1.12	224	8.00	1.30	219	8.06	1.28	210	8.10	1.28	220
Lite	7.98	1.08	318	8.03	1.21	317	7.91	1.20	316	7.99	1.30	317	8.17	1.30	313	7.80	1.52	303	8.05	1.33	314
459 Long	7.86	0.99	287	7.78	1.11	287	8.05	0.99	287	7.87	1.13	286	7.91	1.29	273	7.94	1.40	273	7.83	1.57	283
Lite	7.80	1.01	342	7.89	1.15	340	7.87	1.14	342	7.59	1.41	340	8.04	1.32	338	7.74	1.47	335	7.51	1.67	337
461 Long	7.62	1.23	187	7.54	1.31	187	7.80	1.27	187	7.81	1.31	187	7.58	1.62	182	7.75	1.53	178	7.95	1.40	186
Lite	7.57	1.18	224	7.55	1.39	219	7.62	1.30	224	7.75	1.36	221	7.63	1.55	214	7.48	1.63	215	7.73	1.52	220
467 Long	8.09	0.86	99	7.92	1.17	99	8.47	0.69	99	7.63	1.41	97	8.02	1.29	90	8.56	0.85	97	7.63	1.83	91
Lite	8.16	0.85	152	8.12	1.06	149	8.43	0.82	152	7.70	1.65	133	8.18	1.11	141	8.49	0.92	151	7.61	1.89	127
1443 Long	7.72	0.90	936	7.53	0.99	936	7.77	0.96	936	7.88	0.97	936	7.37	1.38	902	7.75	1.22	901	8.04	1.15	930
Lite	7.28	0.94	96	7.22	1.08	95	7.29	1.05	96	7.36	1.16	96	7.27	1.37	95	7.29	1.38	93	7.44	1.38	96
1857 Long	8.34	0.69	819	8.33	0.76	819	8.46	0.69	819	8.25	0.88	817	8.35	0.97	785	8.44	0.93	773	8.33	1.08	803
Lite	8.27	0.76	1090	8.32	0.87	1082	8.33	0.83	1088	8.14	1.10	1069	8.41	0.95	1070	8.32	1.02	1065	8.15	1.26	1050
1861 Long	7.94	1.10	815	7.90	1.16	815	8.02	1.12	815	7.92	1.30	813	7.87	1.50	795	8.10	1.27	794	7.93	1.61	801
Lite	7.88	1.18	759	7.85	1.35	757	7.97	1.17	758	7.85	1.53	753	7.88	1.52	753	7.99	1.37	749	7.88	1.63	742

**APPENDIX C:
Descriptive Statistics for Total, Subscale, and Three Linking Items for
Minimum Scores for Both the Long and Lite Protocols**

Library	Total			Service Affect			Info Control			Lib as Place			AS13			IC10			LP03		
	M	SD	n	M	SD	n	M	SD	n	M	SD	n	M	SD	n	M	SD	n	M	SD	n
3 Long	6.17	1.16	426	6.50	1.30	422	7.00	1.20	426	6.17	1.57	422	6.61	1.72	400	7.06	1.61	420	6.24	1.90	412
Lite	6.09	1.32	627	6.63	1.54	617	6.72	1.41	626	5.88	1.90	606	6.67	1.75	597	6.52	1.73	611	5.77	2.11	588
4 Long	6.64	1.29	161	6.54	1.43	160	7.05	1.22	161	6.03	1.86	158	6.55	1.72	146	7.18	1.59	161	5.97	2.12	149
Lite	6.44	1.44	224	6.46	1.89	216	6.86	1.47	224	5.70	2.13	206	6.40	2.09	210	6.61	1.79	221	5.40	2.23	199
5 Long	6.10	1.32	309	6.39	1.46	308	6.90	1.31	309	6.26	1.62	302	6.48	1.88	290	7.09	1.58	301	6.20	1.86	291
Lite	6.00	1.46	382	6.49	1.72	374	6.69	1.55	382	5.74	1.96	362	6.47	1.94	365	6.52	1.79	375	5.55	2.15	352
84 Long	6.66	1.33	130	6.69	1.50	130	7.17	1.29	130	5.68	1.90	125	6.54	1.97	125	7.31	1.46	130	5.61	2.22	114
Lite	6.59	1.24	159	6.80	1.44	158	7.01	1.28	159	5.27	2.23	144	6.90	1.56	157	6.77	1.63	158	4.97	2.50	135
107 Long	6.10	1.37	369	6.38	1.46	367	6.89	1.42	369	6.15	1.72	361	6.47	1.78	353	7.05	1.56	360	6.07	1.96	342
Lite	5.92	1.44	451	6.42	1.66	442	6.52	1.52	448	5.84	1.92	427	6.45	1.83	430	6.22	1.80	436	5.70	2.09	416
433 Long	6.06	1.47	668	6.32	1.55	665	6.76	1.48	668	6.34	1.60	658	6.43	1.88	637	6.90	1.70	654	6.22	1.89	647
Lite	6.08	1.50	1868	6.49	1.66	1834	6.54	1.55	1866	6.21	1.79	1790	6.53	1.88	1783	6.29	1.83	1835	6.06	1.99	1757
440 Long	7.10	1.48	230	7.15	1.51	230	7.15	1.53	230	7.02	1.58	230	7.33	1.72	229	7.11	1.78	224	6.88	1.83	225
Lite	7.05	1.58	69	7.31	1.70	69	7.07	1.62	68	6.70	1.34	69	7.43	1.75	69	6.91	1.74	64	6.61	1.97	69
446 Long	6.38	1.04	130	6.10	1.21	130	6.71	1.03	130	6.32	1.15	130	6.06	1.69	123	6.73	1.33	129	6.22	1.58	129
Lite	6.29	1.24	430	6.24	1.54	420	6.43	1.31	429	6.15	1.59	430	6.26	1.78	410	6.11	1.57	418	6.11	1.74	428
450 Long	6.38	1.40	165	6.29	1.42	165	6.56	1.39	165	6.37	1.57	164	6.24	1.82	156	6.68	1.58	155	6.31	1.85	160
Lite	6.24	1.42	236	6.34	1.67	231	6.31	1.46	235	5.96	1.90	230	6.46	1.85	226	6.19	1.74	228	5.94	2.11	225
453 Long	6.98	1.46	225	6.97	1.52	225	7.04	1.46	225	6.89	1.63	224	6.96	1.76	219	7.02	1.79	210	6.81	1.93	220
Lite	6.93	1.52	318	7.08	1.67	317	6.84	1.59	316	6.86	1.83	317	7.20	1.82	313	6.62	1.88	303	6.84	1.91	314
459 Long	6.72	1.46	287	6.69	1.51	287	6.87	1.50	287	6.68	1.61	286	6.87	1.86	273	6.76	1.86	273	6.55	1.94	283
Lite	6.51	1.45	342	6.71	1.58	340	6.48	1.53	342	6.23	1.78	340	6.83	1.85	338	6.24	1.78	335	6.10	1.93	337
461 Long	6.37	1.48	187	6.29	1.55	187	6.56	1.52	187	6.52	1.65	187	6.34	1.87	182	6.42	1.74	178	6.44	1.99	186
Lite	6.26	1.47	224	6.35	1.64	219	6.22	1.59	224	6.38	1.69	221	6.38	1.91	214	5.95	1.90	215	6.25	1.88	220
467 Long	6.95	1.33	99	6.75	1.54	99	7.41	1.28	99	6.40	1.70	97	6.97	1.69	90	7.57	1.51	97	6.18	1.99	91
Lite	6.69	1.58	152	6.74	1.87	149	7.01	1.53	152	5.98	2.09	133	6.77	1.97	141	6.92	1.73	151	5.76	2.23	127
1443 Long	6.25	1.20	936	6.10	1.26	936	6.31	1.27	936	6.36	1.28	936	5.92	1.59	901	6.26	1.48	901	6.53	1.59	930
Lite	6.15	1.09	96	6.12	1.33	95	6.12	1.15	96	6.16	1.23	96	6.11	1.56	95	6.17	1.52	93	6.17	1.40	96
1857 Long	7.16	1.32	819	7.14	1.39	819	7.32	1.31	819	7.01	1.47	817	7.22	1.63	785	7.29	1.54	773	6.94	1.64	803
Lite	7.04	1.30	1090	7.20	1.45	1082	7.02	1.39	1088	6.79	1.58	1069	7.21	1.60	1070	6.81	1.61	1065	6.73	1.75	1050
1861 Long	6.62	1.45	815	6.59	1.50	815	6.69	1.51	815	6.57	1.59	813	6.56	1.84	795	6.78	1.71	794	6.54	1.93	801
Lite	6.41	1.56	759	6.44	1.72	757	6.45	1.60	758	6.26	1.89	753	6.40	1.97	753	6.28	1.82	749	6.22	2.02	742

Coding Practices for LibQUAL+® Comments: Survey Findings

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Abstract

All libraries that administer the LibQUAL+® survey receive both quantitative and qualitative data. While LibQUAL+® provides descriptive analysis of the quantitative data, the qualitative data are provided in the raw form: open-ended comments obtained in response to the survey question, "Please enter any comments about library services in the box below." While the implicit value of these comments to libraries seems apparent, the extent to which libraries have systematically analyzed their comments is unclear. In cooperation with the LibQUAL+® administrators, a team of four independent researchers conducted a survey of North American libraries about their practices in handling the open-ended comments. Survey questions broadly explored the coding process and methods, along with the benefits, challenges, and support needed in conducting qualitative analysis. This paper presents the findings from the coding survey.

Introduction

Since its launch in 2000, more than 1100 libraries in twenty-three different countries have utilized the Association of Research Libraries' (ARL) LibQUAL+® survey to gather feedback on library service quality from over one million users.¹ A key component of the LibQUAL+® survey data is the file of respondents' free-text comments that accompanies the quantitative data—almost forty percent of LibQUAL+® respondents typically include narrative comments.² "[T]he open-ended

comments gathered as part of LibQUAL+® are themselves useful in fleshing out insights into perceived library service quality. Respondents often use the comments box on the survey to make constructive suggestions on specific ways to address their concerns."³ Thus, systematic analysis of a library's qualitative data from LibQUAL+® can be extremely valuable in assessing the library's performance and identifying areas for improvement.

To better understand libraries' current practices in analyzing and using LibQUAL+® comments, the authors conducted a survey of all US and Canadian libraries that administered at least one LibQUAL+® survey from 2003 through June 2009. Survey questions asked respondents to describe what they did with the open-ended comments received from their LibQUAL+® survey and probed aspects including coding methods, local resources for coding, and the use of comments for various purposes. This paper presents the survey findings as well as suggestions for practical steps to help facilitate qualitative analysis of LibQUAL+® comments. The questionnaire can be found at <http://www.library.okstate.edu/dean/neurohr/CodingSurvey10-26-09.pdf>.

Methodology

LibQUAL+® quantitative measures have been thoroughly investigated and validated, but what about the qualitative data? Each survey asks an open ended question: "Please enter any comments

about library services in the box below.” How do libraries analyze and use the data provided by this question?

In the fall of 2008, a small working group began to study this question. The study was initially informed by feedback obtained by one of the authors new to LibQUAL+® who queried the ARL LibQUAL+® listserv in February 2008 by asking, “Can anyone share information about how they coded the open-ended comments from the LibQUAL+® survey?” The wide variety in the responses received led to the formation of a luncheon affinity group to discuss coding at the 2008 Library Assessment Conference in Seattle. There was much interest in coding methodologies and practices within the affinity group. Next, the authors drafted a survey and planned for the survey’s distribution.

In September 2009, the survey questionnaire was piloted to a small group of thirty colleagues who had responded to the listserv query or participated in the affinity group. They assisted the authors in clarifying the wording and structure of the questionnaire by answering these questions about the draft:

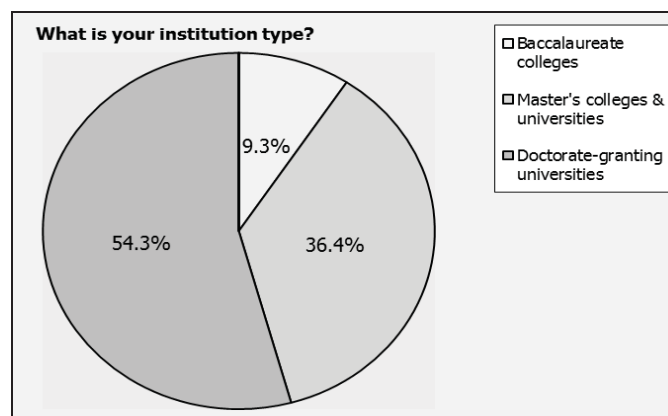
1. How long did it take to complete? (The goal was ten minutes or less.)
2. Can you answer the questions quickly/easily?

3. Are the questions clear? Which are not? Do you have suggestions for clarification?
4. Are they generic enough to cover most possible situations at your institution or others you are familiar with?
5. Other comments.

ARL provided generous assistance by emailing survey invitations to all of the contacts at North American institutions that participated in the LibQUAL+® survey from 2003 through spring 2009. There were 641 institutions: 110 ARL members (eighty-four from the United States and sixteen from Canada) and 531 non-members (515 in the United States and twenty-eight in Canada). The first invitation was sent on October 27, 2009, followed by four reminders at one-week intervals. Of those invited, there were 154 respondents for an overall response rate of 24.0%.

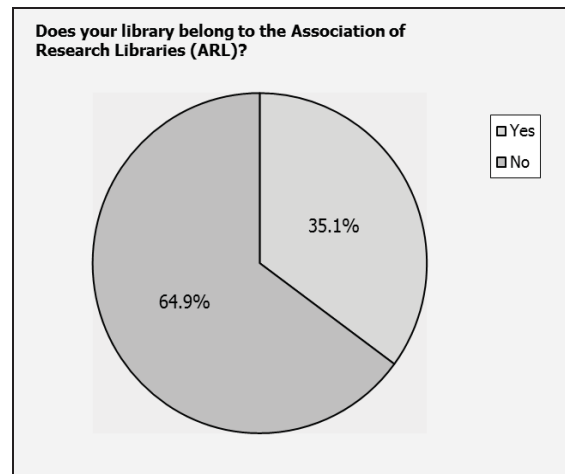
Survey Results

The survey asked what kind of institution the respondent was affiliated with using the Carnegie classifications for higher education. Of the 151 responses to this question, 9.3% were from baccalaureate colleges, 36.4% from master’s colleges and universities, and 54.3% were from doctorate-granting universities. There were no responses from other types of institutions.



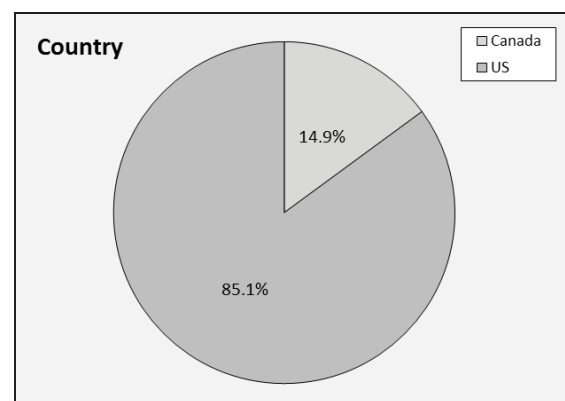
ARL members comprised 35.1% of the respondents to the survey. ARL members were over-represented in the sample; only 17.2% of the

641 libraries invited to participate in the survey were ARL members.



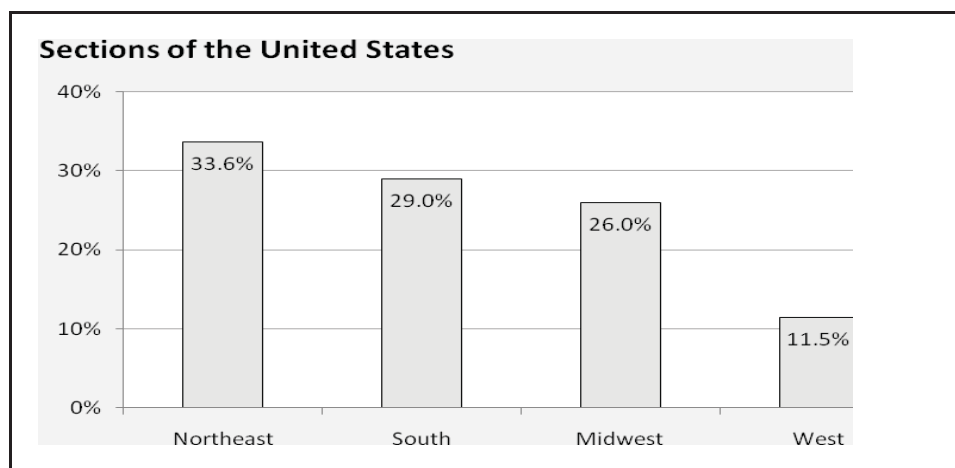
A large majority of the 154 respondents (85.1%) were from the United States with the remaining libraries from Canada. Nonetheless, Canadian

libraries were over-represented in the sample; only 9.4% of the 641 invited libraries were Canadian.



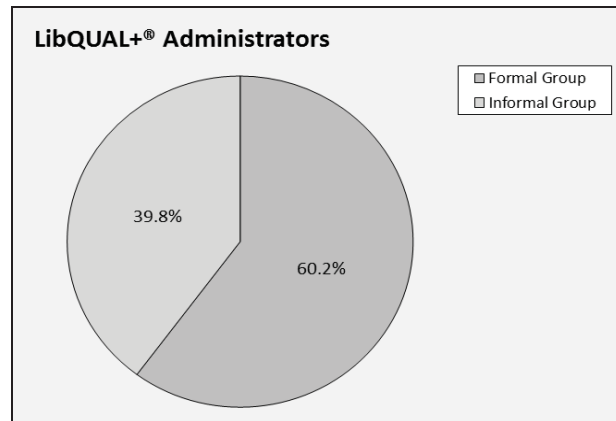
One-third of the US respondents were from the Northeast section of the country, closely followed

by the South and Midwest. Only 11.5% were from the Western states.



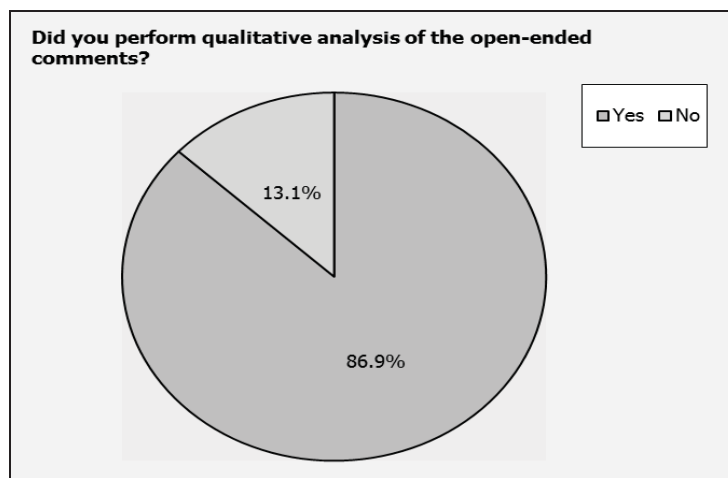
For 60.2% of respondents, administration of the LibQUAL+® survey was handled by a formal or standing group within the library or by someone whose position included survey administration; thus, among these respondents, there appeared to

be some permanent responsibility in their library for assessment. Nearly forty percent implemented LibQUAL+® through an informal or ad hoc team or project group.



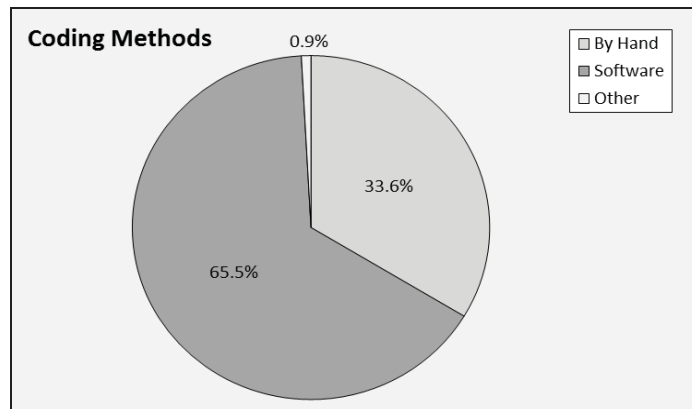
Nearly eighty-seven percent of the respondents indicated that their library had performed a qualitative analysis of the comments from their most recent LibQUAL+® survey. (“Qualitative analysis” was described as any process that organized or categorized or tagged/coded the free-text comments so that they might be used by library staff or others in assessing and/or

improving library services.) Of those who did not perform analysis on their survey comments, the most frequently mentioned reason was lack of staff time. The average number of LibQUAL+® comments received by responding libraries was 379. The median was 293 but the number of comments ranged from one to 1,420.



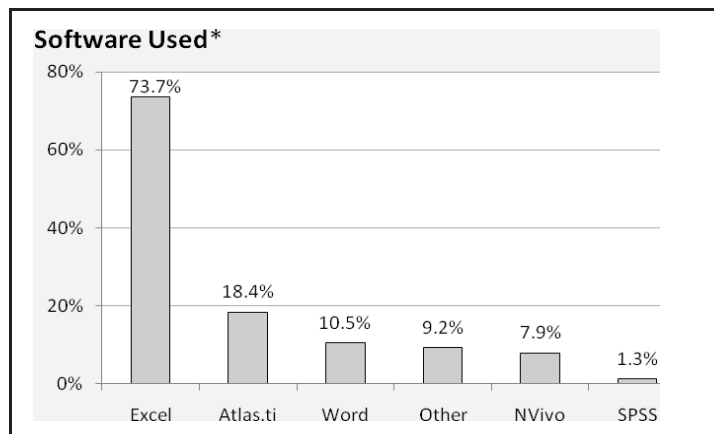
The survey asked those who had performed a qualitative analysis of their comments about the tools and methods they used in their approach. Of the 114 responding libraries that provided

answers, over sixty-five percent used some sort of computer software to organize, code, sort, or analyze their comments, while 33.6% hand coded their comments on paper.



The survey revealed that coders primarily used Excel to analyze the comments: of the seventy-six respondents that provided information on

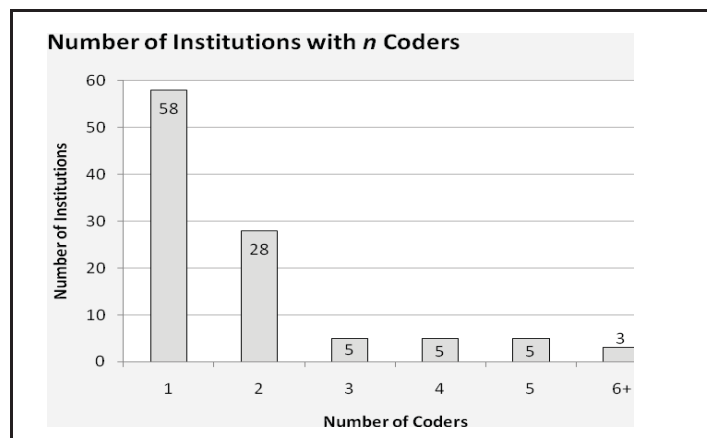
software, 73.7% used Excel. ATLAS.ti was the most common qualitative data analysis software used (18.4% for ATLAS.ti versus 7.9% for NVivo).



*Respondents could choose more than one option.

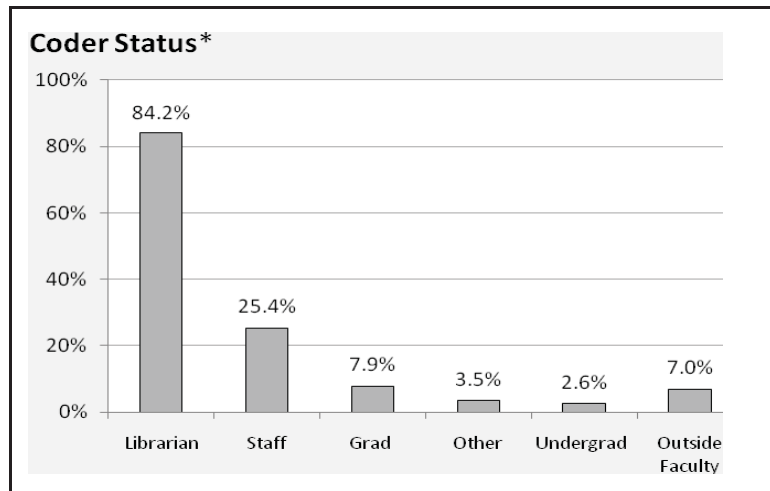
Most respondents (fifty-eight out of 104 libraries, or 55.8%) had only one person coding the comments. Twenty-eight (26.9%) had two coders, but very few had three or more. Thus, at over

eighty percent of the responding libraries, either one or two people performed the coding. Only eighteen libraries (17.3%) had three or more people who did coding.



Staff who performed the coding at respondents' libraries were typically professional librarians:

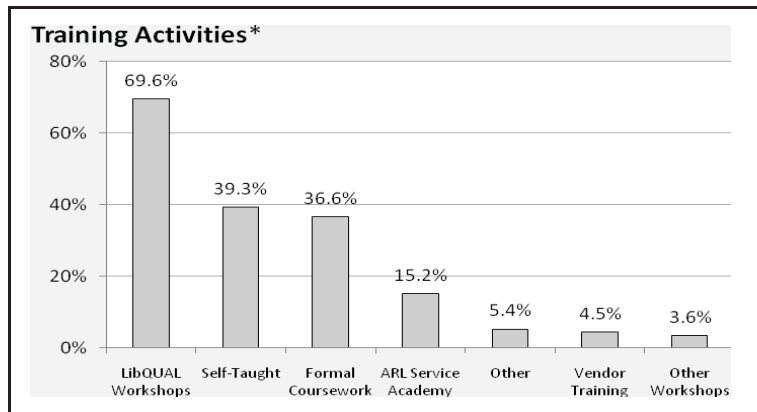
84.2% of respondents indicated that librarians were coders while 25.4% used non-librarian staff.



*Respondents could choose more than one option.

Training for coders came from several venues, primarily LibQUAL+® workshops run by ARL (69.6%); but there was also a large contingent that was self taught or who had taken formal courses

in assessment methods. "Other" tended to be consultants from other areas of the local institution.



*Respondents could choose more than one option.

Respondents used a number of approaches to code the comments. Of those who performed some type of analysis on their comments, nearly all (91.9%) indicated that they developed keywords and topics from reading through the comments (emergent keywords). Another common approach was to code the comments according to LibQUAL+® dimensions (55.0% of respondents used this strategy). Less common

was coding according to the twenty-two individual LibQUAL+® questions (done by only 27.0%). A couple of respondents specifically mentioned that creating a word cloud to visually display the key concepts that emerged from their LibQUAL+® comments was an effective tool, especially in communicating their findings to others.

Basis for Coding the Comments:*	%	N
Emergent keywords or concepts (e.g., “service hours”) developed from reading the comments?	91.9%	102
Whether or not it expressed a “positive” or “negative” perspective/experience of the library?	67.6%	75
The LibQUAL+® dimensions: Affect of Service, Information Control, & Library as Place?	55.0%	61
The number of distinct topic(s) in a single respondent’s comment?	46.8%	52
A pre-set list of keywords or concepts (e.g., “service hours”)?	41.4%	46
The 22 individual LibQUAL+® questions and/or the 5 local questions?	27.0%	30
Other	10.8%	12

*Respondents could choose more than one option.

In order to enhance consistency and objectivity, a number of steps were often implemented, including training, using previous coding

schemes, and having others check the work of a single coder (thirty-three percent of “other”).

Consistency in coding was assured by:*	%	N
Training and/or discussion was conducted ahead of time for all participants to ensure a common understanding of the application of the codes/tags	44.6%	37
Coding schemes and definitions from previous survey administrations were consulted	44.6%	37
Other (please specify)	43.4%	36
Each comment was coded independently by at least two people	27.7%	23
Comments were randomly assigned to people doing the coding	12.0%	10

*Respondents could choose more than one option.

Roughly half (51.4%) of those responding to the survey did not document the process they used to code/analyze their LibQUAL+® comments. The

most common documentation produced was lists of tags/codes with definitions and descriptions of the procedure or methodology used.

Documentation Type*	%	N
None; did not document the process	51.4%	55
Code book (list of tags/codes, definitions, examples, etc)	27.1%	29
Description of procedure and methodology	25.2%	27
Other (please specify)	17.8%	19

*Respondents could choose more than one option.

Nearly all (92.7%) of the responding libraries reported using their LibQUAL+® comments internally to improve library operations. Libraries also typically incorporated the comments into local university reports (75.5%) and used the comments in outreach communications to the

university community (60.9%). Notably, roughly half (46.4%) of respondents said they either did or planned to include their LibQUAL+® comments in communications with professional communities (e.g., in conference presentations or professional publications).

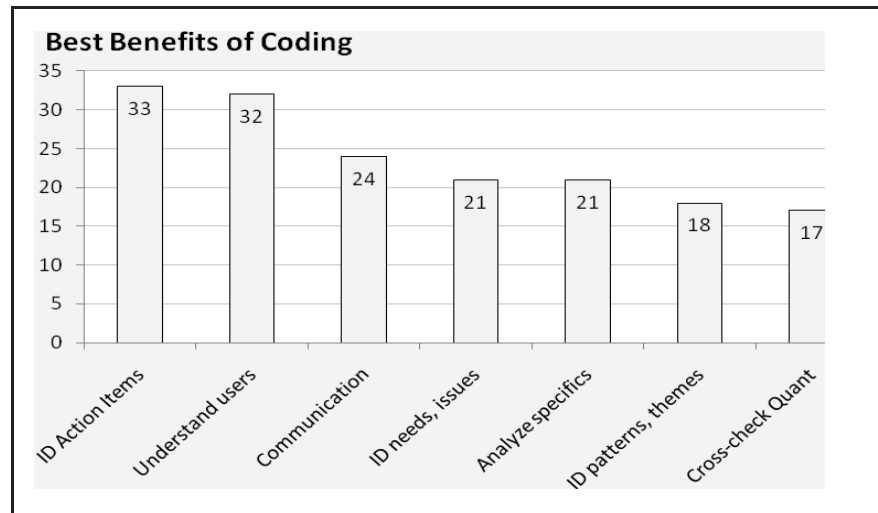
Uses of Comment Data*	Yes	No	Plan to do
Internally within the library for operational improvements	92.7%	0.9%	6.4%
Incorporated into administrative reports to the university community (e.g., in annual report, budget request, etc.)	75.5%	7.3%	16.4%
Included in outreach communications to the university community (e.g., in announcements for new services)	60.9%	18.2%	17.3%
Included in communication with professional community (e.g., in conference presentations or professional publication)	25.5%	43.6%	20.9%
Included in outreach communications to external audiences such as donors or potential donors (e.g., demonstrate satisfaction with funded gifts or express need for funds, etc.)	22.7%	38.2%	27.3%
Other	3.6%	20.9%	0.9%

*Respondents could choose more than one option.

Benefits

The survey asked, “For your library, what was the best benefit of coding the comments?” The two most frequently mentioned benefits were that the comments helped to identify action items for improvement, and helped the library better understand its users. Other benefits included

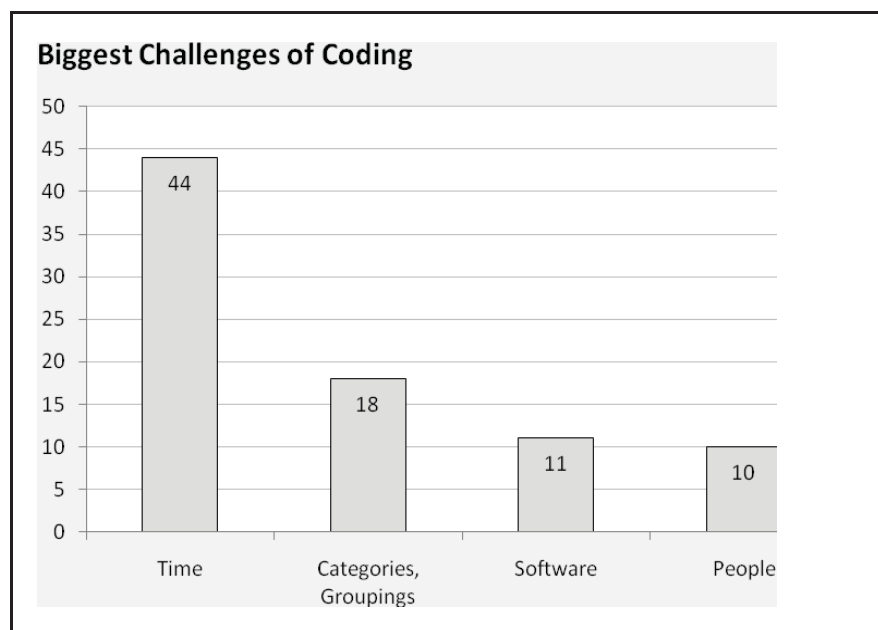
providing results and examples that can be communicated to various library constituents such as the provost or potential donors, identifying and analyzing specific needs and issues raised by users, identifying trends and patterns, and corroborating the quantitative survey data.



Challenges

When it came to the biggest challenges of coding the comments, time constraints were mentioned most frequently. Time here referred not only to the time to conduct the actual coding itself, but also included time to learn new software, and time to manage multiple coders. Closely related to lack of time was the expressed challenge of lack of people/staff to perform the coding and analysis. Another resource-related challenge was the lack of appropriate software. Respondents also described a number of challenges related to the process of performing the actual coding and

analysis, including developing categories/groupings for coding schemes. Other less frequently mentioned challenges included dealing with multiple concepts, maintaining consistency throughout the coding process, the difficulty in maintaining objectivity, and the need for assistance in analyzing and interpreting the data. Some respondents also commented on the sheer volume of the qualitative data (the average number of comments per responding library was 379, with each comment likely to contain numerous concepts to be coded separately).



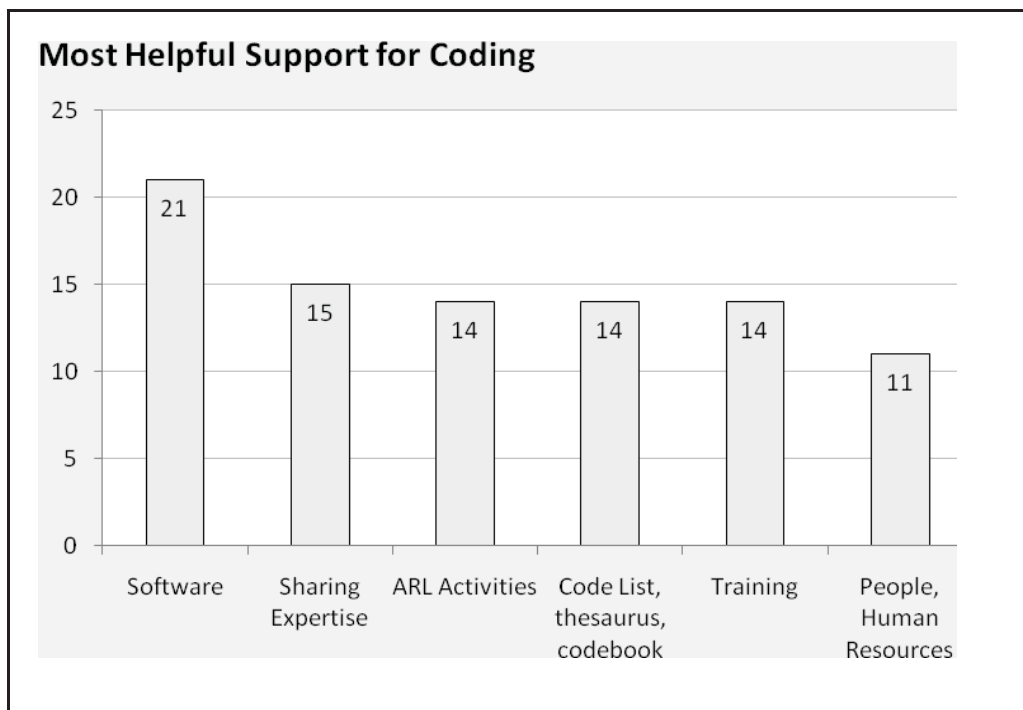
Needed Support

The survey asked, "What kind of support (from your library, institution, ARL, software vendor, etc.) would be most helpful to you in doing qualitative analysis of LibQUAL+® comments?" Software purchase and software training were cited most frequently. Respondents also made a number of suggestions regarding sharing information, experiences, and work products in conducting the coding of LibQUAL+® comments, as well as sharing the results of the qualitative analysis. For example:

- "Perhaps the sharing of the index terms that others have used"
- "It might be interesting for a group ... to draft a thesaurus and research commonalities and trends across universities."

- "It would be great to share comments or types of comments, for informal benchmarking, similar to how we can compare our scores on items through the notebooks."

ARL was gratefully acknowledged for their many workshops and training/sharing sessions on LibQUAL+® generally, but there was also an expressed interest in online training/webinars on coding. In addition, a desire for basic training in qualitative research theory/methodologies was mentioned, as well as training for the actual coding and analysis. More staff to help with coding was desired by several respondents.



Recommended Resources

Finally, the survey asked the respondents to recommend helpful resources for someone new starting a coding project. The resource mentioned most often was ARL with its myriad activities which include publications, the Library Service Quality Academy, the Library Assessment Conference and proceedings, the LibQUAL+®

website and workshops, and the Assessment listserv/blog. Other resources mentioned included experts on campus, software vendors' workshops and websites, and formal research courses. The work of two institutions was mentioned specifically: the Brown University guide⁴ and articles from Notre Dame.⁵

Recommended resources:	N
ARL Activities	20
None or Unsure	12
Online Resources	9
Software Manuals, Training, Tutorials, Websites	7
Articles, Books	6
Suggestions	5
Formal and Informal Coursework	4
Institutional, Campus Resources	3
Manuals, guides	3

Several specific resources were listed by survey respondents as helpful starting points for conducting qualitative research:

Books:

Corbin, J. and Strauss, A. *Basics of qualitative research*, (Los Angeles, CA: Sage, 2008)—or another book on grounded theory generation.

Richards, L. *Handling qualitative data: A practical guide*, (London: Sage Publications, 2005).

Articles:

LaPelle, Nancy. "Simplifying qualitative data analysis using general purpose software tools," *Field Methods*, 16:1 (2004): 85-108.

Online:

Online QDA, School of Human & Health Sciences, University of Huddersfield.
<http://onlineqda.hud.ac.uk/Introduction/index.php>.

Šaupperl, Alenka, "Qualitative research methods in information and library science: an annotated bibliography of sources," Department of Library and Information Science and Book Studies, Faculty of Arts, University of Ljubljana.
http://uisk.ff.cuni.cz/dwn/1003/1725cs_CZ_Qualitative%20Research%20Methods-Bibliography.rtf.

Conclusion

Comments obtained from the LibQUAL+® survey can be useful for strategic planning, understanding users, identifying areas for improvement, and prioritizing needs. Clearly, the

survey results indicated a strong interest in systematically analyzing the open-ended comments from the LibQUAL+® survey: nearly eighty-seven percent of respondents performed qualitative analysis on their most recent LibQUAL+® comments, and of that group more than sixty-five percent utilized a computer software tool in conducting that analysis. In more than half of the responding libraries, LibQUAL+® analysis was conducted by individuals or groups with permanent responsibility for assessment. However, nearly one-third of respondents indicated they had no training and were self-taught regarding qualitative analysis. Overall, respondents expressed a strong desire for assistance in learning how to code and for knowing the best practices used by other libraries. Far and away, Microsoft Excel was the tool of choice as nearly three-quarters of respondents used it for some aspect of their analysis. There appeared to be some confusion about the capabilities of text analysis software packages, presumably by those who had not used such a tool (e.g., several respondents commented on not using any software that "automatically" assigned codes to the text). A key suggestion raised by respondents to this survey was for practitioners to consider sharing the fruits of their labor more widely (including coding taxonomies and coding strategies) as well as broader discussion of qualitative analysis methods, strategies, approaches, and practices. To this end, it was encouraging that more than half of the survey respondents indicated that they either already had or planned to include their LibQUAL+® comments in communications with professional communities (e.g., in conference presentations or

professional publications). Such sharing of information, methods, and results should be welcomed given that the literature review performed as part of this study revealed very few items that focused on performing a systematic analysis of LibQUAL+® comments.

Literature Review/Bibliography

A search of the published, peer-reviewed library literature found twelve articles and conference papers produced by eleven academic libraries: University of Arizona, Vanderbilt University, Texas A&M, Northeastern University, Notre Dame, University of Massachusetts-Amherst, University of British Columbia, University of Pittsburgh, Bowling Green State University, Western Michigan University, and the University of Idaho.⁶ These articles covered surveys administered during the period from 2001 to 2007 and, for the most part, described the methodologies, experiences, and findings of individual libraries that performed some type of systematic analysis of their LibQUAL+® comments.

All eleven institutions represented in the literature review were doctorate-granting universities. Seven of these eleven libraries were members of the Association of Research Libraries (ARL).⁷ Ten of the eleven literature review institutions were in the United States, while the eleventh was located in Canada.⁸ Within the United States, three were located in the Northeast, three in the South, two in the Midwest, and two in the West.

The amount of detail reported by the literature review libraries about the management of their coding project was relatively sparse and inconsistent. Only three of the eleven literature review libraries reported any project structure, all of which were ad hoc or informal.⁹ Three of the libraries reported the number of coders they used: one reported using one coder, and two reported using two coders.¹⁰ Of these four coders, three were librarians and one was non-librarian staff.¹¹ Only one of the literature review libraries reported providing formal training for their coders by way of a consultant¹² while another library's coders were self-taught.¹³ The remaining nine libraries did not provide any information on coder training.

All eleven literature review libraries reported performing qualitative analysis on either all or a representative sample of the comments they received from the LibQUAL+® surveys they conducted (this was part of the criteria for selecting these eleven articles).¹⁴ The average number of comments received by these eleven libraries was 1,031. Seven of the eleven reported using computer software to help in the analysis,¹⁵ while three did not report what coding method (by computer or by hand) they used. Of the seven literature review libraries that reported using software, three used ATLAS.ti, two used Excel, and two used other (NUD*IST and Access).¹⁶

The eleven literature review libraries varied in the way they developed a coding system for use in the analysis of their LibQUAL+® comment data. Five of the eleven reported basing their codes on the three LibQUAL+® dimensions (Affect of Service, Information Control, and Library as Place).¹⁷ Three of the eleven libraries also based their coding on the individual LibQUAL+® and/or local questions.¹⁸ Three of the libraries reported using a predetermined set of concepts or keywords,¹⁹ while nine reported using keywords and concepts developed from the content of the comments.²⁰ Nine of the eleven libraries reported coding the distinct topics found within each comment in lieu of using one code for the entire comment.²¹ Seven of the libraries also coded a comment "positive" or "negative" if it expressed such an experience with an aspect of the library.²² Note that the use of each of the elements discussed above was not exclusive. Each literature review library reported using a different combination in developing their coding system. Only one did not include any report of the elements it used to create its coding schema.²³

Only two of the eleven literature review libraries reported any detailed information about the steps they took to encourage or enforce coding consistency and reduce as much as possible coding subjectivity during their projects. Both reported that their coders worked using an understanding gained through prior discussion of how to apply the codes,²⁴ but only one had their coders work independently on randomly assigned sets of comments.²⁵ None of the literature review libraries reported documenting their coding procedures.

All eleven of the literature review libraries also reported using the results to communicate with other professionals in the field.²⁶ Few of the eleven libraries reported any further plans to use the results of their qualitative analysis. One library reported plans to incorporate some of their findings into their annual reports and other intra-university administrative reports.²⁷ Only three planned to include the findings in outreach communications to their university,²⁸ or to external groups (e.g., donors or potential donors).²⁹

The literature review libraries reported several benefits from analyzing their comment data. Two of the libraries gained a better understanding of “library users’ needs and priorities,”³⁰ one found a new source of ideas for new services,³¹ while four other libraries found a new source for improving existing services,³² and maximizing the impact of limited resources.³³ Three of the eleven libraries reported that they had developed a new tool for analyzing other data sets,³⁴ while two discovered that the findings from analyzing the LibQUAL+® comment data complimented and enhanced the findings from the quantitative data.³⁵

Only one of the literature review libraries indicated the nature of the biggest challenge they encountered during the project. It was devising a method for comment analysis that did not require learning a new software program.³⁶ None of the literature review libraries reported on what support from their institutions, vendors, or others they wished they had during the project. Only one mentioned any of the resources they found helpful, which was the survey research expertise available in their university’s Office of Institutional Research.³⁷

Final Thoughts

The results of the LibQUAL+® survey offer a wealth of data, and librarians want to know how best to use it. The authors greatly appreciate the input of the librarians who took the time to respond to the coding survey, and the work of ARL for their cooperation in sending the survey invitations. We hope that this exploratory study helps describe the current state of practice of qualitative analysis among LibQUAL+® libraries and provides a basis from which the emerging community of interest might grow.

—Copyright 2011 Karen Neurohr, Eric Ackermann, Daniel P. O’Mahony, and Lynda S. White

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Assessment = Improved Teaching and Learning: Using Rubrics to Measure Information Literacy Skills

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Abstract

Librarians and teaching faculty at the University of North Carolina at Greensboro (UNCG) conducted a three-semester information literacy assessment study in 2009-2010 with Communication Studies 300, a core course required of all Communication Studies (CST) majors. The assessment coordinators from the University Libraries and the CST Department collaborated to develop a rubric and applied it to score a worksheet that required students to state their research topic and find appropriate books and articles. Initial evidence gathered during the first indicated that students did not gain important information literacy skills. During the subsequent two semesters the pedagogy changed to include online tutorials in addition to the traditional library instruction lecture. As a result, students' performance improved dramatically.

Introduction

The University of North Carolina at Greensboro (UNCG) is a publicly-supported University with High Research Activity with an enrollment of 14,300 undergraduates and 3,225 graduate students. There are 1,064.50 FTE faculty and a student faculty ratio of 17:1. The University Libraries have a long history of commitment to information literacy and hosts active programs for first-year, upper undergraduate and graduate level students. In 2008-2009, librarians conducted 519 instruction sessions with 10,575 contact hours. An online tutorial has been in place since 2000 and in 2008 an information literacy game created that received national attention. During the past few years the Libraries took several steps to create a culture of assessment. In 2007, the Libraries established an assessment team to coordinate such efforts and ensure that useful quantitative data and qualitative information is available for accountability, strategic planning

and improvement of the Libraries' services and resources. The team also develops an annual action plan, forms guidelines and oversees projects. For information literacy, librarians have experimented with a variety of assessment methods such as pre and post-tests, one minute papers, clickers, worksheets and attending student presentations to gain data on how well our students acquire these important skills.

The Libraries have also been successful integrating information literacy into the curriculum and participating in the campus assessment culture. Librarians at UNCG have faculty status and participate actively in Faculty Senate curriculum committees. A librarian serves on the Undergraduate Curriculum Committee and when the General Education Council formed in 2007, a librarian was appointed to it and contributed to the revision of General Education. Information literacy is included in one of the four core learning goals approved by the UNCG Faculty Senate in 2008:

LG1. Foundational Skills:

Think critically, communicate effectively, and develop appropriate fundamental skills in quantitative and information literacies.

As part of General Education assessment efforts, the Council administered the James Madison iSkills test to 350 juniors and seniors in spring 2010 along with standardized measurements for other subject areas. Results were not disseminated by publication date for this article. Also, during the summer of 2010, two librarians participated in a two-week General Education assessment workshop that included an information literacy component. In 2010, a new Senate committee was formed, the Student Learning Enhancement

Committee focused on assessment; a librarian serves on it as well. In the effort to integrate information literacy further into the curriculum at UNCG, the Libraries formed a university-wide Information literacy Council during 2009-10. It is co-chaired by two librarians and includes faculty representatives from the College of Arts and Sciences, all the professional schools and key assessment staff.

Background

Academic librarians have experimented with and researched numerous methods to assess students' information literacy skills. One method widely used in education is rubrics, a descriptive scoring scheme. They usually applied to performance evaluations, a qualitative measure that requires students to conduct real-life applications of knowledge and skills and measure higher-order thinking skills as opposed to recalling specific pieces of information.¹ Although not yet used extensively by librarians there are studies that utilized rubrics to assess information literacy skills. One of the most rigorous conducted was at the North Carolina State University (NCSU) Library where Megan Oakleaf used a rubric to analyze over 800 student responses to an open-ended questionnaire about website authority. Twenty-five raters, including librarians from NCSU and other ARL libraries, English instructors and English students, scored the questionnaires.² At the University of Mississippi, Elizabeth Choinski, Amy Mark, and Missy Murphy employed a rubric to assess objectively outcomes for EDLS, a for-credit information literacy skills course. They scored student papers that discussed information structure, resources, and research methods.³ In 2006, Lorrie Knight published a study that used a rubric to measure five learning outcomes for first-year students enrolled in freshman seminars. A librarian and a trained student assistant analyzed two hundred and sixty bibliographies.⁴ At the University of Washington Vancouver, librarians helped assess

the University's General Education Program which included information literacy outcomes. Students submitted ePortfolios with two pieces of evidence for each learning goal.⁵

In general, librarians have found rubrics to be a valuable tool for assessing performance evaluations. They are particularly effective in providing useful evidence from assignments such as worksheets or annotated bibliographies. There are, however, some challenges. Developing a good rubric that successfully extracts the needed information takes time.⁶ It is also time-consuming to score the performance tool. Furthermore, unlike standardized or fixed-choice measures, performance evaluations are also not always generalizable to other settings and it may be difficult to benchmark results with other institutions.⁷

Before designing any assessment instrument it is essential first to establish specific learning outcomes. Crafting a good outcome statement provides an important initial step in planning instruction and learning. As stated by Mark Battersby in "So What's a Learning Outcome Anyway?" the outcome approach focuses on integration and application of knowledge and what the students should be able to do at the end of a course or program. Battersby also emphasized that the method of assessing an outcome is crucial to its educational value. He recommended "authentic assessment" which stresses simulating situations where students make use of the knowledge, skills, and values taught in the course.⁸

Debra Gilchrist and Anne Zald applied this approach to information literacy in their chapter, "Instruction & Program Design through Assessment" in *The Information Literacy Handbook* and created a useful template for closing the loop between outcomes and assessment:

1. Outcome	What do you want the student to be able to do?
2. Information Literacy Curriculum	What does the student need to know in order to do this well?
3. Pedagogy	What type of instruction will best enable the learning?
4. Assessment	How will the student demonstrate the learning?
5. Criteria for Evaluation	How will I know the student has done this well? ⁹

They advocate the “assessment as learning” process so that such an evaluation goes beyond accountability and impacts and enhances our pedagogical decisions.¹⁰

Assessment Study

The assessment coordinators from the University Libraries and the Communication Studies (CST) Department at UNCG collaborated to conduct a study of CST students’ information literacy skills.¹¹ The librarian is also the Libraries’ liaison to CST. They applied the methodologies described above of developing student learning outcomes and a supporting pedagogy along with scoring a performance evaluation with a rubric. The study was conducted over three semesters with several sections of CST 300, a Communication Theory course. The Libraries had worked with this course for over 15 years; CST faculty, however, were still frustrated with the poor quality of sources selected by students and their lack of citation skills. The project provided the chance to gain more solid evidence of students’ skills and an ideal situation to apply skills acquired at ACRL’s Information Literacy Assessment Immersion. It was also an opportunity to provide a model of assessment that could be adopted by other librarians.

Communication Theory 300 is an upper-level core course in CST. Students are required to write a 8-10 page paper that places a communication theory in a context or application and uses primary research articles from Communication Studies and allied journals. Because it is required of all CST majors it is an ideal course to target for information literacy. The assignment provides the opportunity for students to learn the concepts of developing a search strategy with Boolean operators and using appropriate databases and other tools to find research material. The long-established pedagogy for the information literacy section of the course required the students to attend one library instruction session and complete a worksheet evaluated by both the librarian and the faculty member. An online research guide is prepared and pushed through Blackboard and available on the Libraries’ website.¹² The worksheet is a “real-life” performance evaluation that asks students to define their theory and application and then choose books and articles related to their paper topic. The CST Department requires the American

Psychological Association (APA) format for their citations. When evaluating the worksheets the librarian looked to see if the articles were from appropriate journals, were primary sources and if they included both the theory and the context. Suggestions and comments were noted and then sent to the professor for further comments and grading before being returned to the students. The worksheet is part of a sequence of assignments that later includes an annotated bibliography and early drafts leading up to the final paper.

The assessment project began with a pilot in spring 2009 with three sections of the course. To begin the librarian and professor met to discuss information literacy goals for the course and established three specific learning outcomes:

1. Students construct a search strategy using appropriate vocabulary and Boolean operators in order to search for information effectively.
2. Students distinguish primary source journal articles in order to gather appropriate resources for a research paper.
3. Students apply an established citation style in order to document the sources they use appropriately.

In addition, the professor added a more concrete information literacy outcome to the syllabus for the course:

- Apply a working knowledge of information literacy as a tool for scholarship in communication studies including APA style for professional writing, library search techniques and use of primary sources (journal articles and other research publications)

Following the established pattern, the students had one session with the librarian who covered:

- Using subject encyclopedias and texts to choose relevant vocabulary
 - Selecting and using databases, particularly the Communication and Mass Media Complete (CMMC)
- Choosing terms and applying Boolean operators
 - Identifying scholarly and primary source articles
 - Identifying Communication Studies and allied journals

A handout for APA was distributed but little time was spent on citation styles during the class session. The session was very hands-on and student given time to search for material on their topics and begin completing the worksheet. The worksheet was due one week later.

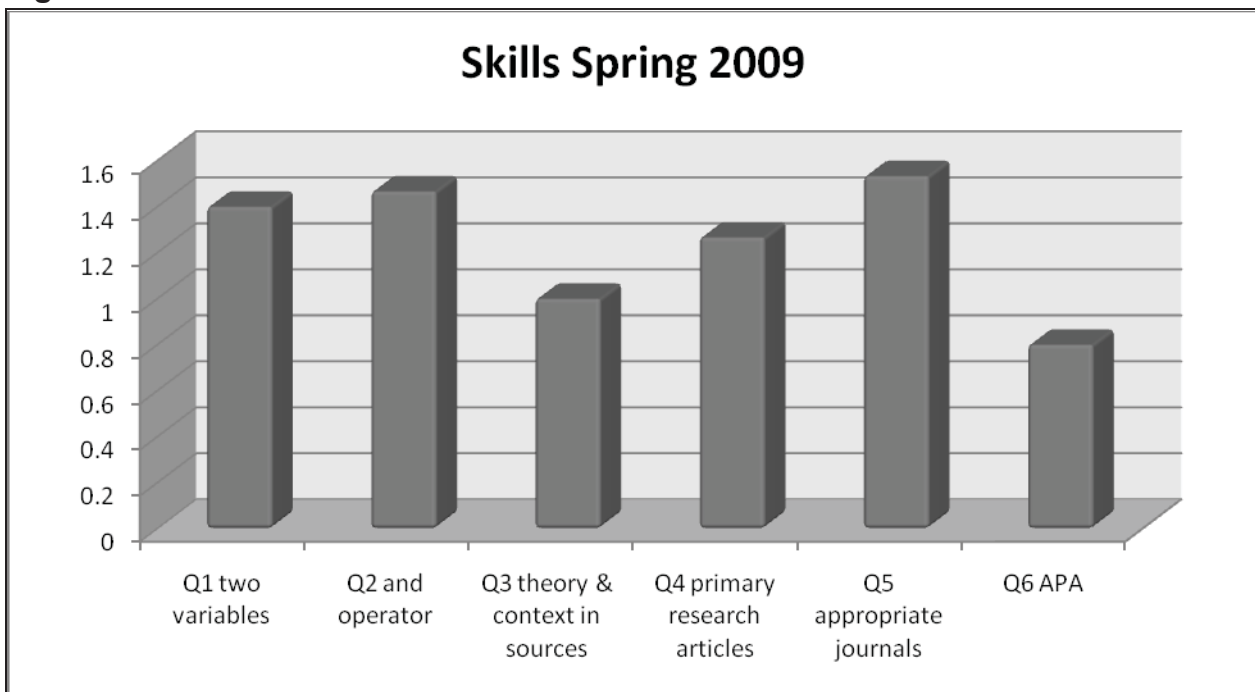
The library worksheet (Appendix I) was revised to reflect the newly-established information literacy outcomes more closely. The librarian

developed a rubric with criteria to score the worksheet that had three levels: Needs Improvement, Acceptable, Excellent (0-2). The librarian provided the usual comments for the students and also scored the worksheets with the rubric. Scores for each skill were entered into an Excel spreadsheet. Appropriate skills were merged to compute an average for each learning outcome. The students did not perform well:

Table 1: Spring 2009 Results

Outcomes	Score N=34
Outcome 1 (search strategy)	1.10
Outcome 2 (appropriate sources)	1.36
Outcome 3 (citation style)	.72

Figure 1



The results provided clear evidence that students did not gain the knowledge identified in the learning outcomes and that changes in the pedagogy were needed for them to be successful. After discussing the results with the CST faculty member several recommendations we made for fall 2009 semester courses:

- Require students to take three specific chapters of the Libraries' online Research Tutorial before the instruction section with the librarian, ("Computer Searching," "Finding Articles," Citing Your Sources") to provide more background in developing a search strategy, Boolean operators, choosing appropriate articles and the APA citation style.¹³ Students had been encouraged to take

the tutorial in the past but it was not a requirement.

- Delay the instruction session so that students have more time to develop their topics and absorb material from the tutorial.
- Revise the rubric to include four levels: Needs Improvement, Acceptable, Good and Excellent with a scoring of 0-3 to allow for a broader range of performance.
- Score the annotated bibliography with the rubric in addition to the worksheet to evaluate especially the use of primary sources and improvement in APA style.
- Compare scores to determine improvement from the previous semester.

In addition to the above changes, the Communication Studies Department Assessment Report for 2008 noted: "Students are clearly unskilled in professional style as a form of documentation. They are also weak in the basic ability to search using Boolean techniques and to discover primary sources."¹⁴ The report included a specific recommendation:

Review undergraduate research skills in all of

our core courses in the major (CST 105, 200, 207, 210, 300). As a result of the poor showing in the information literacy assessment the faculty began a process of reviewing using the table of skills provided by the Office of Undergraduate Research. A more planned program of teaching research skills across the core will support higher achievement of learning outcome by the senior year.¹⁵

The study continued in the fall 2009 with two sections of the course. At this point we completed the IRB process so that results could be published. Only students who signed the IRB form were included in the study. The recommendations discussed above were followed and, as a result, the students were much better prepared when they came to the instruction session with the librarian. The librarian re-scored the worksheets from spring 2008 with the new rubric (Appendix II) so that all scores could be compared. The students' performance improved dramatically from the previous semester with an increase of 78% for outcome 1, 30% for outcome 2, and 27% for outcome 3.

Table 2: Outcomes Spring and Fall 2009

Outcome	Spring 2009 (N=34) (re-scored)	Fall 2009 N=60 score
Outcome 1 (search strategy)	1.33	2.38
Outcome 2 (appropriate sources)	1.90	2.47
Outcome 3 (citation style)	1.33	1.69

The librarian also used the rubric to score the annotated bibliographies, an assignment turned in several weeks after the worksheet, to assess improvement on identifying primary sources and citation style between the worksheet and it. Students showed an improvement of 10.3% in primary sources and 51.5% in citation style.

One concept that is difficult for students to grasp is primary sources in the social sciences. It is even more of a challenge in Communication Studies because that discipline does not always produce empirical studies. Primary research in that field may also include critical analysis, rhetorical

studies or extension of a theory. To help students apply these concepts better, the Libraries developed a brief five minute flash tutorial, "Finding Primary Sources in Communication Studies," again in consultation with the CST teaching faculty.¹⁶ In spring 2010, students were required to take the new tutorial in addition to the chapters from the general one assigned the previous semester. Two sections of the course again participated in the study (n=24). Scores improved again albeit not as dramatically as between the first two semesters of the study. Scores did increase 9.5% for the primary sources skill between fall 2009 and spring 2010 after

adding the new tutorial to the requirements. The CST Department assessment report for 2009 noted the improvement and commitment to continued collaboration with the Libraries:

Continue collaboration with Jackson Library to assess information literacy. This past year we participated in the second year of a pilot

project with Jackson Library to assess information literacy skills in our CST 300 courses. The results for the second year demonstrated improvement. We are committed to increasing the information literacy competency of our students as a core skill set for CST majors.¹⁷

Figure 2: Outcomes Spring 2009, Fall 2009, Spring 2010

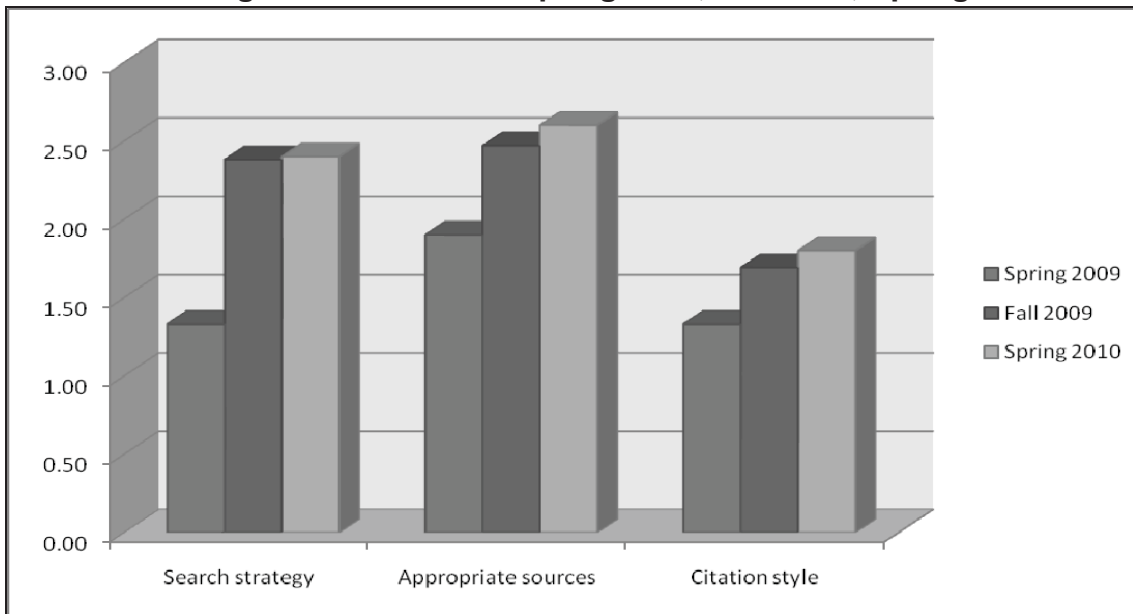
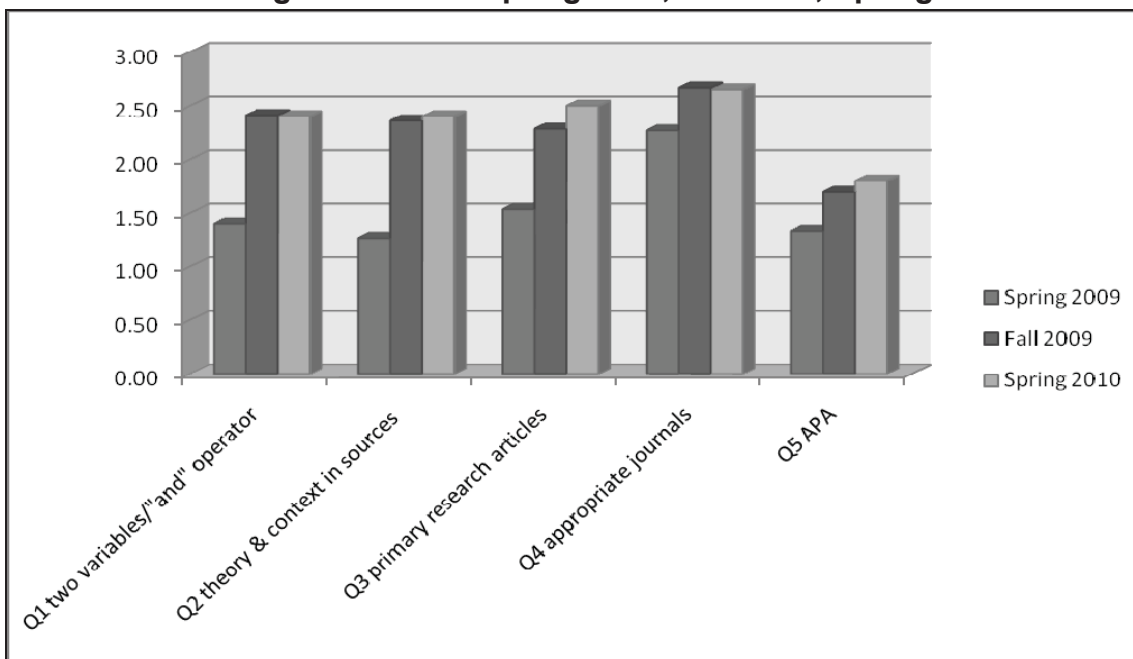


Figure 3: Skills Spring 2009, Fall 2009, Spring 2010



Conclusions and future plans

This study provided solid data in the initial pilot in the spring of 2009 that CST students were not gaining the information literacy skills that they needed to succeed in their major. Although the Libraries had long collaborated with the department and used a performance measure that fit into the sequence of assignments for the course, true assessment had not taken place. The initial evidence indicated that the “one-shot lecture” and worksheet were not providing adequate instruction or content for the students. Adding the general tutorial and delaying the timing of the instruction session resulted in greatly improved scores in the subsequent semesters, especially for outcomes one and two. Interestingly, the author had tried to implement these suggestions for some time but needed this evidence so that the CST faculty realized that they were needed! Adding the primary source tutorial during the 3rd semester helped to improve their performance with that outcome. Although performance improved for APA style over the course of the project, it was still the area with the lowest scores. It was encouraging, however, that scores did improve for that outcome when the annotated bibliographies were scored in fall 2009. Hopefully, feedback on the worksheets made it evident to the students that they had problems with citation styles and they corrected them with their next assignment.

The study offered an excellent opportunity to build upon a successful collaborative relationship between the Libraries and the Communication Studies Department. This authentic assessment of an assignment that was part of the sequence of the course provided evidence that students were not acquiring the skills that both the teaching faculty and librarians wanted them to learn. The Libraries and the CST Department partnered more closely to develop focused outcomes and measure them more rigorously. As a result we worked together to revise the pedagogy which improved students’ performance and integrated information literacy further into the CST curriculum. Conversations with CST will continue to explore implementing information literacy at the 200- level so that they are better prepared for CST 300.

The project was also a valuable learning experience. As others who have used rubrics have noted, it was time-consuming to devise the rubric

to ensure that it evaluated the worksheet. And it was discovered after the initial pilot that the rubric needed four instead of three levels to provide a better range of student performance. It took approximately 7-10 minutes to score each worksheet and enter the data. For some worksheets it was necessary to search for the articles to see if they were primary sources and if they included both the theory and the context. Fortunately, finding the articles in the online environment is easily accomplished! The important evidence and information that was collected, though, far outweighed these challenges.

Applying a rubric to a performance evaluation offered a good model for other librarians at UNCG. The Libraries established student learning outcomes for information literacy based on the ACRL Standards and are embarking on a five-year plan to assess these outcomes and our instruction program. This method will be applied in a variety of classes along with other assessment techniques. Further refinements are needed in the future. For example, the rubric was not shared with students and should be so that they are more aware of the expectations. The scoring was only done by one librarian. For a more rigorous approach, additional raters should be added so that the data is more reliable and valid. This assessment experience has been an excellent first step, however, that the University Libraries looks forward to using more broadly in the future

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10. Ibid., 167.
11. The author thanks Dr. Elizabeth J. Natalle, Assessment Coordinator for the Department of Communication Studies, UNCG, for her collaboration on this project.
12. University of North Carolina at Greensboro, Library Guides, <http://uncg.libguides.com/cst300>.
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Appendix I
Worksheet for CST 300

Name: _____

CST 300
Library Worksheet

This worksheet is the first step in planning and researching your term project for CST 300. Your project involves selecting a communication theory from our course and then taking steps to see if you can apply and evaluate it in the real world. If you are successful making the preliminary decisions required on this worksheet, you will have accomplished some goals for the project that will make your research and writing go well over the next few weeks.

For a successful worksheet, you will need your course textbook, the Library Catalog, the CST 300 Subject Guide, and an APA Handout or Manual to access the necessary information. This assignment is worth 10 points and is due at the beginning of the next class period.

All worksheets must be word-processed!

<p>1.A. List the theory you have selected that will be the focus of the paper (e.g. relational dialectics)</p>	<p>B. What communication context are you considering the application of the theory? (e.g. friendship)</p>
-----------------------------------------------------------------------------------------------------------------------	------------------------------------------------------------------------------------------------------------------

Book or book chapter

2. . Use the UNCG Libraries' online catalog and do a search by SUBJECT or KEYWORD or AUTHOR to find a book or a chapter on your theory by the author who created the theory or by a researcher who is directly working with the theory. List the book here:

Author (of the book or chapter) _____

Editor of Book (if applicable) _____

Title of chapter (if applicable) : _____

Title of book _____

Publisher: _____

Copyright Date: _____ Call Number: _____

Is the book available? _____ If so, on which floor? _____

What key terms or author names did you use to locate the book?

Journal articles

3. Using the Communication and Mass Media Complete (CMMC) database (located on the CST 300 subject guide: <http://library.uncg.edu/depts/ref/bibs/cst/cst300.asp>), list a **primary source journal article** that deals directly with your theory **and** context. **Remember to check the box “peer reviewed articles.”**

A. Put the citation below in correct APA style.

B. Write the terms you used in CMMC in the boxes below:

and
and

4. Find two more articles* from either CMMC or another appropriate database (e.g., PsychInfo, SocIndex, etc., located on the CST 300 subject guide) that support your theory and context. Put citations in correct APA format.

(*Do not list dissertations, conference papers, or book reviews. We are interested here in **primary sources that have been peer-reviewed**—that is, research reports of studies done on your topic area.) Review the tutorial on primary sources if needed.
<http://library.uncg.edu/research/tutorials/ComStudiesPrimarySources/ComStudiesPrimarySources.html>

A. Database Used: _____

Citation:

B. Database Used: _____

Citation:

5. What questions or concerns, if any, do you have about your research at this time?

Appendix II
Rubric for CST 300

CST 300 Rubric

Outcome #1

Students construct a search strategy using appropriate vocabulary in order to search for information effectively.

Criteria	Excellent 3	Good 2	Acceptable 1	Needs improvement 0
Uses two variables in search strategy with “and” operator	Uses two topic-related variables with “and” operator appropriately	Uses two variables but 1 term doesn’t match topic or uses “and” operator inappropriately	Uses one topic-related variable and doesn’t use “and” appropriately	Missing variables and terms don’t match topic. Doesn’t use “and” operator

Outcome #2

Students distinguish primary source research material in order to gather appropriate resources for a research paper.

Criteria	Excellent 3	Good 2	Acceptable 1	Needs improvement 0
Student selects primary source research material	All items are primary source research	Two items are primary sources material	1 item is a primary source	No items are primary research
Appropriate journals or books	All items from Communication/Allied journals or scholarly books	2 items from Communication/Allied journals or scholarly books	1 item from Communication/Allied journals or scholarly books	No items from Communication/Allied journals or scholarly books
Includes theory and context in material	Theory and context in all items	Theory and context in 2 items	Theory and context in 1 item	Does not include theory in context in any items.

Outcome #3

Students apply an established citation style in order to document the sources they use appropriately.

Criteria – APA format	Excellent	Good	Acceptable	Needs Improvement
Student includes all components of a citation in correct order, format and punctuation in accordance with the APA style.	Citations include all components with correct order, format and punctuation	Citations are missing one of the following: 1 item out of order 1 punctuation item	Citations are missing one of the following: 1 component 1 item out of order 1 punctuation item	Citations are missing two of the following: 1 component 1 item out of order 1 punctuation item

Using a Rubric to Assess Freshman English Library Instruction

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Abstract

Loyola Marymount University's (LMU) Reference Department redesigned their freshman English library instruction so that all freshmen get a consistent and measurable experience using the library. In order to move to a more outcomes-based approach that measures what students can do with the information literacy skills we teach them, the Department designed an interactive five-module introduction to the research process that can be evaluated. All teaching materials were inserted onto a "LibGuide" content management system. Students sequentially complete an "English 110 Library Research Worksheet" as they work through the five-module research process and receive library instruction.

The Department also designed a rubric that analyzes learning outcomes from parts of the ACRL Information Literacy Competency Standards for Higher Education¹ to apply to collected student worksheets. The rubric ranks each student on a 1-3 point scale of beginning, developing, or proficient for all five modules. Overall areas of weakness were communicated to the Director of the Freshman English Program, and the worksheet and teaching materials were revised for the lower-scoring modules. The redesigned curriculum and rubric led to standardization in library instruction across all freshman English classes and new benchmarks for the next academic year in student worksheet scores.

Introduction and Background

Loyola Marymount University (LMU) is a private, Jesuit and Marymount university in Los Angeles, California. It has more than 5,600 undergraduate and 1,800 graduate students as well as 498 full-time faculty. Since the late 1980s, the LMU Freshman English Program (consisting of English 110: Introduction to College Writing classes, required of all freshmen) has been the primary avenue through which students are introduced to

the library. The Director of the Freshman English Program requires all English 110 instructors to bring their classes to the library once during the fall semester. These one-shot instruction sessions last about 50 (or 75) minutes and are taught by members of the Reference Department. This is a valuable opportunity for librarians to connect with each student and introduce them to the library and its services early in their freshman year.

Although the library has developed a good relationship with the Freshman English Program over the years, most students attending library instruction either do not have a research project at all or have an assignment different from the other sections. As a result, students tended to receive varied instruction depending on the librarian or the assignment, and the means of assessing the effectiveness of the instruction was limited to survey evaluation forms from students and instructors. The eternal questions we asked ourselves every year were "What should be covered in a 50 minute one-shot library instruction session?" and "How should we assess our English 110 library instruction curriculum?"

The LMU Reference Department experienced many changes in 2009. The summer of 2009 brought a move into the high-profile, \$63 million William H. Hannon Library building as well as a new Head of Reference. Also, the Department had been experiencing a dramatic increase in specialized library instruction for upper division and graduate courses that now accounted for 75% of its classes, and this trend was likely to continue. This left less time for preparation of English 110 library instruction. The Instruction Coordinator decided to revise the old English 110 library instruction curriculum to create a standardized introduction to the research process that could be applied to any topic. Students could choose their own topic if they had none to start with, which

got around the usual “no assignment” barrier, or they could apply the topic of their class research assignment. Also, the instruction would be designed so it could be completed either as a stand-alone tutorial or with librarian mediation.

In addition, the Instruction Coordinator and the Head of Reference agreed to develop a scoring rubric that would systematically equate the new library learning outcomes to matching ACRL Information Literacy Competency Standards² and allow students to be evaluated on how well they achieved the representative skills. Although the library had done a test pilot on 54 freshmen to measure information and communication technology literacy in 2008 using the standardized iSkills test from ETS,³ it was impossible to tie those results into the one-shot library instruction done for the Freshman English Program. The newly redesigned curriculum and rubric would give freshmen a consistent and measurable experience using the library that could be analyzed and revised.

Learning Outcomes and Activities

In the summer of 2009, the Instruction Coordinator read and applied Jerilyn Veldof’s “One-Shot” instructional design methodology⁴ to the English 110 curriculum to prioritize content and develop and select teaching materials. Progress had already been made for Step 3, “brainstorm content,” during a reference retreat in 2007 where the librarians ranked their top ten from a list of almost thirty concepts that could be covered in a one-shot library instruction session. The Coordinator used the final top ten list as a starting point to filter content, along with input from a lunch with the Director of the Freshman English Program and the Head of Reference. Content was then grouped into categories the students “need to know” versus what would be “nice to know,” and everything that was not essential was eliminated. Working from the final list, the coordinator did a task analysis listing all the steps needed to complete each task along with key teaching points and learning objectives.

The final list of student learning outcomes were as follows:

1. Given a broad research topic, use the 4W questions (who, what, where, when) to write a research question.

2. Given a research topic, compile a list of search terms or keywords.
3. Given background information about Google and the Library, list two differences between the two related to content, organization, or quality.
4. Given a research topic and access to the library’s catalog, find relevant books on your topic.
5. Given a research topic and access to a general article index database (ProQuest Research Library), find relevant articles on your topic.

The learning outcomes were reflected on a new English 110 worksheet (see Appendix C), an interactive LibGuide content management system containing all teaching materials,⁵ and a new teaching script. The LibGuide content management system was selected for inclusion into PRIMO, a peer-reviewed collection of instructional materials online.

Piloting the Learning Activities

After piloting the new teaching materials with the first four English 110 classes of the Fall, several changes were made. Clearer directions were added and the worksheet became more self-guided. We tested the worksheet on a student worker to make sure she could complete the worksheet without library instruction. The main concern was that it was obvious there was still too much information to cover in a 50-minute instruction session. Module 1 (choosing a topic) and Module 2 (selecting keywords) needed to be done as a homework assignment before the library visit to give students time to decide on a research question. Once the worksheet changes were final, we made copies of Modules 1 & 2 and sent them via campus mail to each English 110 instructor. A copy of the complete worksheet was also available online as a word document file on the LibGuide.

Ideally, students now came to the library with a topic, having completed Modules 1 and 2 as homework. The LibGuide leads students to several “idea generator” websites and keyword building tools to help them explore topics. In the revised lesson plan, the librarian starts off the instruction session with Module 3 (why use the Library?). This includes a mini-lecture about the differences between Google/Wikipedia and library resources and services. Then the librarian

quickly reviews Modules 1 & 2 and moves on to Module 4 (finding books) and Module 5 (finding articles) using the same keywords from the demo research question to find books and articles. Before leaving the library, students compile a short bibliography of two books and two articles relevant to their topic on the worksheet. The librarian collects all worksheets, photocopies them, and gives them to the Library Instruction Coordinator. The originals are sent back to the English 110 instructor via campus mail.

Evaluation: Developing A Rubric

The authors developed a scoring rubric to assess how well students were achieving the desired learning outcomes. A rubric judges the quality of student work and aligns it with a rating scale. Rubrics are “useful assessment tools for coding student responses into pre-set categories and translating the textual data of student answers into quantitative terms.”⁶ We chose the rubric methodology because, unlike a survey, it is a valid measure of what students have learned from instruction rather than how they felt about the instruction. Also, unlike standardized testing, a rubric provides “authentic assessment” because it “measures how students apply their knowledge to real-time tasks”⁷ rather than measuring an isolated piece of factual knowledge. It would also include the opportunity to discuss agreed-upon values of student learning among all stakeholders,⁸ and provide documentation for ongoing analysis.

We developed an analytic rubric rather than a holistic one. An analytic rubric divides a performance into “separate facets and each facet is evaluated using a separate scale,”⁹ but each facet can also be summed to form a total score. The criterion for a rubric is clearly aligned with both the task requirements and the stated goals and objectives, and these should be included and described on the final chart. Our rubric ultimately breaks down each of the five learning modules into subsections with stated student learning outcomes and corresponding ACRL Standards, then lists overall evaluation criteria for each subsection as well as specific evaluation criteria for scoring each task (see Appendix A). The rubric ranks each student on a 1-3 point scale of beginning, developing, or proficient for all tasks within all five modules.

We weighted three tasks as more valuable and important than the others: defining a research question, relevancy of the found book, and relevancy of the found article. The importance of these tasks is represented in the rubric by doubling them when calculating the total score for that module. We also doubled the value of correctly identifying the “subject heading” and “floor location” of a book citation, as well as correctly identifying the publication name, volume/issue number, and page numbers of an article citation because we feel these are developmentally more sophisticated tasks. In order to develop a rubric that legitimately measured our learning outcomes, the authors looked at examples of other rubrics published in the literature.¹⁰

Calibration of the Rubric

The Department undertook a multi-step process to try to calibrate the rubric and achieve agreement among eight graders. We used the methodology that is outlined in Megan Oakleaf’s article on achieving consensus estimates of interrater reliability for rubrics through percent-agreement.¹¹ As explained in the article, interrater reliability is the consistency of scores assigned by multiple raters, and provides an estimate of the extent to which two or more judges are applying their ratings in a way that is reliable. We started with several rounds of group grading practice with all 8 graders grading the same worksheets, followed by rigorous discussion leading to slight revisions to the rubric. Eventually, we tested a sample of 20 worksheets by assigning two independent graders to score each worksheet. We tested the level of percent-agreement across judges for each worksheet, calculated by adding the number of times the judges gave the same score and dividing it by the total number of scores for that worksheet. We also looked at the level of agreement for each subsection across all 20 worksheets to check for problem areas. An acceptable percent-agreement of at least 92% was reached for each worksheet scored (see Appendix B). An acknowledged limitation of this method is that it fails to correct for chance: because the rubric only has three possible scores, some agreement might have been reached by chance and not because the judges truly scored the same way.

Problem Areas and Revisions

The calibration process identified several problem areas in the rubric that were addressed. In Module 1, the criteria for answering “who, what, where, why” questions about the topic was ill-defined. Graders tended to grade lower if the four questions were poorly integrated into the research question, but the score was really intended to measure completion: were answers to the questions written or not written in the designated space? To make this clearer, we added the words “in the box” to the criteria and also added “completion” to the evaluation criteria. In Module 2.b., the criterion was to compile synonyms related to the topic. Since some acceptable terms could be related terms rather than synonyms but the criterion only mentioned synonyms, we changed the wording to “keywords” to be more inclusive. Also we added the words “a total of” to “lists (a total of x) relevant keywords” to make it clearer that any relevant keywords related to the topic would count, and there didn’t need to be an even distribution of keywords for each key concept. Because we had disagreements over what constituted a “relevant keyword,” we added to the criteria “If in doubt, type the keywords into the library catalog or article index to test for relevancy.” Determining relevancy was an ongoing challenge with the rubric, so we also added similar caveats to Modules 4 and 5. For Module 4.d. (finding relevant books), we added “If in doubt, look at the subject field, title field, call number field, or table of contents to make the determination.” For Module 5.d. (finding relevant articles), we added “If in doubt, look at the abstract or full text of the article.”

Module 3 (library resources versus Internet) caused problems because the original rubric read “lists differences between Google and the library.” A few graders took this literally: even if the student listed a characteristic of Google or the library that was one of our teaching points, they gave no credit because the student didn’t contrast it with the other information retrieval system. We modified the rubric to read “lists differences between or characteristics of Google, the Internet, or the library.” For Modules 4.b., 4.c., 5.b., and 5.c., which require adding up totals of citation components for books and articles, we listed out all fields with the point totals in parentheses to help judges add the totals more accurately. For Module 4.c. (book subject heading), there was a

question over whether the “academic subject” should also count as correct or only the LCSH. We added “or academic subject” to also give credit for the former. Another issue that came up was how do we grade a citation that is so poorly recorded we cannot locate it again in the database? Yet another issue was how to score a blank answer. We decided a blank answer would be graded the same as if the answer was incorrect and ranked at a level 1 (equivalent to “beginning” on the developmental scale), since we had no evidence the person could accomplish the outcome being measured.

Design/Methodology

The final, calibrated rubric was applied to a sample of “English 110” library research worksheets from fall 2009. A total of 755 worksheets were collected, copied, and numbered. A random number table was then used to sample 100 worksheets from the 755 total. Graders were assigned worksheets to single-grade and independently assign a score of 1, 2, or 3 for each subsection, recording their numbers into a Google form. The Google form data was transferred to an Excel file where formulas were inserted to reflect the fact that the rubric weights certain sections more than others. Percentage totals were calculated for all modules and subsections.

Findings

Evaluation of the 100 randomly sampled worksheets revealed that on average, students scored at least a “developing” ranking (equivalent to a “2”) on all modules, and on average were somewhere between developing and proficient. The lowest scoring module was Module 3, listing differences between library resources and the Internet or Google (see Table 1). Students also need more help with Module 1.b. (narrowing down a broad research topic); Module 2.a. (picking out its key components); and Module 2.b. (generating keywords on those components). They scored high on Module 4.a. (finding books) and Module 5.a. (finding articles), but needed more help with Module 4.b. and Module 4.c. (matching book citation elements into the correct fields). Also, they needed more help with Module 5.d. (finding articles that were relevant to their research topic). See Table 2.

Table 1

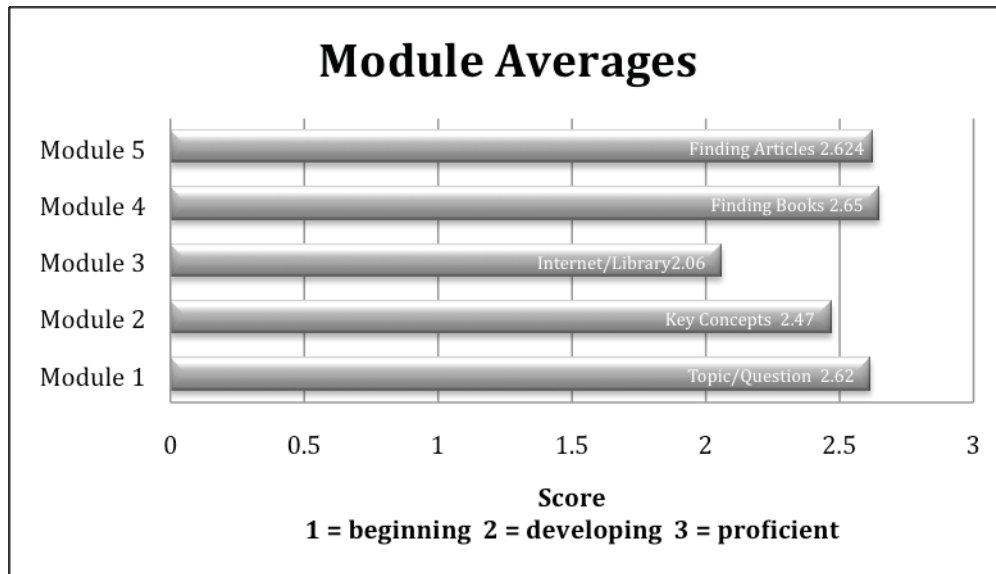
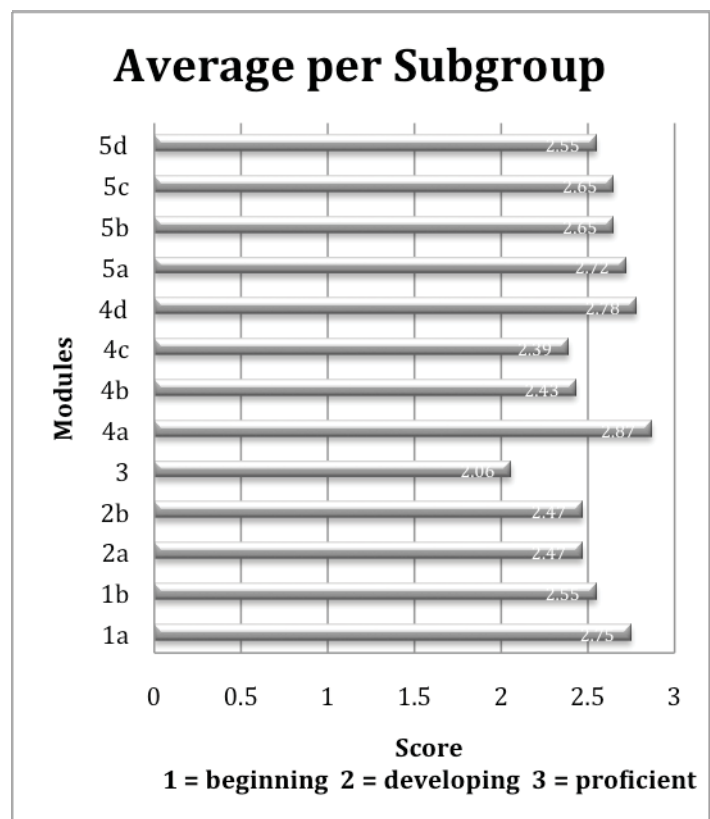


Table 2

Modules Key

- 5.d. Relevancy/1 source: Links article to research topic
- 5.c. Accuracy/1 source: Lists citation elements in correct fields
- 5.b. Completion/1 source: Lists citation components
- 5.a. Quantity: Locates sources (articles)
- 4.d. Relevancy/1book: Links book to research topic
- 4.c. Accuracy/1 book: Lists citation elements in correct fields
- 4.b. Completion/1 book: Lists citation components
- 4.a. Quantity): Locates books
- 3 Lists differences or characteristics
- 2.b. Compiles keywords
- 2.a. Lists key concepts
- 1.b. Defines research question
- 1.a. Narrows topic (completion)



Discussion

Module 3 (Internet versus library) scored the lowest at 2.06, partly because many classes ran out of time and couldn't complete the worksheet portion for this module. Although this was the first module covered by the librarian, the teaching script did not allocate time to pause and allow students to fill in that part of the worksheet until the end of class. This was the least standardized module: it had eight possible teaching points, and some librarians taught the module differently and focused on different criteria. Because the English 110 Instructors liked this module, we agreed to keep it for next year, but with shortened and standardized teaching points. The Instruction Coordinator surveyed all the Reference librarians and asked them to rank their top five teaching points for Module 3; the top 5 are the ones we will teach in fall 2010.

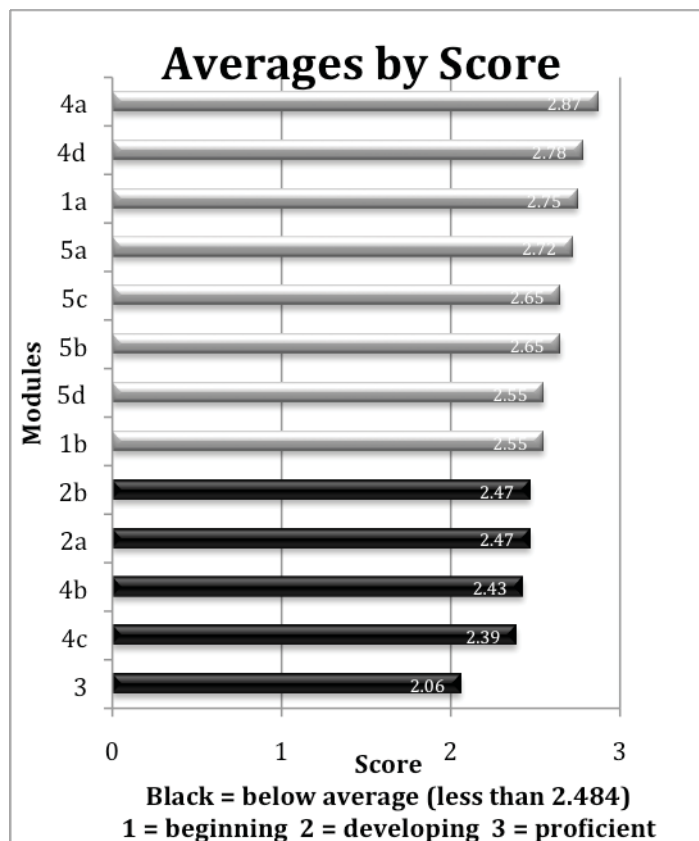
When the Instruction Coordinator and the Head of Reference presented the worksheet results to the Director of the Freshman English Program, he pointed out that the *Brief McGraw-Hill Handbook*, a required textbook for English 110 classes, had specific terminology for talking about information quality that was similar to our teaching points in Module 3. We borrowed the text and copied the exact wording of its criteria for evaluating sources onto the LibGuide so students might recognize it and make the connection. The Director also suggested we make Module 3 more "spatial" by posing the questions where does information live; how deep is the information; and where does it fit into the overall conversation about the topic? We added a visual image to the LibGuide for Module 3 attempting to depict these ideas. In addition, to improve Module 1 (finding a research question), we added additional language from required class readings suggested by the Director. We referenced the information-gathering technique used by journalists to help narrow down a topic, as well as a reminder to think about cause and effect and value when forming a research question. For the revised English 110 teaching material, see <http://libguides.lmu.edu/ENGL110>.

Module 2 (key concepts) was the second weakest with a score of 2.47 (see Table 3). Students had trouble generating keywords and picking out relevant concepts. We decided to add more examples on the LibGuide of how to narrow down a research question as well as additional tools to practice finding keywords. We also changed the example on the worksheet, which had previously been "what have schools done to prevent eating disorders in teen girls," to something more neutral about violence and video games. In order to better reflect the cyclical nature of the research process, the new worksheet also allows for the research question and keywords to evolve throughout the exercise: students can go back and add more keywords as they find books and articles to Module 2 and change their research question in Module 1.

Module 4 (finding books) and Module 5 (finding articles) had the highest overall scores of 2.65 and 2.642. Students could easily locate relevant books (Modules 4.a., 4.d.) but had problems finding relevant articles (Module 5.d.). Students also found it extremely difficult to complete the book citation elements accurately (Modules 4.b., 4.c.), especially the subject heading and floor location. Upon closer inspection we realized that there was a mismatch between the worksheet and the student learning outcome "Lists citation elements in correct fields." Not all the elements necessary for MLA style were included on the worksheet. For example: location-city, publisher, year, and medium were not included. We revised the worksheet to add all necessary MLA elements and give each element its own separate box. Also, we divided the elements into two groups: those you need to find a book, and those you need to cite a book. Finally, the worksheet for Modules 4 and 5 has also been redesigned so students only need to find one book and one article. This will make assessment more consistent since librarians will be grading only one book or article rather than having to choose the best one to evaluate, and it will give students more time to focus on relevancy rather than quantity.

Table 3

Modules Key	
4.a. Quantity):	Locates books
4.d. Relevancy/1book:	Links book to research topic
1.a. Narrows topic (completion)	
5.a. Quantity:	Locates sources (articles)
5.c. Accuracy/1 source:	Lists citation elements in correct fields
5.b. Completion/1 source:	Lists citation components
5.d. Relevancy/1 source:	Links article to research topic
1.b. Defines research question	
2.b. Compiles keywords	
2.a. Lists key concepts	
4.b. Completion/1 book:	Lists citation components
4.c. Accuracy/1 book:	Lists citation elements in correct fields
3	Lists differences or characteristics



Conclusion

Designing the worksheet and rubric led to increased standardization in library instruction across all freshman English classes, since all classes were given the same teaching material and taught the same way. Because the modules and worksheet allow the student to choose a research question, they can be applied to any class or subject area. The online content management system housing the teaching material was designed to work as either a standalone tutorial or with instructor mediation. Furthermore, individual modules are adaptable and could be inserted into any lesson plan intending to measure similar learning objectives. The data from our analysis of student learning led to greater communication of our instruction goals to students, ourselves, the Director of the Freshman English Program, and its instructors. The Reference librarians, when surveyed, found the rubric calibration process frustrating, but an overwhelming majority still felt the teaching expectations for English 110 were clearer as a result of the rubric and that the rubric made it

easier to see the connection between our learning outcomes and the ACRL standards. Our analysis led to a new benchmark for defining success in fall 2010: the target score for all modules is at least a 2.5 (a strong “Developing” score). Future aspirations might include more buy-in from the English 110 instructors to make the worksheet a graded assignment, and development of a student version of the rubric.

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Notes

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2. Ibid.
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6. Megan Oakleaf, "The Information Literacy Instruction Assessment Cycle: A Guide for Increasing Student Learning and Improving Librarian Instructional Skills," *Journal of Documentation* 65, 4 (2009): 548.
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11. Oakleaf, "Using Rubrics," 970.

Appendix A

RUBRIC: ENGL 110

			Criteria	Criteria	Criteria	
	Student Learning Outcomes	Evaluation Criteria	Beginning = 1	Developing = 2	Proficient = 3	Weight
Module 1						
1.a.	Defines or modifies information need to achieve manageable focus through the dissection of a broad topic [ACRL Standard 1, indicator 1.d]	Narrows topic (completion)	Answers zero or 1 of the "when, where, who, what" questions about the topic in the box	Answers 2 or 3 of the "when, where, who, what" questions about the topic in the box	Answers all 4 of the "when, where, who, what" questions about the topic in the box	(x1)
1.b.	Defines or modifies information need to achieve manageable focus through the construction of a specific research question	Defines research question	Constructs no question or a question that is not much narrower than the original topic	Constructs a question that is narrower than the original topic, but still too broad for a research question	Constructs a question that is narrower than the original topic and specific enough for a research question	(x2)
Module 2	Student Learning Outcomes	Evaluation Criteria	Beginning = 1	Developing = 2	Proficient = 3	
2.a.	Identifies key concepts and terms that describe the information needed [ACRL Standard 1, indicator 1.e]	Lists key concepts	Lists 1 or less of the most important concepts from the research question	Lists 2 out of the 3 most important concepts from the research question	Lists all 3 of the most important concepts from the research question	(x1)
2.b.	Identifies keywords, synonyms and related terms for the information needed [ACRL Standard 2, indicator 2.b]	Compiles keywords	Lists a total of 2 or less relevant keywords for the research topic. If in doubt, type the keywords into the library catalog or article index to test for relevancy	Lists a total of 3-4 relevant keywords for the research topic. If in doubt, type the keywords into the library catalog or article index to test for relevancy	Lists a total of 5 or more relevant keywords for the research topic. If in doubt, type the keywords into the library catalog or article index to test for relevancy	(x1)
Module 3	Student Learning Outcomes	Evaluation Criteria	Beginning = 1	Developing = 2	Proficient = 3	
	Investigates the scope, content, or organization of two information retrieval systems [ACRL Standard 2, indicator 1.c]	Lists differences or characteristics	Lists no differences between or characteristics of Google, the Internet, or the library related to authority; invisible web; free versus fee-based; quality control; personal assistance; Pagerank technology; popularity; or scholarly	Lists 1 difference between or characteristic of Google, the Internet, or the library related to authority; invisible web; free versus fee-based; quality control; personal assistance; Pagerank technology; popularity; or scholarly	Lists 2 or more differences between or characteristics of Google, the Internet, or the library related to authority; invisible web; free versus fee-based; quality control; personal assistance; Pagerank technology; popularity; or scholarly	(x1)
Module 4	Student Learning Outcomes	Evaluation Criteria	Beginning = 1	Developing = 2	Proficient = 3	
4.a.	Recognizes relevant information sources using the library catalog and records all pertinent citation information for future reference [ACRL Standard 2, indicators 5.c and 5.d]	a. (Quantity): Locates books	Finds no books in the library catalog and doesn't write down any citation information	Finds 1 book in the library catalog and writes down the citation information	Finds 2 books in the library catalog and writes down the citation information for both	(x1)
4.b.		b. (Completion/1 book: evaluate the best one overall): Lists citation components	Fills in 3 or less fields Title (1 point) Author (1 point) Location (1 point) Call Number (1 point) Subject (1 point) Availability (1 point) Floor (1 point)	Fills in 4-6 fields Title (1 point) Author (1 point) Location (1 point) Call Number (1 point) Subject (1 point) Availability (1 point) Floor (1 point)	Fills in all 7 fields Title (1 point) Author (1 point) Location (1 point) Call Number (1 point) Subject (1 point) Availability (1 point) Floor (1 point)	(x1)

4.c.		c. (Accuracy/1 book: evaluate the best one overall): Lists citation elements in correct fields	Title (1 point) Author (1 point) Location(1 point) Call Number (1 point) Subject (LCSH or Academic) (2 points) Status (1 point) Floor (2 points) Total is 3 or less	Title (1 point) Author (1 point) Location(1 point) Call Number (1 point) Subject (LCSH or Academic) (2 points) Status (1 point) Floor (2 points) Total is 4-7	Title (1 point) Author (1 point) Location(1 point) Call Number (1 point) Subject (LCSH or Academic) (2 points) Status (1 point) Floor (2 points) Total is 8-9	(x1)
4.d.		d. (Relevancy/1 book: evaluate the best one overall): Links book to research topic	Finds a book that is not relevant to the research topic. If in doubt, look at the subject field, title field, call number field, or table of contents to make the determination	No "2" value for this X	Finds a book that is relevant to the research topic. If in doubt, look at the subject field, title field, call number field, or table of contents to make the determination	(x2)
Module 5	Student Learning Outcomes	Evaluation Criteria	Beginning = 1	Developing = 2	Proficient = 3	
5.a.	Recognizes relevant information sources using an article index; Understands the elements and correct syntax of an article citation; and Records complete citation information from the index for future reference [ACRL Standard 2, indicators 5.c and 5.d]	a. (Quantity): Locates sources	Finds no sources in the article index and doesn't write down any citation information	Finds 1 source in the article index and writes down the citation information	Finds 2 sources in the article index and writes down the citation information	(x1)
5.b.		b. (Completion/1 source: evaluate the best one overall): Lists citation components	Fills in 3 or less fields Author (1 point) Title (1 point) Publication (1 point) *Volume/Issue (1 point) Date (1 point) Page Number (1 point) *if newspaper, no vol/issue so give 1 point	Fills in 4 or 5 fields Author (1 point) Title (1 point) Publication (1 point) *Volume/Issue (1 point) Date (1 point) Page Number (1 point) *if newspaper, no vol/issue so give 1 point	Fills in 6 fields Author (1 point) Title (1 point) Publication (1 point) *Volume/Issue (1 point) Date (1 point) Page Number (1 point) *if newspaper, no vol/issue so give 1 point	(x1)
5.c.		c. (Accuracy/1 source: evaluate the best one overall): Lists citation elements in correct fields	Author (1 point) Title (1 point) Journal/Publication (2 points) *Volume/Issue (2 points) if newspaper, no vol/issue so give 2 points Date (1 point) Pages (2 points) Total is 3 or less	Author (1 point) Title (1 point) Journal/Publication (2 points) *Volume/Issue (2 points) if newspaper, no vol/issue so give 2 points Date (1 point) Pages (2 points) Total is 4- 7	Author (1 point) Title (1 point) Journal/Publication (2 points) *Volume/Issue (2 points) if newspaper, no vol/issue so give 2 points Date (1 point) Pages (2 points) Total is 8 or 9	(x1)
5.d.		d. (Relevancy/1 source: evaluate the best one overall): Links article to research topic	Finds an article that is not relevant to the research topic. If in doubt, look at the abstract or full text of the article	Finds an article that is somewhat relevant to the research topic, but is general or broad. If in doubt, look at the abstract or full text of the article	Finds an article that is relevant to the research topic. If in doubt, look at the abstract or full text of the article	(x2)

Appendix C

English 110

Library Research

****As you work through these exercises, please ask a librarian if you have any questions!****

Module 1: Narrow the focus of a broad topic by making it more specific and turning it into a question.

If you have a topic that you're interested in, write it down below.

Need a Topic? Go to <http://libguides.lmu.edu/ENGL110> and look at the Module 1: Need a Topic? tab to find one!

Your Topic:

Often, it helps to narrow your topic (or make it more specific) before you start doing research. Complete the following exercise to turn your topic into a research question. For an example of how to do this, click on the "Form a Research Question" sub-tab under <http://libguides.lmu.edu/topic>.



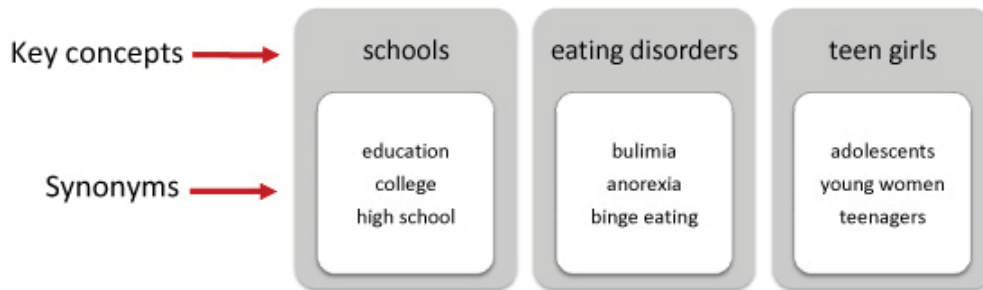
Research Question:

Module 2: Identify the main concepts in your research question/statement by picking out key terms. Then, compile a list of search terms for your topic (keywords), including synonyms and related terms.

Circle three main concepts in your research question and brainstorm synonyms or other keywords that would narrow or broaden your topic.

Example:

In the last ten years, what have schools done to prevent eating disorders in teen girls?



Now try it with your research question.

Question: _____

Key concepts	concept 1:	concept 2:	concept 3:
	_____	_____	_____
Synonyms			

If you need help coming up with keywords, go to <http://libguides.lmu.edu/ENGL110> and look at the Module 2: Choosing Keywords tab for access to a thesaurus and the keyword generator.

Module 3: The Visible and Invisible web. Going beyond Google.

Describe how Google and the library are different. Take a look at the Module 3: The Internet tab and the Module 3: Google and PageRank sub-tab (underneath) on <http://libguides.lmu.edu/ENGL110> for more information.

(Hint: types of materials, organization, quality, or retrieval)

- 1.

- 2.

Module 4: How are books organized in the library and how do you find them?

Go to <http://libguides.lmu.edu/ENGL110> and click on the Module 4: Books tab. Look in the “Find books at LMU” box and use **LINUS** (Library’s online catalog) search box to find **two relevant books** on your topic that can be checked out from the Library. In the LINUS search box, type in some of your keywords from page 2. In the space provided, write down the book information from the catalog records.

Book One

Title	
Author	
Location	
Call Number	
Subject(s)	
Is the book available?	
What floor?*	

*Using the Book directory box (<http://libguides.lmu.edu/ENGL110> under the Module 4: Books tab), on what floor would you find your book?

Book Two

Title	
Author	
Location	
Call Number	
Subject(s)	
Is the book available?	
What floor?*	

Module 5: How are articles organized and how do you find them?

Go to <http://libguides.lmu.edu/ENGL110> and click on the Module 5: Articles tab. Look in the “General Article Index Databases” box and click on “Proquest Research Library.” Search Proquest to find **two relevant articles** on your topic. Use some of the same keywords from page 2 to search. In the space provided, write down the article information from the Proquest records.

Article One

Author(s)	
Article Title	
Publication Name	
Volume, Issue	
Date	
Page #	

Article Two

Author(s)	
Article Title	
Publication Name	
Volume, Issue	
Date	
Page #	

**Check out the “More” tab on the ENGL 110 LibGuide at <http://libguides.lmu.edu/ENGL110> for more resources and MLA Style help!

But What Did They Learn? What Classroom Assessment Can Tell You about Student Learning

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Abstract

This paper compares a typical course or session evaluation with a classroom assessment technique (the “minute paper”) with the goal of demonstrating what the assessment can tell the librarian about what the students have learned, and how the librarian can alter his or her teaching in light of the assessment results, thereby closing the loop on the assessment cycle. The paper identifies areas where standard course evaluation forms do not provide sufficient information for the instructor to make changes to his or her teaching, in order to increase student learning. The results of actual “minute paper” assessments, which ask students to identify one useful thing they learned and one thing they are still confused about, are discussed and common themes are identified. The paper also details the specific changes the author made in her approach to teaching and learning in the course sessions where the assessments were used. Finally, the paper offers suggestions for using assessment results as a communication and outreach tool with faculty.

Introduction

Course evaluations are nearly ubiquitous in higher education; administered at the end of the semester, they offer students an opportunity to critique the course and the faculty member, with the goal of improving instruction and, as an assumed consequence, student learning.¹ Taking a cue from their colleagues on the teaching faculty, instruction librarians often use a modified version of a course evaluation form at the conclusion of “one-shot” instruction sessions, with the same goals of improving instruction and student learning.

This paper examines the differences between these traditional course or teaching evaluations,

and classroom assessment techniques for assessing student learning outcomes. The paper will discuss what kinds of information can be gleaned from each kind of tool, and why a librarian would choose one tool over the other. It will look specifically at one particular classroom assessment tool, the minute paper (also sometimes called a half-sheet response or “muddiest point” exercise), and demonstrate how the author used information from these assessments to change her instruction and improve student learning.

Defining Terms: Evaluation

Words like “assessment” and “evaluation” can be notoriously slippery, and there are contexts in which they are used in almost precisely the opposite way in which they will be used here. For example, Peter Hernon and Robert Dugan draw a distinction between assessment and evaluation where assessment is formative—i.e., used on an ongoing basis during instruction to improve teaching and/or student learning—while evaluation is summative, used at the conclusion of a class session, course, or program, and is virtually indistinguishable from grading.² Needless to say, this is not the distinction that will be used here.

In this paper, “evaluation” will refer primarily to a standardized, end-of-semester or end-of-class session survey, in which students rate a class or an instructor in a number of categories, usually using a 5-point Likert scale, and often, though not always, including open-ended questions at the end. An example of this kind of instrument, adapted for use in a one-shot library instruction session, is given in Figure 1. Figure 1 is a composite instrument, generated with questions from a number of evaluation forms from colleges and universities across the United States.³

Figure 1: Sample questions from a typical evaluation for one-shot library instruction.

	Strongly agree	Agree	Neutral	Disagree	Strongly Disagree
The librarian was prepared for the session.					
The librarian was organized.					
The librarian included time to practice the skills that were introduced.					
The librarian explained and demonstrated search strategies that were relevant to my research needs.					
The handout was helpful.					

Partly because they are so common in higher education, course evaluations have made their way into library instruction. Even the leading library instruction and information literacy conference in the US, LOEX, uses evaluation forms at the conclusion of each presentation. Unfortunately, evaluations are often a better measure of students' satisfaction with the session, than of the actual quality of instruction.⁴ In addition, there is a substantial body of research that challenges the validity and reliability of standard course evaluations, and questions whether there is much if any correlation between the strength of an instructor's ratings and how much students in the class actually learned.⁵ These questions are compounded by users' tendency, when using a Likert-scale rating system, simply to mark the middle choice across the board.⁶ Students fill the forms out quickly, without much reflection, and especially tend to skip over the more time-consuming open-ended questions at the end of the form, thereby short-changing the richest source of data that the evaluation instrument can provide.⁷

If course evaluations are this problematic, why do librarians use them? Librarians and administrators like the numerical data generated by Likert-scale instruments, allowing them to perform statistical analyses and comparisons. Because they are so commonly used by teaching faculty, they lend an air of legitimacy and academic rigor to library instruction, particularly in institutional settings where librarians' status is not on a par with the teaching faculty. Organizational inertia can also be a factor in librarians' continued use of these tools; once established, procedures that are intended to improve instruction can be difficult to

discontinue, even when research shows that they have little to no correlation with improved student learning.

Defining Terms: Classroom Assessment Techniques

Unlike course evaluations, which largely measure satisfaction, outcomes assessment attempts to measure learning. In many cases and contexts, assessment can be virtually indistinguishable from grading. Many of the tools used for outcomes assessment—quizzes or exams, portfolios, rubrics for judging the quality of student work—are familiar to any instructor. The time constraints of a one-shot library instruction session, however, preclude the use of anything more elaborate than the very shortest of quizzes. Fortunately, there are also a wide variety of less formal options for assessing student learning that work very well in a one-shot setting. Many of these less formal options, referred to as "classroom assessment techniques," are compiled in a widely-recognized collection by Thomas Angelo and Patricia Cross.⁸

One of the most common informal assessment tools is the "minute paper," sometimes referred to as a "muddiest point" exercise or "half-sheet response."⁹ At the conclusion of the class session, students are asked to write two things on a sheet of scratch paper: one useful thing they learned in class that day, and one thing they still have questions about or are still confused about.¹⁰ There are slight variants: students may be asked to write down the most important thing they learned, to choose the most important idea that the class covered, or to include their names to facilitate follow-up on their specific questions. Unlike exams, standardized tests, or Likert-scale

course evaluations, informal techniques such as these don't generate the kind of quantitative data that can be subjected to statistical analysis. However, they nevertheless can provide significant insights into what students are learning, and perhaps more importantly, what they are *not* learning, as a result of library and information literacy instruction.

What We Can Learn From Evaluations

Ultimately, the point of evaluations or assessment techniques is to improve student learning by improving instruction. With that in mind, we can return to the sample class evaluation in Figure 1, and examine some of the questions individually to see what information they provide to the librarian instructor, and how he or she might use that information to change his or her teaching in the service of improved student learning.

Preparation and Organization

- "The librarian was prepared for the session."
- "The librarian was organized."

If the librarian scores well on the preparation question, that is a good first sign. And likewise, if the librarian's scores on this question are on the lower end of the Likert scale, that is clearly an area for improvement. However, the important question to ask here is whether this is useful information to the librarian, or whether it is something s/he already knows about his or her teaching. In almost all cases, the librarian knows perfectly well how well he or she was prepared for the session in question. Asking students to rate the librarian on this factor doesn't provide any new information to the librarian.

This applies equally well to the next question on the sample evaluation, regarding organization. While some people's perception of their own organizational skills may not match up with their students' evaluations, library professionals generally have a good grasp of whether organization is a challenge for them or not. Spending class time asking students to evaluate factors that the librarian can usually evaluate for him- or herself is inefficient, and can be somewhat insulting to both the students and the librarian. Even more obviously, the next question, "the librarian included time to practice the skills that were introduced," does not provide any new information either; it simply asks the students to

report factual data—data which, again, the librarian can easily enough provide.¹¹

Search Topics

- "The librarian explained and demonstrated search strategies that were relevant to my research needs."

The item "the librarian explained and demonstrated search strategies that were relevant to my research needs" alludes to the commonly-understood principle that it's better, when demonstrating search strategies, to use sample search topics that are closely related to the students' own research topics, or even use the students' own topics themselves, rather than generic topics with no particular relevance to the subject at hand. A low score on this item indicates one of two things: either the librarian did not attempt to select relevant topics, or the librarian *did* attempt to select relevant topics, but did not succeed. If the former is the case, this is another situation where the evaluation does not provide any information that the librarian doesn't already have: s/he knows whether s/he chose generic search topics or not.

If the latter is the case, however, and the librarian attempted to select relevant topics, then this might be new information. The problem arises, however, in trying to determine how to respond to the students' evaluation: in what ways were the topics not relevant? What topics would have been more useful to the students? Unfortunately, there is no information here that helps the librarian improve his or her teaching; there is only the criticism that the topics weren't relevant.

This is the case with many standard evaluation questions: they indicate that the instructor did badly (or well), but give no feedback on how to do better. Other questions where this applies include the previously-discussed question about organization, and "the handout was helpful." One hopes that students who rate an instructor poorly on one or more factors will elaborate, and provide suggestions or more specific criticisms, in the free-response portion of the evaluation instrument—and indeed, some forms provide free-response areas after each question to encourage this elaboration—but, as we have seen above and as many instructors report anecdotally, students

complete evaluations so quickly that they rarely take the time to answer free-response questions.

In summary, therefore, many standard questions on instruments modeled after course evaluations suffer from two fundamental flaws: they either provide information that the librarian instructor already has, such as whether s/he was prepared for the session or provided time for the students to search independently, or they offer criticism (or praise) with no information as to how to improve the quality of instruction.

What We Can Learn From Classroom Assessment Techniques

The quotations and excerpts that will be discussed in this section are taken from actual minute paper assessments done by the author in a variety of one-shot library instruction sessions. In many cases, these sessions covered three basic learning outcomes: transforming a research topic into searchable keyword strings with Boolean operators; searching for articles in databases on the EBSCO platform; and obtaining the full text of articles in print, online, or via interlibrary loan using our link resolver. None of the quotations have been corrected for spelling, grammar, or correct library terminology; errors, especially in library terminology, are important indicators of students' familiarity with and understanding of essential concepts.

Finding Print Articles

- "Finding a periodical can sometimes be hard."
- "I'm still confused on where to find the article if it's still in the library."
- "I'm still confused about where to find certain articles."

These three quotations are representative of many, many comments that have appeared in the second portion of the minute paper, "one thing I'm still confused about." Comments like this—usually no more than a handful for each class—appeared on the assessments for nearly every class that covered locating print journal articles, despite the fact that the bound periodicals are shelved by title, all in one location. Individually, these comments are nothing more than an indication that some students in most classes are uncertain about how to locate articles in our library's print collection.

In the aggregate, however, they are much more instructive, because receiving comments like this on nearly *every* assessment indicates a more pervasive problem: our students simply have no experience locating individual articles among a collection of bound periodicals. Anecdotal evidence later confirmed this problem; when a class of students were given citations to print articles in the collection and asked to locate them, almost all of them needed assistance with the task. As a result, we are currently revising the way that we teach these skills. One possibility is the development of a video that walks the student through the process—focusing particularly on the publishing model of journal titles, volumes, issues, and page numbers—and shows where the bound volumes are located in our building. Where previously we would simply point students to the room where the bound periodicals were shelved and instruct them to go find the article, we now go with the student into the collection, discuss the process of locating an article, and ensure that the student obtains the item she is looking for.

The "Find Text" Flowchart

- "The 'find text' flowchart is really helpful."

This comment refers to a library instruction handout that used a flowchart to illustrate the process of locating the full text of an article using our link resolver. Unlike the previous example, however, this comment was notable not because it was representative of many other comments, but rather because it was unique. In two semesters of using the flowchart handout, no other student had ever commented that the handout was useful. This comment prompted a re-thinking of the handout, and eventually it was transformed into a short screencast video, which shows every step of the process. Since the video has been introduced, there has been a notable increase in positive comments, including many like the following:

- "Full text button video b/c we could see what we would come across when clicking on it."
- "Find text button (very good video)"
- "How to use SMC text finder is something I learned new today! Loved the video!"

The frequency of these comments, compared with the lack of comments regarding the previous flowchart handout, is a good indicator that

switching to the screencast was a positive step, and led to improved student learning.

A Solution Along With the Problem

- “I am still confused on how to write an end note. Maybe next time you could write out an example.”

This is another example of a comment that is representative of a wide variety of comments from the same class. In this case, the class in question was a business course, in which the faculty member insisted on the students not using standard APA- or MLA-style citations, but nevertheless documenting their sources in a format appropriate to business correspondence. Since this was, for most students, their first business course, and the faculty member did not provide any examples himself, this understandably caused a considerable amount of confusion for the students. That confusion often manifested itself in the minute paper assessments.

Since this was a course I worked with on a regular basis, I was already quite familiar with the students’ confusion, and had suggested several times to the faculty member that he might want to consider providing some example citations for the students. This particular comment was precisely the information I needed in order to move ahead with a plan to provide those example citations myself, rather than wait for the faculty member to provide them. In this case, therefore, the information from the assessment lead directly to a small but significant change in teaching that helped to improve student learning.

Students Will Think the Assessment Is an Evaluation

- “You did great at covering all of the material.”
- “You did a wonderful job! Much appreciated!”
- “Did good.”

Students are so used to being asked to complete teaching evaluations that, even when they are specifically directed to do otherwise, they will occasionally assume that the assessment is asking for standard satisfaction information, and will provide exactly that information. There is very little that can be done about this, at least until students become more accustomed to classroom

assessment techniques in general. Anecdotal experience suggests that these comments are almost always positive, so while they don’t provide useful information to the librarian, they rarely cause problems either.

Repurpose the Data: Sharing Assessments with Faculty

An additional benefit to the minute paper classroom assessment tool is that, once the results are transcribed into an electronic document, they are easily shared with the teaching faculty. This can open up new lines of communication between librarians and teaching faculty and offer new insights to teaching faculty about their students’ information literacy skills (or lack thereof). Unlike standard course evaluations, minute paper assessments, as well as other classroom assessment tools, provide clear evidence of areas where students are confused or uncertain. Librarians can use this evidence to suggest follow-up contacts with students or clarify points of confusion. In institutional contexts where librarians are trying to increase contact and collaboration with teaching faculty, assessment data can be an important tool for opening doors to further collaboration.

Assessments can also help to provide teaching faculty with a realistic picture of where their students’ information literacy skills are strong and where they need additional help. As we have seen above, a task as simple as locating a print journal article in the library can be a significant challenge for students. For faculty who have internalized the research process over the course of many years (and who may have learned certain skills at earlier educational levels than today’s students), it can be hard to remember how difficult even basic tasks are for beginning undergraduates. Assessment data can provide a useful reminder.

Conclusion

There is, of course, a time and a place for course or teaching evaluations. If you truly do need to know whether students were satisfied with a particular session, then a course evaluation, particularly one that highlights the most explicitly satisfaction-oriented questions, is precisely the right tool. Likewise, if administrative regulations require the use of a standardized evaluation instrument for one-shot library sessions, then of course that evaluation tool will be necessary. It

may still be possible, however, to use a minute paper or other similar classroom assessment technique in addition to the evaluation instrument.

At the same time, many classroom assessment techniques do not provide quantitative data, so in situations where statistical analysis is necessary, some form of quantitative measure will be required. It is also true that the minute paper, and other informal classroom assessment techniques, do not always answer specific questions about whether students learned a *particular* piece of information or a particular skill. In situations where it is necessary to document whether and how well students learned specific skills or concepts, the minute paper may be replaced by or transformed into a short quiz, as Choinski and Emanuel did in their recent work on outcomes assessment.¹² However, for librarians seeking to improve their own teaching in the day-to-day service of student learning, the minute paper assessment provides better and richer data.¹³

—Copyright 2011 Catherine Pellegrino

Notes

1. Robert E. Wright, "Student Evaluations of Faculty: Concerns Raised in the Literature, and Possible Solutions," *College Student Journal* 40, 2 (June 2006): 417.
2. Peter Hernon and Robert Dugan, "Assessment and Evaluation: What Do the Terms Really Mean?" *College and Research Libraries News* 70, 3 (March 2009): 146-149.
3. For additional examples of library instruction evaluation forms, see Lawrie Merz and Beth L. Mark, eds., *Assessment in College Library Instruction Programs*, CLIP Note 32 (Chicago: American Library Association, 2002).
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5. For a review of the literature surrounding problems with course evaluations, see Wright, "Student Evaluations of Faculty."
6. Jane Barton, Richard German, and Nick Joint, "Beyond the Happy Sheets! Evaluating Learning in Information Skills Teaching," in *Library Management in Changing Environment: Proceedings of the 2004 International Association of Technological University Libraries Conference, May 30-June 3, 2004* (presented at the International Association of Technological University Libraries, Krakow, Poland: International Association of Technological University Libraries, 2006), 4, http://www.iatul.org/doclibrary/public/Conf_Proceedings/2004/Richard20German.pdf.
7. Curt Friehs and Cindy Craig, "Library Instruction Evaluation: Measuring Sin an Increasingly Complex Electronic Environment," *Brick and Click Libraries Symposium Proceedings* (November 3, 2006): 124.
8. Thomas A. Angelo and K. Patricia Cross, *Classroom Assessment Techniques: A Handbook for College Teachers* (San Francisco: Jossey Bass, 1993).
9. Choinski and Emanuel, 150. For an extensive review of the literature surrounding the use and effects of the one-minute paper, see David R. Stead, "A Review of the One-Minute Paper," *Active Learning in Higher Education* 6, 2 (2005): 118-131.
10. Angelo and Cross, 148-153.
11. Asking students whether they felt that there was too much, not enough, or just the right amount of time set aside for independent work is a different matter, but that is not what many evaluations ask.
12. Choinski and Emanuel.
13. The author wishes to thank Marianne Aldrich and Laura Crossett for invaluable advice and assistance in preparing this article.

You Don't Say?

Students at the University of Virginia Come Clean When Asked, "What Are You Doing and How Can We Help?"

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Abstract

Ever look out into your library and wonder, "Who are these people, what are they working on, and how can I help them?" Clemons Library at the University of Virginia began looking for answers to those questions in the spring of 2009 using a combination of student feedback gathered through simple assessment techniques, existing survey results and library use assessments. Clemons Library has previously used techniques like the ones described in this paper to help identify strategies to successfully redesign the main floor to encourage and facilitate mobile computing. In 2008, motivated by a suggestion from the Library and the University's IT office, we sought student feedback using surveys, focus groups, and space assessments and used that knowledge to make innovative design decisions that maximized students' ability to effectively use the space. Building on that successful project, we employed similar tools to discover the Who, What, When, Where, Why, and How of Clemons's patrons and their work. This paper will describe the various assessment activities we conducted, what we learned from them, and how what users said and how they said it had an impact on our strategies to design new services and redesign existing ones in Clemons.

Introduction

The University of Virginia (U.Va.) is comprised of 12 schools at the undergraduate and graduate level. The University awards 51 bachelor's degrees, 84 master's degrees, and 57 doctoral degrees. The student population includes approximately 13,700 undergraduate students and 6,629 graduate students, including those in our professional schools. Curricularly, U.Va. is especially strong in English, history, commerce, education, and psychology.

There are 14 libraries in the University's library system. Clemons Library is the undergraduate and media library with an A-Z collection of around 120,000 volumes covering most subjects, with primary research collections in media studies, film studies, sports, commerce, and drama and dance. We are open 24/5, have 23 group spaces across four floors, and house the Digital Media Lab and the Robertson Media Center, which is the home of our video collection. Our hours and central location, as well as an abundance of space (there is seating for over 1,500 students), make Clemons a prime spot for undergrads to meet and get their work done. The Clemons team is, by extension, equally student-centric and we routinely make adjustments to our spaces and service models based on student feedback. For example, in 2008 we renovated our main floor to encourage and accommodate mobile computing based entirely on feedback from students.

Context

The U.Va Library is committed to improving library services and the students' experience. To that end, Clemons Library has conducted a number of small assessments in the last two years designed to better understand how students use our space. In addition, a critical part of the U.Va. Library is the office of Management and Information Services (MIS) which coordinates and facilitates assessment activities for the Library as a whole. Through their periodic student surveys, which take place every four years, we already have a general picture of the student population in Clemons. For example, based on the MIS report *Surveying Our Users: The 2009 User Survey on the University of Virginia Library*,¹ we know that 36% of undergrads surveyed call Clemons their primary library. Most of the students who use

Clemons are undeclared or are in the College of Arts and Sciences. Among the things Clemons's users value are the long operating hours, the media resources, and the variety of study space options available.

In addition to discovering basic information about who uses Clemons, we also sought information via other simple assessments designed to gather information about when students come to Clemons. Over a two week period we conducted head counts of Clemons users to determine when peak usage hours were in the building. This particular assessment helped us to fine-tune the timing of our overnight building walkthroughs and identify when to maintain maximum overnight staffing at the desk. In our 24-hour building on weeknights, the population begins to fall after 12:30am when there is an average of 400 people in the building to an average of 150 people at 2:30am. The busiest nights of the week are Sunday (12am - 8am Monday morning) through Wednesday (Thursday from 12am - 8am). Using gate counts from 2008-2009, we were able to further add to the picture, noting that students heavily used Clemons in the months of October and April, not surprisingly coinciding with mid-terms, and used the library more frequently in the fall semester.

Among the Clemons-generated assessments that contributed to the context of this study was a computing survey we conducted when redesigning our main floor to determine how students use personal and library-provided computers in the library. In particular, we learned that some students used both their own laptop and a library computer in the course of a single visit, most frequently to facilitate ease of printing. This finding spoke to deeper issues students might be encountering during their time in Clemons and lent further weight to the need to conduct a more sophisticated assessment of students work in Clemons.

The combination of MIS surveys and our own assessment projects has given us a sketch of who is using Clemons and how they are using the library. But with all of this great data at hand, why conduct more assessment activities?

Premise

Although we had a general sense of who comprises our student population and how they use Clemons, we wanted to dig deeper and discover just what students are doing when they are in the library and how we could refine our services to better suit their needs. We wanted greater specificity about what tools they use to do their work, what kind of roadblocks they encounter, and where they go for help. Through basic surveys, exercises, and focus groups we expected to find detailed trends about their work process and isolate areas where the library could contribute to the completion of tasks. Based on this information, we planned to identify areas of success and improvement, and make recommendations about space and services in Clemons Library.

Process

With a background of successful assessment projects based on student feedback, notably the ethnographic studies of Susan Gibbons at the University of Rochester² and Crit Stuart from the Georgia Institute of Technology,³ we decided to build on those tools and experiences for this more comprehensive project. We designed a multi-phase assessment program that began with a survey, was followed by focus groups, and ended with a group discussion to follow-up on previously noted trends. We anticipated that each phase of the assessment would give us a different kind of information about our students: the survey would give us a sense of who they are and what kinds of tools they use while in Clemons; the focus groups would help us understand more about their process; and the group discussion, which turned out to be the most revealing part of the assessment, would give us a chance to talk to them in greater detail about roadblocks and how they seek help. Indeed, informed by what we learned from the previous assessment activities, the final part of Phase Three, a Q&A with the students, proved to be extremely helpful.

Phase One—The Task Survey

The Task Survey (Fig. 1) was developed in coordination with MIS and implemented in spring 2009 semester. The survey was distributed on three different days, and at three different times during each day: 4:00pm, 9:00pm, and

1:00am (for a total of nine distributions). The surveys were handed out by student assistants to patrons as they entered the library, who were then asked to fill them out once they completed their work. On their way out, patrons dropped the

surveys off at the main desk and picked up a candy bar as a thank-you. Of the approximately 750 surveys handed out, an impressive 568 were returned.

Figure 1. Task Survey

Clemons Library Task Survey		Date: March 25 th , 2009	Time: 1:00 am
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Clemons Library is interested in knowing what you did while you were in Clemons, and how we can design services to help you. Before you leave, please fill out this survey and turn it in on your way out.
Please take a free candy bar when you drop off your survey as a small thanks for taking the time to answer our questions.

Status (please circle one):
 1st year 2nd year 3rd year 4th year grad faculty not affiliated with the University

1. What did you do while you were in Clemons? (Check all that apply.)

<input type="checkbox"/> Worked on individual assignment (ex: English paper, Math spreadsheet, etc.) (please specify) _____	<input type="checkbox"/> Non-class related activities (socialized, committee work, etc.)
<input type="checkbox"/> Worked on group assignment (ex: Media project, Commerce presentation, etc.) (please specify) _____	<input type="checkbox"/> Copy/Print/Scan
<input type="checkbox"/> Checked e-mail	<input type="checkbox"/> Watched a video
<input type="checkbox"/> Surf'd the Web	
<input type="checkbox"/> Read/studied	
<input type="checkbox"/> Checked out a book/video	
<input type="checkbox"/> Other: _____	

2. What equipment, facilities, or resources did you use? (Check all that apply.)

Equipment/facilities:	Resources:
<input type="checkbox"/> My laptop	<input type="checkbox"/> Software (ex: Word, Excel, Powerpoint) (please specify) _____
<input type="checkbox"/> A library laptop	<input type="checkbox"/> Library databases (ex: JSTOR, Lexis-Nexis) (please specify) _____
<input type="checkbox"/> A library desktop	<input type="checkbox"/> Textbook
<input type="checkbox"/> A library monitor	<input type="checkbox"/> Library book
<input type="checkbox"/> Digital Media Lab	<input type="checkbox"/> Video
<input type="checkbox"/> G-Lab	<input type="checkbox"/> Google
<input type="checkbox"/> Library printer	<input type="checkbox"/> Wikipedia
<input type="checkbox"/> Booths	<input type="checkbox"/> Reference books
<input type="checkbox"/> Group study space	<input type="checkbox"/> Reserve books/videos
<input type="checkbox"/> Individual seats or carrels	<input type="checkbox"/> Talked to a librarian
<input type="checkbox"/> Video room	<input type="checkbox"/> Social networking site (Facebook, MySpace, etc.)
<input type="checkbox"/> Video station	<input type="checkbox"/> Other: _____
<input type="checkbox"/> iPhone or other portable device <ul style="list-style-type: none"> <input type="checkbox"/> for personal use <input type="checkbox"/> for school use 	
<input type="checkbox"/> Other: _____	

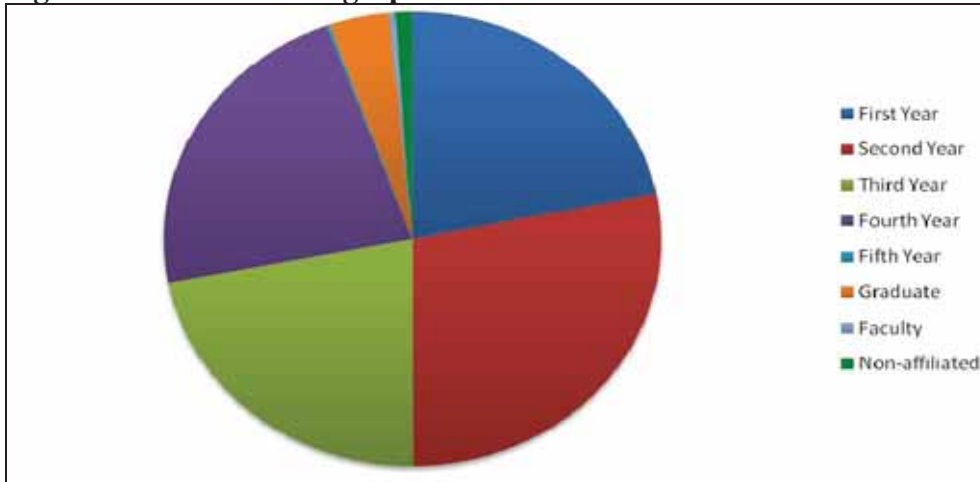
3. How long did you stay in Clemons for this visit? (Circle one.)
 Less than an hour 1-3 hours More than 3 hours

4. What questions did you have while you were doing your work? (Use back if needed.)

The one-page survey could be completed quickly and the information we received from it was valuable and detailed. From the survey we gathered more information about who our users are. We learned that our user base is primarily students and mostly undergraduates. Students

distributed almost equally among the four years, although Second Years (Sophomores) turned in slightly more surveys than other years at 28% (Fig. 2). Combined with information from the MIS 2009 user survey, we had a clearer picture of who Clemons users are.

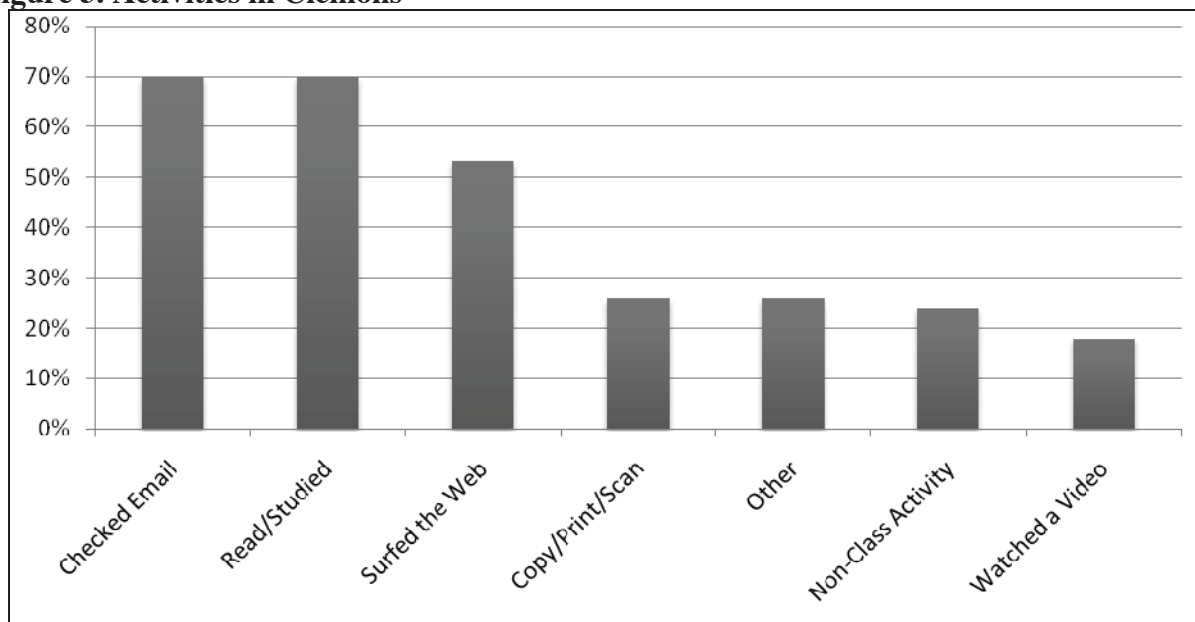
Figure 2. Clemons Demographics



Question 1 addressed activities that students were engaged in while in Clemons (Fig. 3). 80% of respondents were working on an individual assignment while 35% were working on a group assignment (n.b. in all questions, students had the option to check more than one box, which

resulted in percentages higher than 100%). Checking email and reading/studying topped the activity list. A little more than half of users were surfing the web (for school or personal reasons) and around a quarter of users were copying and printing or participating in non-class activities.

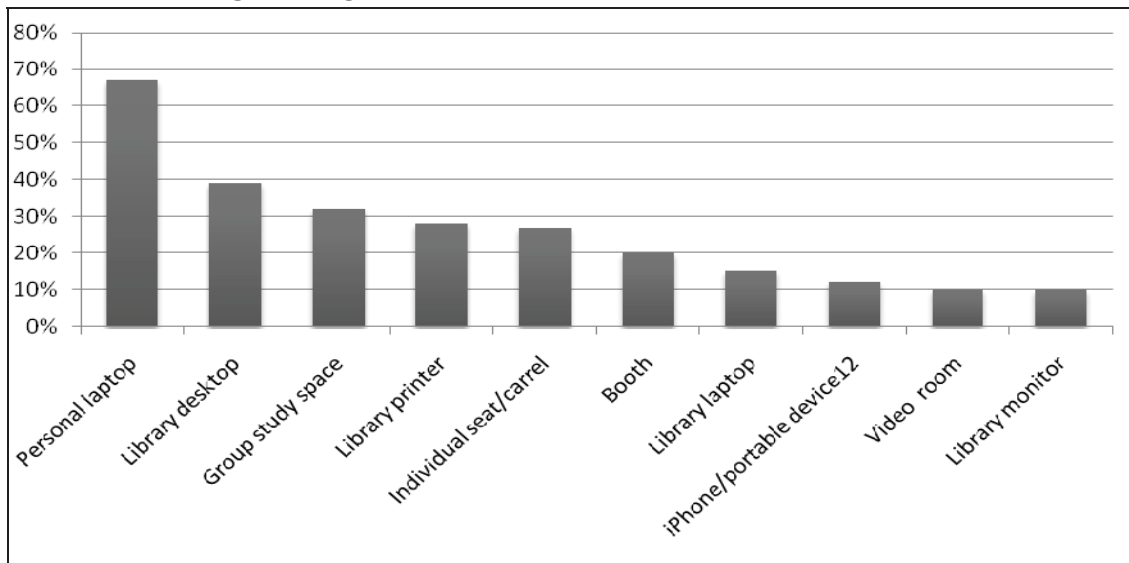
Figure 3. Activities in Clemons



Question 2 addressed use of equipment, facilities and other types of resources. Popular resources included computers, group study spaces and library printers (Fig. 4). Some trends emerged

regarding equipment and facilities indicating the need for follow-up questions in the focus groups. For example, more than two-thirds of the students responded that they used their personal laptop and around a third used a library desktop. However, as we learned from the 2008 Clemons Computing Survey, students may have been using more than one type of computer in the same visit.

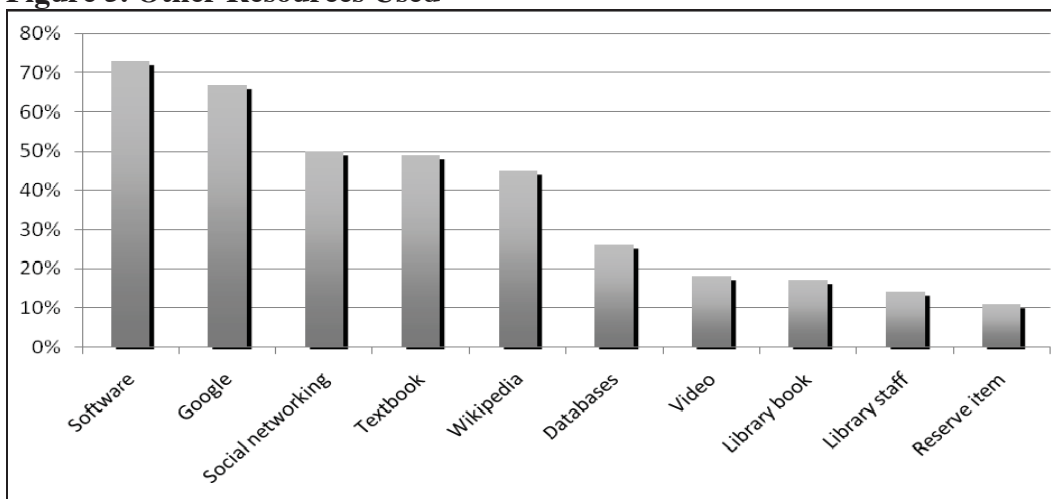
Figure 4. Resources Used in Clemons



When it comes to other kinds of resources (Fig. 5) 73% of users responded that they used software (though not necessarily library-provided software) and 67% reported using Google.

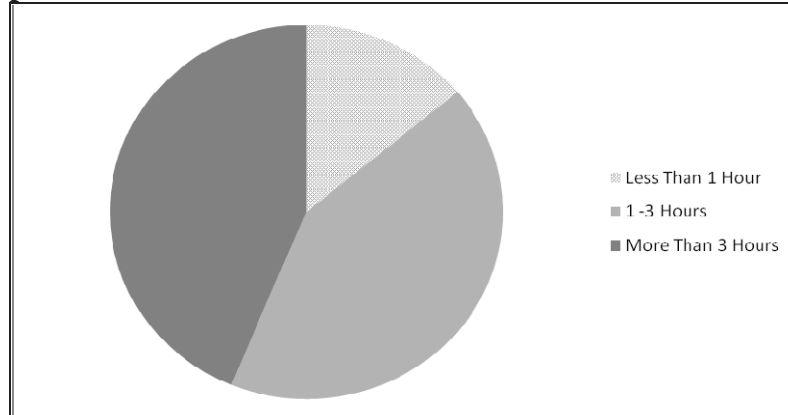
Around half of them used some kind of social networking service, textbooks, or Wikipedia, while about a quarter of them reported using library databases.

Figure 5. Other Resources Used



From Question 3 we learned that the majority of our patrons, 43.7%, were in the library for more

than three hours, while 42.3% were in the library for 1-3 hours (Fig. 6).

Figure 6. Time Spent in Clemons

Students responded in their own words to the final question about questions they had while doing their work. Overwhelmingly, students commented on the lack of abundant power outlets in the library, an issue that we try to remedy whenever we can. Here is a sampling of other questions and comments we received:

--Computing: When students needed help with computing it most frequently related to wireless issues, connecting to the Internet, or printing.

"... not enough desktop computers so I'm going to Alderman. Laptop [checked out] slow! Froze a lot!"

"Is it at all possible to make the desktop screens moveable?"

"How can I connect to UVA wireless with my mobile device?"

"Why can I sometimes not connect to the internet?"

"I wonder why more computers aren't available."

"More group computers."

--Environment: There were some general comments and questions about the environment, mostly regarding the temperature.

"... how to change the temperature."

"... the air is stale down there..."

"Why is it so cold?"

"Why is my chair so uncomfortable?"

"Too much noise on the 2nd floor."

--Equipment: Clemons circulates a number of accessories and peripherals to help students with mobile computing, and most of the equipment questions related to those items.

"Why can't we plug in Macs to TV? You don't have enough adaptors."

"Tried to figure out how to use the monitor in the booths."

"Can I have a power strip?"

"Why are the school laptops so slow and outdated?"

"Why are there not enough outlets for charging computers?"

"Get more laptops. Nicer headphones."

"More Ethernet cords."

"More tables that have big monitors for group work."

--Information: There were a few questions about needing help with assignments, but also about our general policies.

"How do I find books in the library?"

"How do I do a problem with a differential eq.?"

"What time does the DML open?"

"Can I check out my laptop twice in a row?"

"What does it mean to be barred/bursared?"

"How can we quickly access the online version of the Wall Street Journal?"

"Where can I find more info on the topic from a sociological aspect?"

In all, there were several hundred questions and comments, most of which were serious (although there was the occasional "How can I get her phone number?" type of question) that fell into the broad categories above.

Phase Two—Focus Groups

The focus groups comprised phase two of our assessment. Using the basic information and trends acquired via the Phase One Task Survey

we determined the areas in which we needed more information to meet the goals of this assessment and generated three exercises to be done as individuals and in groups. We recruited 10-12 students for each of three focus groups and we asked students to participate in three different exercises:

- Exercise 1. Notes about Clemons
- Exercise 2. Notes about Activities
- Exercise 3. Timeline about Process

Exercise 1: Students were given a pad of notes and asked to write down things that they associate with Clemons. They could write down as many things as they like and put each thing on its own note. The students were given five minutes to complete this task and then they were asked to put the notes on the wall of the room in groups that made sense to them. For example, there were notes about food, studying and socializing. Fig. 7 shows what some of the clusters looked like.

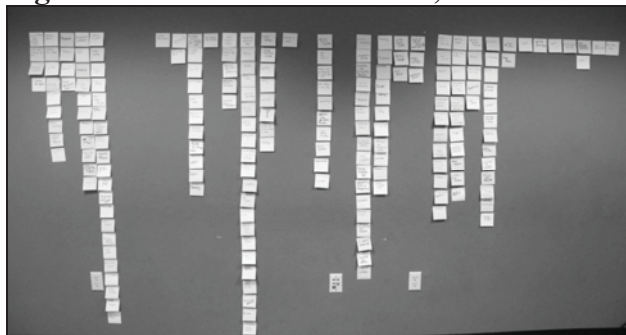
Figure 7. Notes about Clemons



All of the group clusters were photographed as a record of how the students organized their notes. At the conclusion of the focus groups, we

combined all of the notes and arranged them again in groups that represented services or resources in the library (Fig. 8).

Figure 8. Notes About Clemons, Combined



Exercise 1 Results: We arranged the notes into five clusters representing our services and resources: group and individual projects; book and film use; media creation and space use; equipment; and,

social or non-academic activities. The most frequently mentioned activities for Clemons Library were group projects, studying, and watching films, each receiving 21 notes. These

were followed by computer use (17 notes), socializing (13), and sleeping (12).

From the left in Figure 8, the first group (49) includes group projects, studying, paper writing, and research. Group projects/study is the longest row in that group (and tied for the most mentions overall) with 21 notes. Studying (generic) is the second longest row (11).

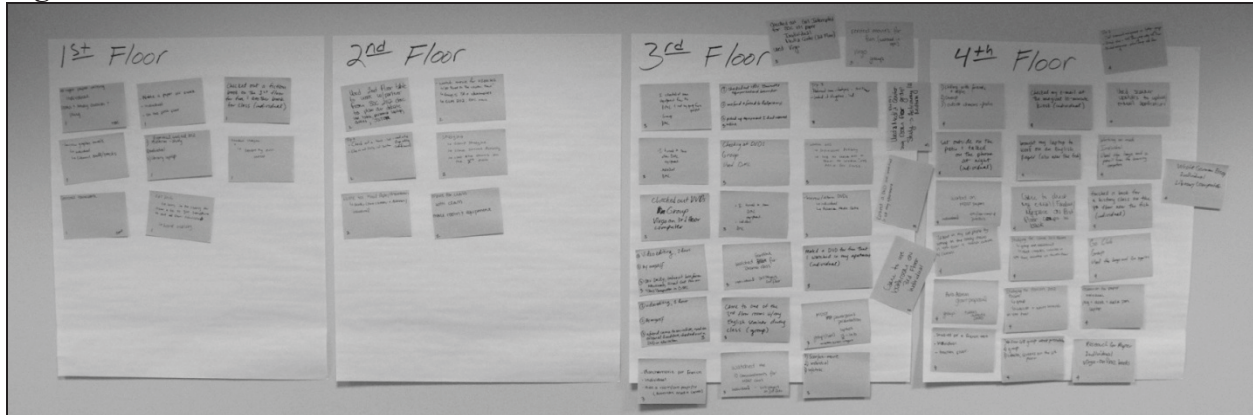
The next group (50) features resources—browsing or reading books or watching movies. Watching movies is the longest row (and tied for longest row overall) with 21 notes. Those notes say things like “video rental,” “DVDs,” “Sex and the City,” and “watching VHS.” A few notes relate to watching films specifically for class (videos on reserve for a class must be watched in the library). For the most part, students didn’t differentiate why they were browsing for books or reading but there are mentions of things like “new books,” “novel reading,” “graphic novels,” and “reading for an extended period of time.”

The single row in the center of the photo (10) is related to the Digital Media Lab (where students go to make podcasts, edit movies, etc.) and includes spaces “G-Lab,” equipment, “camcorder,” and activities “video editing,” and software “movie maker.”

The fourth cluster from the left is equipment and tool related (34) and includes computers (17), printers (11), technical help (3), and power strips (3). The computer column includes TVs, monitors, express stations, and laptops.

The final cluster includes non-academic activities and is the largest (51). The longest column with 13 notes is socializing, featuring notes like “seeing friends,” “talking to friends,” and “party.” The next longest (12) is sleeping/comfort with “napping” and “sleep” being the headliners. There are 11 notes relating to food/drink and 5 for the Clemons fish including “meet @ fish tank for groups.” (The “fish” references refer to the two large aquariums we installed two years ago as part of the remodeling of the main floor. During that project the students were very concerned about the atmosphere and environment of the library and asked for something peaceful to look at, such as aquariums, when they took a study break.)

Exercise 2: In the second exercise, the students were given large notes and asked to write down for each of their last three visits to Clemons, what they worked on, whether it was a group or individual activity, and what resources they used (Fig. 9). Once they were done we asked them to post their notes on the wall according to what floor they were on when they conducted each activity. There are four floors in Clemons and each floor has a different atmosphere: the 4th floor (the entrance floor) is a popular meeting and group study space; the 3rd floor is where the video collection and the viewing equipment are; the 2nd floor is for quiet group study; and the 1st floor is designated for quiet individual study.

Figure 9. Notes about Activities

Exercise 2 Results: We discovered that students use all four floors of Clemons to do all kinds of work. To some extent, the design of the space dictated what kind of work students were doing (for example, the banks of viewing stations on the 3rd floor meant lots of media use occurred there) but the results of Exercise 2 illustrated that students don't feel confined by space design and will happily work around it if doing so meets a perceived need.

The 4th floor of Clemons is the entry floor and features comfortable seating, mobile chairs and tables, large monitors and small defined spaces for group work. Primary motivators to working on the 4th floor included flexibility of space and the high noise tolerance. As expected, some of the students doing this exercise used the 4th floor for group work but 68% of the people who indicated using the 4th floor used it for individual tasks. In addition to resources for group work, the materials and resources housed on the 4th floor, such as magazines, browsing books and computers, also dictated use of the space. Adjacent to the floor is an outdoor terrace. Although it received the smallest percentage of mentions, students included the terrace outside of the library as part of Clemons, using the small tables and chairs equally for group and individual work.

The most significantly purpose-driven floor is the 3rd floor, featuring the video collection, viewing stations, viewing rooms, and a media lab. Adding to the mix are multi-purpose work spaces,

meeting rooms and classrooms equipped with advanced media viewing and presentation technology. Students used this floor more than any other and, not surprisingly, cited media-centric tasks as their focus. 19% of the tasks also mentioned group work.

In this exercise, the 2nd and 1st floor of Clemons were used less frequently than the top two floors. The 2nd floor features half of the stacks, group study rooms and large tables for group work. Noise on this floor is restricted to quiet talking which encourages groups but a little over one-third of students chose the 2nd floor for individual work. Every mention of work on the 1st floor was individual. Students mentioned using the floor for silent study, individual carrels, and the stacks. The biggest draw was the extra power outlets on the floor, installed based on the feedback we received from the computing survey.

Exercise 3: In the third exercise, we asked the students to work as a group to create a timeline of a project from beginning to end (Fig. 10). While the students were seated facing one wall of the room, one of the facilitators asked, "When working on a project do you do first?" As the students called out the various steps in beginning a project another facilitator wrote each step down. After the students identified the first step, the facilitator asked, "Then what?" and the next steps in the process were written down. Several more "Then what?" questions were asked until the students reached the end of the project.

Figure 10. Complete Timeline

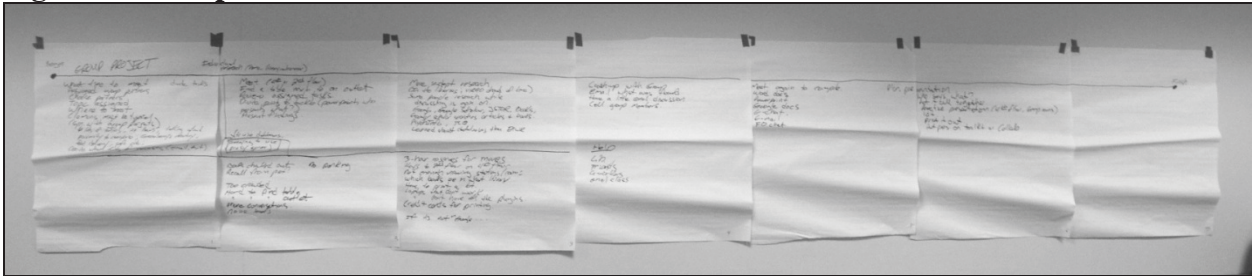
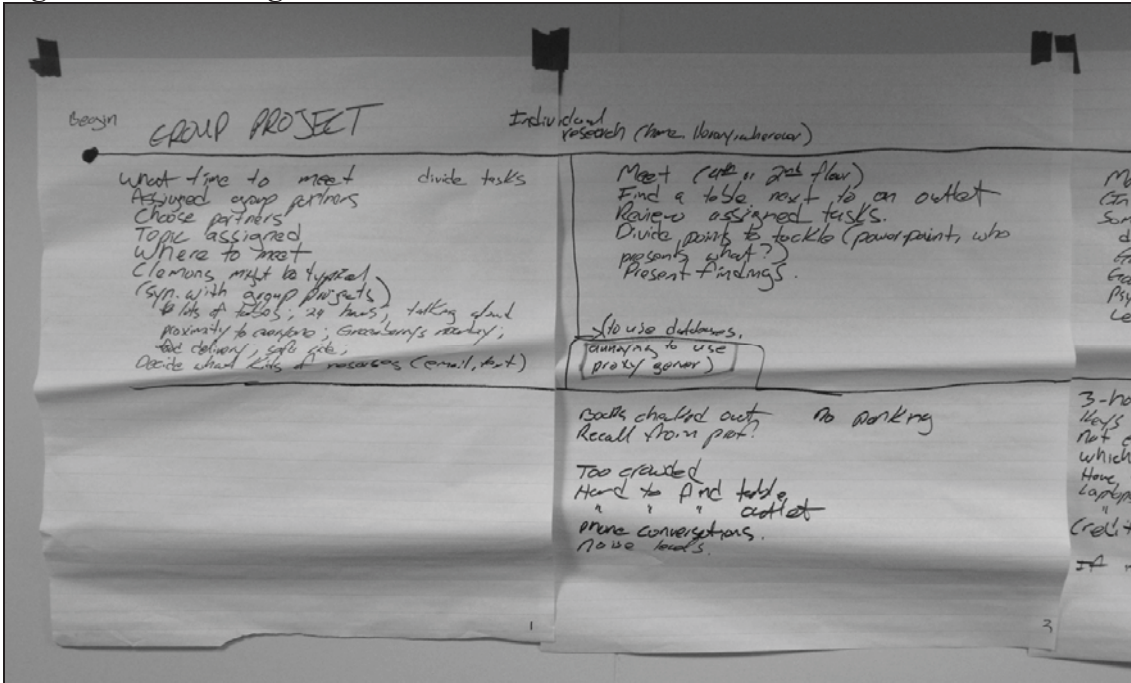


Figure 11. First Stages of the Timeline



Once the timeline was created we asked the students some follow-up questions:

- Where along the timeline did you experience roadblocks or difficulties?
- What were they?
- Where did you go for help?
- Were there times when there was not help that you could find?

Exercise 3 Results: The timeline exercise revealed that students generally follow similar paths when working on an assignment and that many phases of each assignment are completed outside of the library. One focus group working on a group project timeline mentioned coming to the library to make initial project assignments and then again at the completion of the project, focusing on using the library for the production and the study space

rather than for resources. Another focus group working on an individual assignment timeline noted that students come to the library during the second draft or completion stage of the project as opposed to the first draft or research stage.

Students listed stopping points ranging from logistical problems like not being able to find a parking place, no tables, no power outlets, or too much noise, to research-related problems such as recalled books, and alternatives to Google. For help, students started with the person closest to them (physically and otherwise): roommate, friends, classmates, family, instructor, then the Library. Almost universally, unless the student worked in a library, the library was not the first place the student went for help.

Phase Three—Group Discussion

We initially planned only two phases for this assessment—the task survey and the focus groups. However, once we reached the evaluation stage, we realized that while we had gotten a significant amount of information from the students, we had not quite gotten the level of detail that we hoped for in order to develop our services and programs.

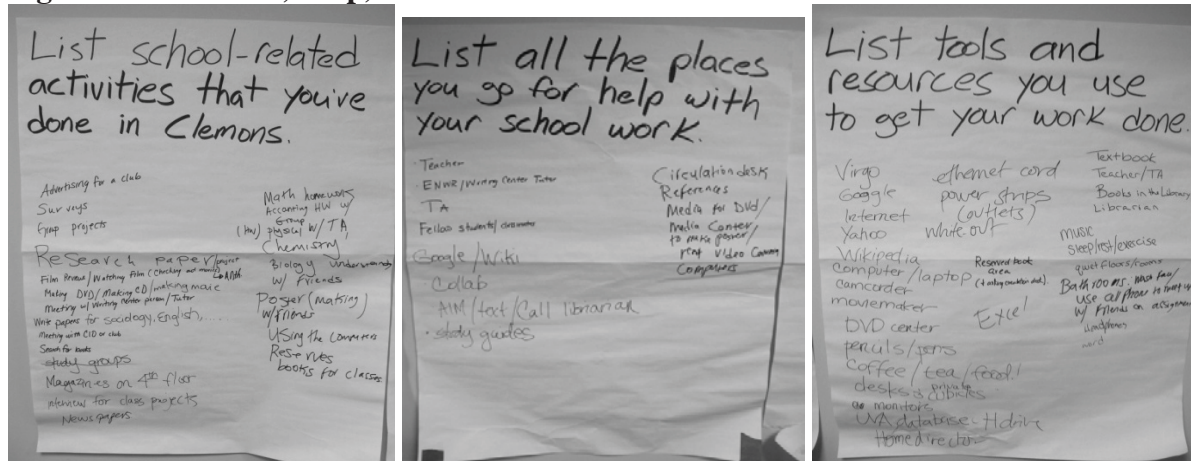
In Phase Three we conducted a group interview with students who had previously participated in the focus groups in order to delve more deeply into the students' research process. In this session we led the students through a couple of exercises to uncover that information.

Exercise 1: In the first exercise (Fig. 12) we posted questions on flipchart sheets:

- List school-related activities that you've done in Clemons.
- List all the places you go for help with your school work.
- List tools and resources you use to get your work done.

We divided the students into three groups and then wrote their answers on the flipchart sheets in a round-robin, starting with one sheet then moving to the next and then to the final sheet. (Although these questions are similar to questions that we posed earlier in the assessment, we asked them again in order to provide a foundation for the follow-up discussion.)

Figure 12. Activities, Help, Tools



Exercise 1 Results: The results of this exercise echoed those we obtained in the task survey, timelines exercise and follow-up discussions. Students use a wide range of tools to complete their academic tasks and rely on a web of people and resources to find the answers to their questions. The types of tasks that students do while in Clemons are varied and take advantage of our spaces for small group work; media

viewing and creation; independent study; and, creative endeavors, such as creating a poster or completing a charcoal drawing for art class.

Exercise 2: In the second exercise, we passed out a sheet of paper with the instructions to write down all the difficulties or roadblocks the students encountered when doing their work (Fig. 13).

Figure 13. Sample of Roadblock Sheet

Write down all the difficulties or roadblocks you've encountered when doing your school work.

- Not being able to find information online. Textbook
- All the computers being used at the library
- No tables available/ private rooms /cubicals
- Place being either too quiet or too loud (even if I go to the 3rd floor, it's sometimes too loud)
- Wanting to check out a movie for a class, & it's checked out

Exercise 2 Results: We obtained some of the most valuable results from this exercise. Student responses tended to break down into two main roadblock areas: tools/facility and finding information. In the tools/facility area, students expressed frustration that various equipment, technology or building features posed an obstacle to completing their work in the library. Some of the highlights in this area are:

--Power problems: Students had difficulty finding outlets and with the number of power strips the library makes available for check out. Students said:

"If the power strip isn't working, I leave, pray, or get a new one."

"Students don't know that power strips can be checked out."

"If there aren't any power strips, I go home."

--Computing problems: Personal and library laptops also posed challenges for students and effectively using the proxy server from home was often an insurmountable barrier. Some users said that they simply don't carry their own laptops during the day because of their weight, despite considering personal laptops better than library-provided laptops or public desktops. Students said:

"Library laptops are slow and don't have the necessary plug-ins."

"Logging on to a public computer takes forever."

"It is easier to come back to school than to use the proxy server."

--Tool problems: Students struggled when the need for resources didn't match the supply, including internet, computers and office supplies. Students said:

"The internet goes in and out when there are a lot of people in the library."

"... pencils and paper near the computer so you can write down the call number."

Highlights in the finding information area include:

--Finding Information: Roadblocks to finding information were more complex and more frustrating for students. Stopping points ranged from difficulty finding books (in the stacks or in the catalog) to concerns about access to help finding information. Students said:

"You have to go where the books are, not where you want to be."

"Books aren't in stacks so I go to Google."

"Librarians aren't here when I need them."

"Librarians can't find what you're looking for."

The comments about access to librarians and the utility of librarians were particularly interesting and were a common thread throughout all of the focus groups. When we asked follow-up questions regarding the order in which students seek help with questions, librarians were universally last. For example, we asked the focus groups to brainstorm a path to take when they can't find something. Focus groups said:

“I ask someone nearby, stop looking, use other materials, try articles, look in the catalog, ask my professor, find similar books using a bibliography, use Google scholar, go home, ask a librarian.”
 “I would rather leave than talk to a librarian.”

These exercises were done very quickly, within the first 30 minutes of the 90 minute session. We used the remaining 60 minutes to have a conversation with the students using the feedback that we got from the exercises as an entrée into various topics that we wanted to cover.

Among the topics we addressed in the follow-up conversation was the apparent aversion to asking librarians for help. Students stated that their answers were largely based on pre-conceived ideas about the role of librarians in the academic experience although a few students cited poor experiences when seeking help as the reason they did not return to a librarian. Comments about the librarians’ role included:

“You assume the librarian can’t help you with your physics homework, etc.”
 “The problem is that the librarian can’t help you with what you need.”
 “It’s annoying when you have a question and the librarian can’t answer it and then I won’t go back, because why bother?”

Other comments were based on service standards or quality of help:

“Some librarians look so into what they’re doing on the screen they don’t want to engage with people.”
 “One on one sessions don’t feel as intimidating.”
 “Librarians aren’t always helpful . . . the librarian says ‘Oh, stacks!’ and I’m lost for two hours.”

During this process students noted that they didn’t always feel this way personally about librarians, but that they were speculating about why students in general wouldn’t approach a librarian. This remainder of the discussion generated ideas about how students begin searching for information and ideas for new services that were helpful as we evaluated the information we gathered and drew conclusions about what new services to offer and how to further develop existing services.

Conclusion

When we began thinking about our assessment, we ideally would have liked to pull a chair up to the tables where our students were working, observe their process and ask them what they were doing and how could we help. In the end, we tried to replicate that interaction in each phase of our assessment. We clearly got some great information from the survey and the focus groups, but it was in Phase Three, the group discussion, where we really got to the meat of what we wanted to know. Being able to have an open conversation with the students revealed much about how they approach their work, what they need to accomplish it, and where they go for help. Although we suspected previously that librarians were their resource of last resort, it was good to understand why. Now we can use that information to design, or redesign, ways to communicate to students what the Library has to offer.

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Notes

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2. Nancy Fried Foster and Susan Gibbons, eds., *Studying Students: the Undergraduate Research Project at the University of Rochester* (Chicago: American Library Association, 2007), http://staging.ala.org/mgrps/divs/acrl/acrlpubs/downloadables/Foster-Gibbons_cmpd.pdf.
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Multiple Methodologies for Space Assessment to Support Learning

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Abstract

Washington State University Vancouver is a growing commuter campus in SW Washington State. The student population has increased over thirty percent since the State of Washington allowed WSUV to admit freshmen in the fall of 2006. Librarians have had a growing concern about how to best serve student learning in their existing space as well as how to best plan for expansion. The purpose of our space studies, therefore, was to gather data about student use of space for learning, in general, and the use of our library space, in particular.

Following best practices for assessment we used multiple methodologies to determine student space preferences for learning activities. In addition to drawing conclusions about the use of space for learning activities, the team working on these studies over the past three years has also drawn conclusions about both the limitations of these methods and the need for further investigations. The methodologies used in these studies are easily adapted to any library and require no specialized training or technical skill. The techniques can be applied with a minimum amount of time by librarians, staff, or student workers making them affordable and sustainable assessment tools. In some libraries, these techniques can be worked into existing data collection. Additionally, data can be used from multiple assessment methodologies to draw sound conclusions that lead to practical decision making for administration and design teams.

Introduction

Library as place is a phrase that has become popular in the literature as academic libraries struggle to understand the impact of technology and changing generations on the library's role in our institutions of higher education. As newer generations arrive on our campuses, the older ones are not leaving. We are serving a patron base that spans at least three generations, each having

its own set of values and ways of working.¹ Scott Bennet² and Sam Demas³ have both written eloquently about the need to turn our library spaces into learning spaces that contribute to our institutions and communities. Lewis added to this call in 2007 by stating that “[libraries] increasingly . . . are being thought of as places to create, as well as to access, knowledge.”⁴

In 2007, when we first started our study of library space, much of the research into library space only employed one method and tended to focus on “what are the most popular spaces” question. There were a few exceptions to that. Cataldo's work at the University of Florida⁵ and Lewellen's work at the University of Massachusetts, Amherst⁶ both looked at space using multiple methods that were both quantitative and qualitative. The paucity of research indicated that not much had changed in library space studies since Potthoff's 2000 study using the Role Repertory Grid Procedure in which the researchers concluded that “librarians need to use a broader range of assessment techniques”⁷ especially those that would correct for biases in self-report methods. Their results, in combining self-report methods with the Role Repertory Grid Procedure method, suggested that there may be very clear differences in results between self-report methods and, what they call, “less overt decision-making methodologies.” These less overt methodologies take a more phenomenological approach and might include direct observation, photos, and other ethnographic methods.

Architects are also recommending a more ethnographical approach to learning about users and are noting the major changes in library as place. For example, the Cohens, partners in a library space-planning and architectural firm, called for photographic studies and discussions with library users as key to designing for the future. They go on to say “For a library

environment to be successful in our changing world, it is essential for human interaction and behavior to be given primary consideration."⁸ Qualitative studies, particularly those employing ethnographic research methods, are better designed to observe human behavior.

Since 2007, there have been more studies done which have incorporated multiple methodologies to investigate how students use space in libraries. For example, in 2008 Webb's study at the University of Dayton used campus surveys, online library surveys, a video study and data from the National Student Survey of Engagement (NSSE) to understand current space use by students.⁹ During that same year, Crumpton and Crowe published the findings of their study which was conducted at the University of North Carolina Greenville.¹⁰ In this study the researchers used the results of surveys, observation and focus groups to provide input into a repurposing of library space.

Since our original research at WSU Vancouver, there has been a growing trend toward more multi-methodological and ethnographical research in academic libraries to understand student behavior and study habits. The most well known research is Foster and Gibbons's research at the University of Rochester where librarians worked with an anthropologist to understand how undergraduates research.¹¹ Two studies that specifically addressed library space are Jordan's et al. study using surveys, maps and design focus groups to understand library space as learning space¹² and Suarez's research on how students use library space to study.¹³

Seeing the results of Potthoff's research in 2000¹⁴ and noting the very few studies published before 2007 that included multiple methods to study space, we at WSU Vancouver decided to use a multi-staged and mixed-method approach to our space study. Informed by phenomenology, we wanted to be sure to employ methods that included direct observation of student behavior rather than relying only on self-reporting. By using mixed-methods, we hoped to lessen the weaknesses of any one approach and be able to draw a more complete picture of how students use the library and other study spaces on campus. Relying on Bryman's eighteen categories of reasons to use mixed-methods research involving both quantitative and qualitative methods, we

planned our research methods with five of his reasons in mind: validity/triangulation, credibility, off set weaknesses, completeness, and instrument development.¹⁵

In the fall of 2006 the WSU Vancouver campus was undergoing a change that was certain to affect the WSUV Library. For the first time WSUV was admitting freshman while maintaining its active transfer program. At the same time, the campus was discussing the possibility of renovating and expanding the library. The library administration wanted to know about the current use of the library's space and how to make the best use of the current building while planning for future expansion.

Focus Groups and Survey

We decided to begin by conducting a satisfaction survey of students, faculty and staff. To help in the development of the survey instrument, a psychology faculty member was asked to elicit the concerns of patrons by facilitating focus groups of these same populations. The focus groups were recorded and the tapes coded to identify common concerns. Then survey questions were written with those concerns in mind.

Though surveys and focus groups are commonly used methodologies it is worth considering the advantages and disadvantages of their use. Surveys are especially good for gathering information from a large group of people and covering a wide range of topics. They are also relatively inexpensive to administer and can be analyzed using a wide range of software. The disadvantages are in the risk of self-report bias, and that the information gathered is not in-depth or in context.¹⁶ One other concern about surveys is how surprisingly difficult it is to write questions that make sense to the respondent, are concrete, avoid loaded vocabulary and bias, and are not stated negatively.¹⁷

Focus groups tend to yield more detailed data than surveys and allow the facilitator to clarify questions, improving the quality of the responses. They are good for pre-testing topics or ideas, and therefore work well to gather information to design surveys. Since much of the success of focus groups depends on the skills of the facilitator, it is important to find someone experienced in managing group dynamics. A facilitator needs to

be able to draw out the more reticent group members, limit the more verbose, and tread a fine line between keeping the group on task and allowing the synergy of conversation to elicit information.¹⁸ Hiring a skilled facilitator may be worth the expense when considering a focus group.

After we conducted our survey and analyzed the results, we realized that the survey was useful in identifying patron satisfaction with services, but it did not give us as much information as we wanted about student use of library space. The outcome of the survey revealed that students used the library primarily for individual study, computer use, photocopying, group study, and checking out books; but we realized that some questions were not detailed enough while others used unclear language. Therefore we had more questions about how and why students chose the spaces that they used.

We also wondered if the patrons chose where they worked in the library intuitively or if they were aware of the choices they made. If the choice was intuitive we reasoned that the students may not be able to answer the space use questions without the self-report bias as described by Potthoff (and mentioned earlier in this article).¹⁹ We concluded that using an alternate, direct observation method to reduce the self-report bias would also assist us in answering the questions raised by the survey results.

Mapping

Jingeng Xia, in his study at the University of Arizona in Tucson, notes the usual process to plan for library expansion or remodeling is to use the casual observations by librarians and library staff with few actual studies that measure the use of the library.²⁰ We had asked our patrons about some space issues in the survey but some answers were unclear and there was more we wanted to know. In order to strengthen our study we decided to use an observational methodology to triangulate our survey outcomes and provide us with more information. Observational studies have the advantages of providing direct information about the behavior of those being observed and can add understanding to the context of a situation. They also offer the opportunity for unanticipated outcomes. Observational studies, depending on the method employed, may also have the

disadvantages of being costly, time consuming, and require highly trained observers to implement and analyze the research. Additionally, the selective perception of the observer may distort the data and the behavior of the subjects may be atypical at the time of observation.²¹

Xia's observational research of the study areas in the library at the University of Arizona inspired us to conduct a similar study at our library.²² He notes that it is necessary to measure the use of each study area and each study carrel, table and chair at intervals over a period of time. His method was to use Geographic Information Systems (GIS) technology to constantly observe library use. This technology was not an option for us so we adopted the framework of his GIS study and applied it using the technology we had at hand: paper, pencils, and librarians who were already doing an hourly head count.

We started by making a map of the library which included the computers, carrels, each table and chair, and the group study rooms. For three separate weeks over the course of the semester we collected data by putting an "X" on a map where ever someone was sitting during our routine hourly headcount. For each hour we used a new map. Our first round of analysis had a foundational perspective in phenomenology with an ethnographic approach. We chose a representative sample from the maps including some from various times of the day and week and some from when the library was busy and when there were fewer people. We spread out the sample of maps on a large table and spent some time looking at each map, drawing conclusions about the choices students made. Xia notes it is best to conduct a study in a library that has adequate space to observe the choices so we gave weight to the content of maps when occupancy was low. We noted that our group rooms are often used by single students as well as by groups and carrels are seldom used unless other tables are full. We noted that students liked to sit at the tables near the windows and tended to use the larger rectangular tables over the smaller round tables.

The observational study pointed out some weaknesses in our survey and clarified some questions we had about space issues. Students reported that they liked to sit alone at tables in the library. We did not ask which type of tables they

preferred on the survey but the mapping study made that clear. One unexpected observation that conflicted with our survey was the very low number of students that were sitting in lounge chairs. The survey results indicated that students preferred sitting in a "comfortable chair" which the librarians had interpreted to mean the upholstered lounge chairs when writing the survey questions. It was clear the students had not interpreted the phrase in the same way or that their self-report preference was different from their actual behavior.

In addition to our qualitative analysis, we decided to apply quantitative analysis to the maps by counting the use of each area and furniture type for all of the maps. We divided the library into sections, gave each section a name, and identified each type of chair and writing surface. One of our student workers coded each map and entered the data into an Excel spreadsheet. The statistical analysis of our results confirmed our conclusions about preferred tables and the confusion over what a "comfortable chair" is. One very surprising result was where students sat if two people were sitting at a large rectangular table for four. From the literature, one would assume that, unless working together, when two people sit at the same table, they will choose to sit diagonally from each other. However our data indicated a very large preference to sit beside one another (65% as compared to 4%). This has raised more questions. Does this indicate that our students frequently work in pairs? Or in couples? Why are our results so very different from most other studies?

No specialized training or equipment is necessary to duplicate this process. Because our library is small we were able to include our entire space as a part of the hourly headcount already done by the reference librarians. In a larger library the project could be carried out in a particular section of the library or at more targeted time intervals to reduce the time investment. No training is needed to look at the completed maps and make observations about the outcomes. This can be done with a specific question in mind, such as, "are patrons using the carrels?" or observations could emerge in a more organic process.

Quantitative analysis is less time consuming and does not take specialized training beyond the use of Excel. Other data analysis programs could be

used as well. Our student workers at the circulation desk are not busy during the summer so entering the data from the maps did not create added expense for the library. In a busier environment it is possible there would need to be someone employed to enter this data.

Photo Survey

While we were observing how library patrons used space for study in the library we began to wonder how students used other spaces on campus to study. This might inform our library design as well as allow us to serve a wider student population in the future. We decided to apply ethnographic techniques across campus but wanted to use a technique that would give us more detail than the mapping project. We wondered if students were using laptop computers if they were not using library computers. Did students choose larger tables because they wanted more personal space or did they simply have so much in the way of study materials that they needed the space to spread out?

Rosalind Hurworth, an expert in qualitative research methodologies, discusses the use of photography as a research methodology for program evaluation.²³ She suggests that photographs, along with interviews, can be used for the evaluation of the post occupancy of buildings. She also suggests that visual images add to evaluation by enabling improved understandings about context and allows the evaluator to more easily understand people and settings. Photography as a methodology is not without criticism. What the photographer shoots and the inevitable subjectivity of interpretation are loaded with bias. But the use of images adds to a multi-method strategy and reduces the bias that would be present in the photographs alone. Using a rigorous sampling approach can further reduce bias. Fixed time sampling is a process by which pictures are taken from a particular angle at a particular place and regular intervals, reducing the shot selection argument against the methodology. Pictorial evidence can be analyzed both qualitatively and quantitatively or by using both approaches.

We decided to photograph students across campus in the known study areas, including the library, using a fixed time sampling process. As with the

mapping survey, we chose three weeks over the course of the semester at three specified hours each day to go to each of the study sites. The camera angle was to include all students studying in the area. To analyze the content of the photographs we looked at all of the images and made observations about student study habits. We noted that, although students do not use carrels in the library as their first choice, the carrels in another building were being used when many other seating options were available. We also observed that students in the library and in other places had backpacks, laptops, notebooks, and textbooks that were often spread out over a study surface. It seemed that the photographs raised as many questions as they answered. We could observe what students were doing but we were unable to be precise in our evaluation of why they chose certain study places.

Interviews

In order to clarify why students chose specific study spaces, we decided to design a brief interview questionnaire and administer it to students in the same study areas where we had taken photographs. The questions asked students about the importance of various environmental elements: light, temperature, type of chair or table, the proximity to food, and sound level. We asked the students to determine how important each of these environmental elements are to them and to select the top three elements that factor into their choice of a study area. This study was started in the spring and will be continued early in the fall semester.

Interviews have some of the same advantages and disadvantages as focus groups. They permit face-to-face contact with respondents with the ability for the interviewer and the interviewee to ask clarifying questions. It also allows for some flexibility on the part of the interviewer in particular situations or with particular individuals. Because of the individual nature of the interviews, the data collected is usually deeper than other methods and allows for new insights. The disadvantages are in the time it takes to conduct interviews, the training and skill level of the interviewers, and the volume of the data that may need to be transcribed. There is also a risk that the interviewee may distort information to please the interviewer and that the flexibility of

the interview can cause inconsistency across interviews.²⁴

Our intent when deciding to interview students while they were studying in certain areas was to increase the validity of our interview data. We were able to ask them why they chose the space they were in at that moment rather than asking them to remember why they chose a particular space in the past. Some students were able to say with certainty that they had chosen the space for very specific reasons, which is what we had hoped we would learn. On the other hand, other students were in a space that was not of their choosing for a variety of reasons. Those students talked about what they liked and disliked about that study area and also about where they would rather be. The interviews gave us some information about why students made choices in ways, both expected and unexpected.

Conclusion

As demonstrated in our multiple-methods study of space at the WSU Vancouver Library, each methodology added to our understanding of how our space is used in the Library and also raised additional questions. Each method also assisted in the development of methods that came after. We now have a much fuller picture of how and why students use the spaces that they do for studying and group work, and we have been able to gather important data to assist us in our library's future remodel.

However, in thinking about the information gained through all of these methods, we also understand that we have limited data that will tell us what types of spaces actually impact student learning. How do we determine what spaces are truly conducive to student learning? How should we design learning spaces that will increase students' concentration and time-on-task and will reduce stress? What physical attributes of a space will encourage productive group study? Observation of behavior and self-reports tell us what students are doing but do not tell us if their choices contribute to learning. As a profession, we need to look to psychology, design, and architecture to learn new methods to more accurately answer these questions and to begin using them more often in our research.

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Towards Democratizing Library Data: Data Management and Sharing in the Institutional Repository

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Abstract

Library data repositories exist in many forms, in many libraries, and at the Association of Research Libraries (ARL) repository, but data access and manipulation is generally restricted to authorized users. The University of British Columbia (UBC) Library explored the feasibility of presenting various kinds of library data in cIRcle, the library's Institutional Repository (IR). The purpose of this project was three-fold: to merge library data with presentation tools to communicate the value of the library more effectively; to explore the open access institutional repository as a "container" for "democratizing" library data, that is, creating locally digitized library data and disseminating it widely; and to raise awareness of assessment methodologies within the library and beyond. This paper summarizes the methodologies and tools used in the project, including the Nesstar WebView data analysis tool and cIRcle. It describes the results of extending the reach of library data to a broader audience, beyond that of only assessment specialists.

Introduction

Library data repositories exist in many forms, in many libraries, and at the Association of Research Libraries (ARL) repository, but data access and manipulation is generally restricted to authorized users. More often, important library data resides on standalone or personal computers or flash drives in the assessment librarian's office. When data is made accessible to library staff and the public, it is often presented in a static dashboard format or as a PDF file, without explanation about the source of the data, the definitions of variables, the context in which the data is presented, or the story the library or, more importantly, its users want to tell.

The literature about data management usually refers to academic research data repositories, but the authors did not find many examples of library data repositories. In some cases, institutional repositories list data sets in the description of their collections but, upon examination, most either have no holdings or the holdings are insignificant, the data cannot be re-used, and/or the data is accompanied with either minimal documentation or none at all.

Purpose and Project Tools

The purpose of this project was three-fold:

- to merge library data with presentation tools to communicate the value of the library more effectively
- to explore the open access institutional repository as a "container" for "democratizing" library data, that is, creating locally digitized content from library statistical data and disseminating it widely
- to raise awareness of assessment methodologies within the library and beyond

Two tools were used in this project: **Nesstar WebView** for data analysis and training; **cIRcle**¹, the UBC institutional repository, for data presentation and dissemination.

A. Nesstar WebView

The Nesstar analysis tool has been used for some time by other university research groups, primarily faculty members and students, to manipulate and share data. However, it has not been used routinely by academic libraries for analysis of their own library data. The UBC Library initially applied this tool to the analysis of its LibQUAL+® 2007 survey data. The current task was to replicate and enhance this analytical

process for the 2009 and 2010 survey data and prepare longitudinal data and charts. In addition, training materials were created for non-specialist library staff to explore the tool, learn the basics of manipulating data, and to present data in charts.

Nesstar allows library staff without expert knowledge of statistical programs (SPSS, etc.) to browse for variables, review and manipulate or correlate data, make graphs, view, print, download output, and customize reports. Charts and graphic presentations can be created, previewed, reviewed, by teams in consultation with each other. Output presentations can be customized and/or exported to other media for public viewing.

For a description of the Nesstar program, see previous paper by the author presented at the

Library Assessment Conference in Seattle, 2008.² Although Nesstar's visual analysis tools are relatively easy for anyone with an interest in library data to learn, raw data from the LibQUAL+® survey still needs to be prepared and presented in an accessible way. The SPSS data from the 2009 and 2010 LibQUAL+® surveys was manipulated by assessment staff for easier viewing and analysis in Nesstar. Variables were renamed, and unnecessary variables and data were stripped away.

Results from the three surveys were compared to more fully understand longitudinal trends, relationships and correlations.

Figures 1 and 2 illustrate the renamed variables in the Nesstar menu for the 2009 and 2010 data sets.

Figure 1. Nesstar menu for the LibQUAL+® data sets and the renamed variables for the 2009 data set

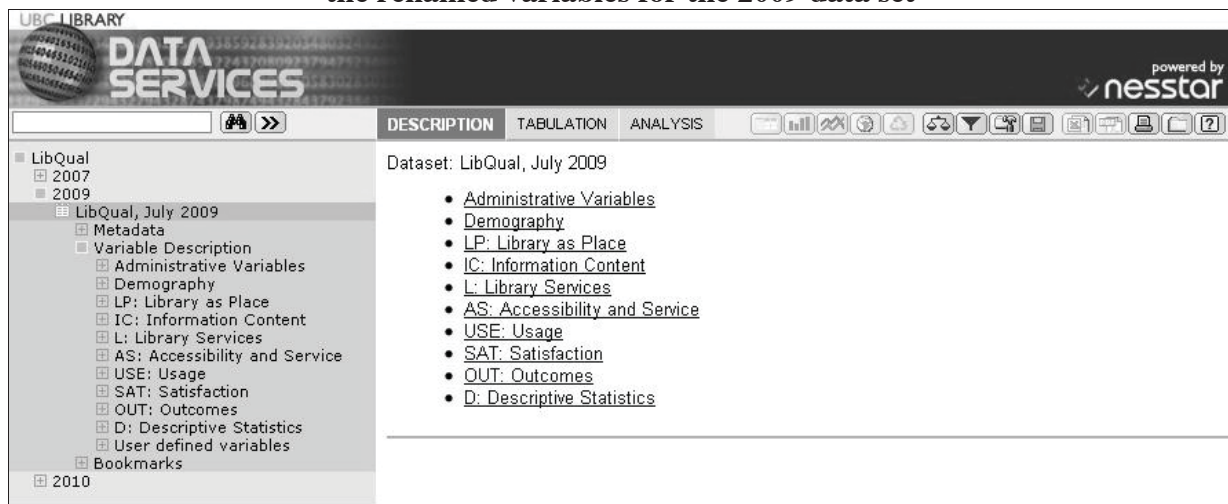
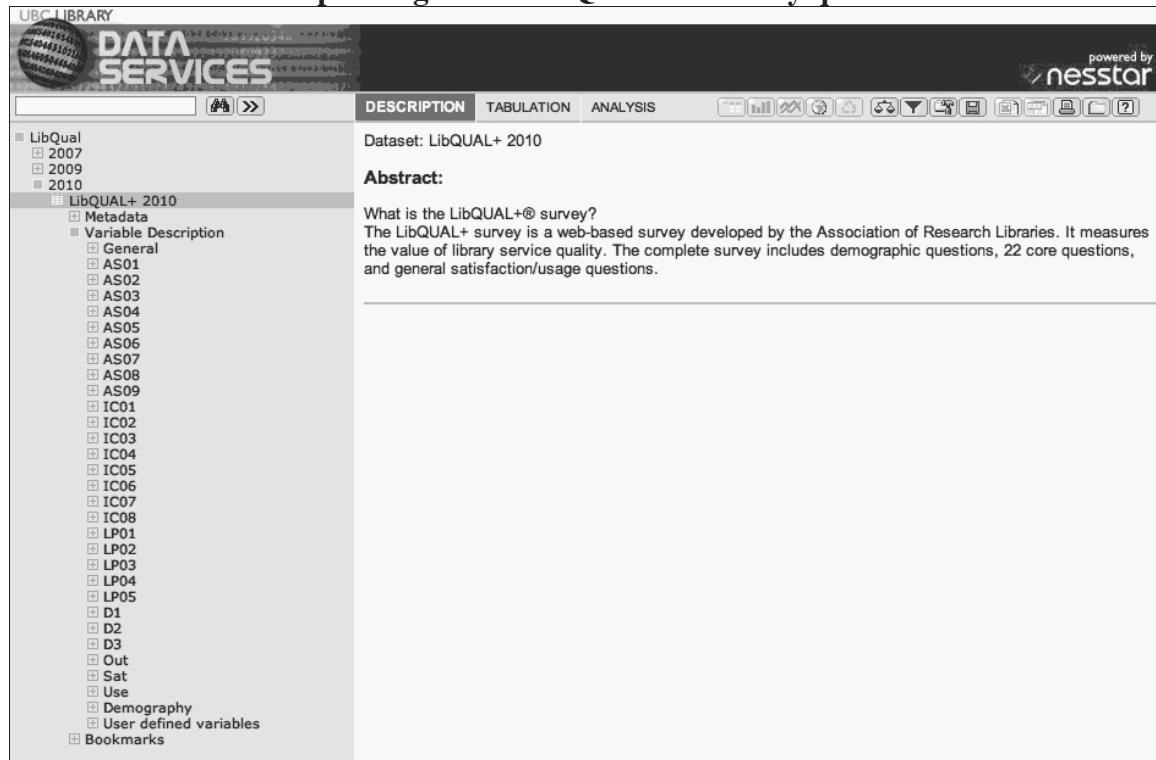


Figure 2. Nesstar menu for the 2010 survey with the renamed variables, corresponding to the LibQUAL+® survey questions



LibQUAL+® 2009 Subset

A subset of the UBC Library LibQUAL+® 2009 survey results was created in Nesstar. The intent was to use selected variables as a tool for non-specialist library staff to:

- learn the basic functions of Nesstar
- learn how to analyze and manipulate data at a basic level of expertise
- learn how to produce statistical reports using Nesstar's functions

The Nesstar subset included two files:

- SPSS file with 6 variables for practice purposes:
 - demographics (3 variables)
 - discipline
 - user group
 - library used most often

- library use (frequency of in-person visits) (1 variable)
- general satisfaction ratings (2 variables)
 - satisfaction with learning, research, teaching support
 - satisfaction overall
- A *Data Dictionary* with the metadata of the dataset:
 - abstract - explanation of the survey and subset variables
 - levels of measurements
 - variables descriptions (name, label, description, values)

Accompanying Documentation

To facilitate the use of the data subset, a tutorial document for self directed learning was also created. The *Nesstar Tutorial* Table of Contents is shown in Figure 3.

Figure 3. Table of contents for the *Nesstar Tutorial*

Nesstar Tutorial for LibQUAL+® 2009 Subset	
Table of Contents	
Access the Dataset “LibQUAL 2009 Subset”	2
Login	2
Screen Layout.....	2
Section 1: Hierarchical List of Resources and Variables	3
Section 2: Description and Analysis.....	4
Manipulating Data.....	5
Step 1: Create a Table.....	5
Step 2: Populate the Table with Data	6
Step 3: Limit to Specific Categories.....	8
Add a Layer.....	11
Presenting Data in Charts.....	13
Export Table to Excel.....	14
Export Table to PDF.....	15

Figures 4, 5 and 6 show examples from the LibQUAL+® 2009 Subset³ of:

- metadata
- description of variables
- manipulating data

Figure 4. Metadata for the LibQUAL+® 2009 Subset record

The screenshot shows the 'DESCRIPTION' tab of the 'LibQUAL+ 2009 Subset' record. The left sidebar shows a tree view with 'LibQUAL+ 2009 Subset' selected. The main content area contains the following text:

Dataset: LibQUAL+ 2009 Subset

Abstract:

What is the LibQUAL+® survey?
 The LibQUAL+ survey is a web-based survey developed by the Association of Research Libraries. It measures the value of library service quality. The complete survey includes demographic questions, 22 core questions, and general satisfaction/usage questions.

LibQUAL+ 2009 Subset:
 The current dataset is a subset of the LibQUAL+ 2009 survey. It includes six (6) variables representing two (2) groups of variables. These are:

Demographic variables
 Variables:
 1. Academic discipline
 2. Library used most often
 3. User group

LibQUAL+ general satisfaction and library use questions
 Variables:
 4. Satisfaction - learning, research, teaching support
 5. Satisfaction - overall quality of service
 6. In-person visits to the library

Figure 5. Description of the variable "academic discipline" with response numbers and percentage responses for each discipline

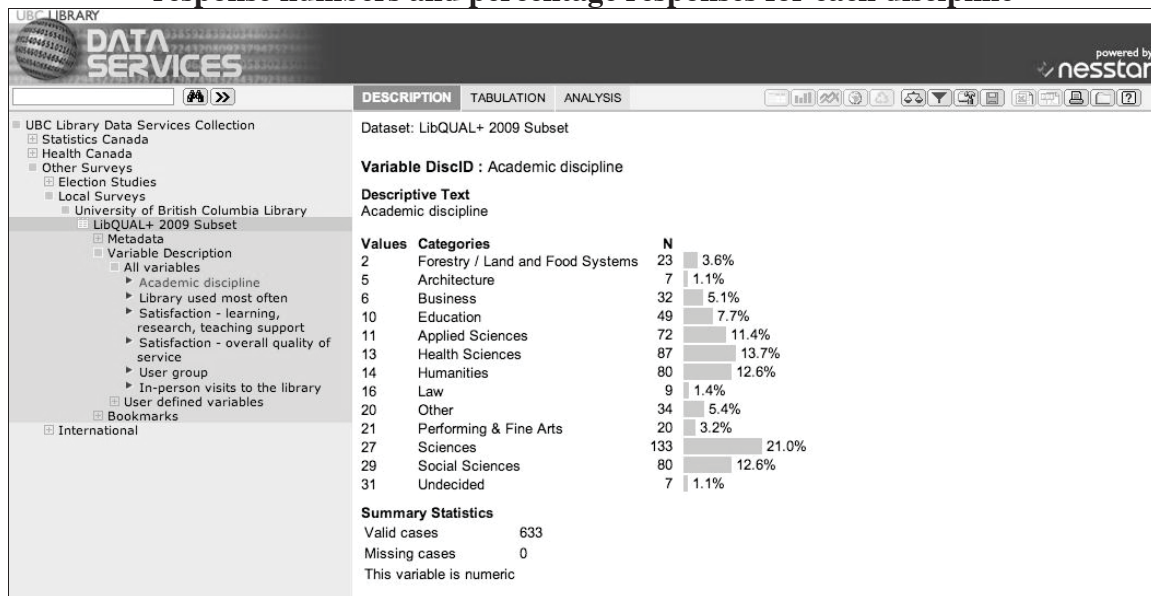
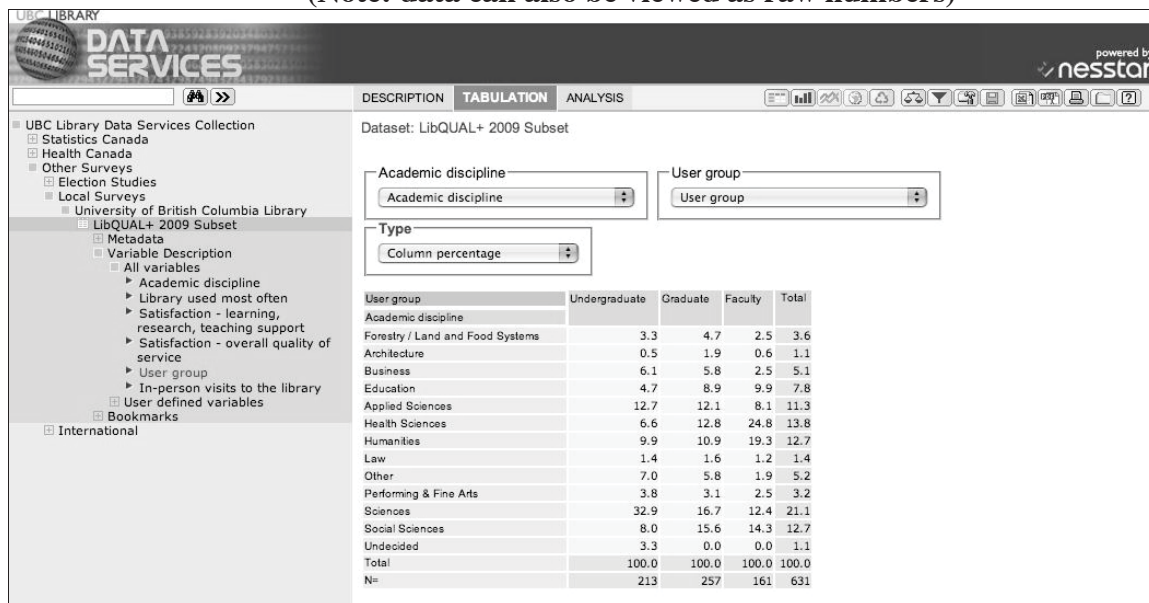


Figure 6. Example of manipulating data by variable "academic discipline" and variable "user group", presenting the table in column percentage (Note: data can also be viewed as raw numbers)



Both the *Data Dictionary*⁴ and *Nesstar Tutorial*⁵ are accessible in cIRcle. A training session on the "Nesstar Subset" was also presented to library staff. It included a demonstration of the key Nesstar functions and allowed attendees to practice online.

This pilot project, creating the data subset, data

dictionary, tutorials, charts, and training session designs, serves as a prototype for developing training products and assessment tools in future projects.

B. cIRcle Institutional Repository

The UBC Library explored the feasibility of presenting and publishing several examples of

library data in cIRcle, the University of British Columbia Library's institutional repository.

Cases include selective data on library services and longitudinal data from the LibQUAL+® 2007, 2009 and 2010 Survey results. Later, having tested the waters, we also deposited selected submissions on library institutional history, including its accompanying statistical data.

It was anticipated that cIRcle would provide an opportunity for the library story to be told visually and creatively for different audiences and provide easy access to library data:

- by library staff for learning and presentations
- by the library administration for advocacy
- by the development office for "making the case" for funding
- by managers for making informed decisions based on evidence
- by the public for understanding the value of the library and how the library can address their concerns for access and content

Usage statistics were to be collected to assess access, usability, and usefulness of the collections.

Organizational Context

The library's current strategic plan includes a specific priority goal to "develop cIRcle into a showcase for research." In addition, the plan identifies the Assessment Program as a "critical enabler" for library-wide and unit-specific strategic initiatives. Three specific goals of the Assessment Program are to:

- move data from the desktop or manual files to shared data repositories
- share knowledge and expertise of assessment efforts
- communicate assessment plans and programs to staff and the public

These Assessment Program goals intersect with the mandates and policies of cIRcle and the University Archives. Questions to be considered were:

- which library statistical data created in-house or derived from other sources needs to be retained? (archival question)
- what are the requirements for submission, content and format? (cIRcle question)

- where do the respective responsibilities for data preservation reside? (University Archives, cIRcle)

Assessment questions to be considered were:

- what tools are available for creation of data presentations? (communications)
- what resources are allocated to develop, prepare, submit and update data? (data repositories, sustainability)
- what value can be added to the existing data to satisfy users' demand for data? (user perspective)

Project Management Steps

The project management steps were to:

- determine scope of the data sets to be deposited in cIRcle
- determine method of presentation
- develop a data dictionary of terms and definitions for a non-specialist audience
- for the LibQUAL+® 2007, 2009 and 2010 data, replicate and enhance the analysis carried out earlier with the Nesstar WebView application program
- deposit the data sets in cIRcle, following naming conventions and collections policies
- evaluate the measures of success: access, acceptance, usability, usefulness

Assessment Collections in cIRcle

Three categories of documents were selected to explore the scope and methodology for submitting documents to cIRcle:

- publications about assessment
- LibQUAL+® surveys: data and findings
- library services: statistical data

This project used or established the following headings according to authorized naming conventions for the cIRcle "Community" and "Collection":

- Community = Library
- Sub-Community = Library Assessment
- cIRcle Collection = Library Assessment: Publications/Presentations
- cIRcle Collection = Library Assessment: LibQUAL+® Surveys
- cIRcle Collection = Library Assessment: Statistics

Cross-listing under the Sub-Community "Library Staff Papers and Presentations" was also undertaken in several cases.

In preparing the content for deposit in cIRcle, the following questions were considered:

- how is it different from deposits to the staff intranet?
- what do different audiences want to see? library managers/staff? community? donor?
- how can the credibility and accuracy of the document be ensured?
- what data needs to be updated, maintained?
- how can library data be presented in a user-friendly way, e.g., data dictionary, data keys?

The following examples summarize and illustrate the process of capturing the data, preparing the documents, preparing metadata and presenting

the data in the three assessment collections.

1. cIRcle Collection: Library Assessment: Publications/Presentations

The jumping off point for submitting a series of assessment documents to cIRcle was the exploratory paper, based on the LibQUAL+® 2007 survey, presented at the Library Assessment Conference in 2008 and later published in the Proceedings.

2. cIRcle Collection: Library Assessment: LibQUAL+® Surveys

The purpose of adding these documents was to update the findings described in the earlier paper and to tell the story of the 2009 and 2010 LibQUAL+® surveys.

Figure 7 shows the browse list in cIRcle for the collection.

Figure 7. The cIRcle browse list for "Library Assessment: LibQUAL+® Surveys" collection
Browsing Library Assessment: LibQUAL Surveys by Issue Date

Jump to a point in the index: (Choose month) (Choose year)

Or type in a year:

Sort by: Order: Results:

Now showing items 1-15 of 15

Chart 1: Access from Home or Office (Ratings) All Respondents by Academic Discipline Friesen, Margaret; Diers, Bailey (2010)
Chart 2: Library Website (Ratings) All Respondents by Academic Discipline Friesen, Margaret; Diers, Bailey (2010)
Chart 3: Library - Quiet Space (Ratings) Undergraduate Students by Library Friesen, Margaret; Zaher, Suher (2010)
Chart 4: Library - Quiet Space (Ratings) Graduate Students by Library Friesen, Margaret; Zaher, Suher (2010)
Chart 5: Library - Group Space (Ratings) Undergraduate Students by Library Friesen, Margaret; Zaher, Suher (2010)
Chart 6: Library - Group Space (Ratings) Graduate Students by Library Friesen, Margaret; Zaher, Suher (2010)
Chart 7: Library - Quiet Space (Ratings) All Respondents by Library and Year Friesen, Margaret; Zaher, Suher (2010)
Chart 8: Library - Group Space (Ratings) All Respondents by Library and Year Friesen, Margaret; Zaher, Suher (2010)
UBC Library LibQUAL 2009 Survey Results: Explanatory Notes Zaher, Suher; Friesen, Margaret (2010)
UBC Library LibQUAL+® 2010 Survey Results for "Library as Place": Explanatory Notes for Charts 9-11 Friesen, Margaret; Zaher, Suher (2010)
Chart 9: Library - Quiet Space: A comparison of IKBLC and Koerner for 2007, 2009 and 2010 Friesen, Margaret; Zaher, Suher (2010)
Chart 10: Library - Group Space: A comparison of IKBLC and Koerner for 2007, 2009 and 2010 Friesen, Margaret; Zaher, Suher (2010)
Chart 11: Library - Getaway for Study, Learning or Research: A comparison of IKBLC and Koerner for 2007, 2009 and 2010 Friesen, Margaret; Zaher, Suher (2010)
UBC Library LibQUAL+® Survey 2009 Subset: Nesstar Tutorial Zaher, Suher; Friesen, Margaret; Diers, Bailey (2010)
UBC Library LibQUAL+® Survey 2009 Subset: Data Dictionary Zaher, Suher; Friesen, Margaret; Diers, Bailey (2010)

The charts selected for presentation of the LibQUAL+® data were chosen because the data represented issues of significant concern to library users. These issues related to remote access from home or the office, the library website and users' perceptions of the "Library as Place."

Since the LibQUAL+® survey instrument asks for users' responses to three levels of service (minimum, desired and perceived ratings), thermometer charts were selected to present the average scores for all three ratings in a graphic way.

The findings were summarized and the charts were explained in non-technical language in the *Explanatory Notes* (data dictionary). These *Notes* included the following information:

- What is the LibQUAL+® survey?
- The LibQUAL+® survey at UBC, 2007 and 2009
- Summary of findings
- Description of variables

A second dictionary (*Explanatory Notes*) was prepared to explain a subsequent set of charts for the 2010 survey data.

Content of the charts

2009 Survey

Charts 1 and 2 show the correlation of variables "access" and "library website" with the respondents' academic disciplines.

Charts 3-8 relate to "Library as Place." Charts 3 and 4 correlate ratings for "quiet spaces" with variables for user groups (undergraduates, graduate students) and with variables for the libraries used most often. The four largest libraries at UBC are Koerner, The Irving K. Barber

Learning Centre (IKBLC), Woodward and Education.

Charts 5 and 6 correlate ratings for "group space" with variables for user groups (undergraduates, graduate students) and variables for "library used most often."

Charts 7 and 8 compare ratings for variables "quiet spaces" and "group space" for the two largest libraries (IKBLC and Koerner) for two years, 2007 and 2009. The reason for focusing on these ratings was to tell the story of users' perceptions before and after the opening of the IKBLC - South Wing. This stunning new space became a hugely popular destination as soon as it opened for both undergraduates and graduate students, for study and social purposes.

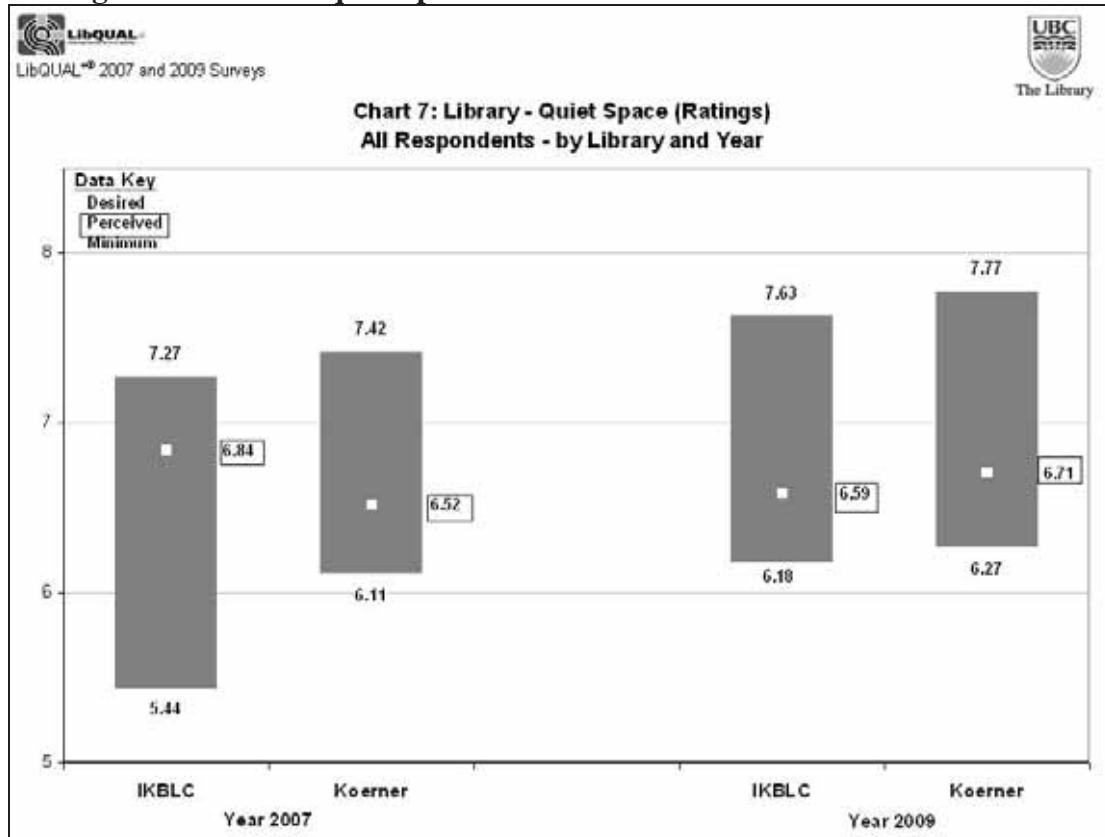
2010 Survey

Charts 9-11 update the LibQUAL+® data for "Library as Place" to 2010. These findings reinforced those of the earlier surveys which revealed that users were asking for more quiet space to be allocated for study, and in particular, in the popular Irving K. Barber Learning Centre.

Figure 8 (chart 7) illustrates how a chart in cIRcle was described in non-technical language:

- The LibQUAL+® survey question = LP2 "Quiet space for individual activities"
- The Data Key explains the thermometer charts and the three levels of service: minimum (bottom of bar); desired (top of bar); perceived (red square).
- Survey years are 2007 and 2009
- Variable: Library used most often: Category is IKBLC and Koerner Library

Figure 8. Chart 7 - quiet space for 2007 and 2009 in IKBLC and Koerner



Margaret Friesen/Suher Zaher, UBC Library Assessment

3. cIRcle Collection: Library Assessment: Statistics

In addition to the LibQUAL+® submissions, tables showing data for four library services activities were also added to cIRcle. The services were Circulation, Visitors (Gate Count), Instruction, Reference, for the years 2008-09⁶ and 2009-10⁷. The purpose was to make library statistical data more accessible than where it currently resides, on a password protected staff intranet. This snapshot of key library services also reveals more detail about these services than can be derived from the ARL repository, which presents only a total figure for all reference and instruction activities at UBC Library.

Two of the data sets, for reference and instruction activities, are derived from the Desk Tracker data repository, a decentralized online data entry system. Branches and divisions submit data about their activity in real time and can view, download and manipulate data as required for their branch/division, the library system as a whole, or other groupings of libraries. In cIRcle, the excel files can also be downloaded for further analysis and manipulation.

cIRcle Usage, or Measures of Success

Usage of the assessment documents in cIRcle was tracked. In a four-month period, these cIRcle submissions were viewed and files downloaded as follows:

Table 1. cIRcle usage

cIRcle collection	Page views	File downloads
LibQUAL+® charts/data dictionary (13 files)	1,597	397
Statistics (Library data on services) (2 files)	305	146
Publications	228	101
Total Library Assessment Collection usage	2,130	644
Note: usage was tracked by country: USA, Canada, Japan, Korea, France, Netherlands, Russia, China, UK, Israel		

Qualitative data from library staff indicated that documents in cIRcle were easy to find and that "cIRcle is the perfect place for this data."

C. Comparison of Nesstar and cIRcle

The audience and the process for preparing documents and disseminating data differed in key respects between Nesstar and cIRcle.

In Nesstar, the viewer can discover relationships on his/her own, manipulate data, re-use data,

create charts, and access the entire data set. The audience is limited to the assessment staff, library staff, library administrators, and authorized library users.

In cIRcle, the LibQUAL+® data is presented in a static way. The viewer has access to only the selected data, prepared for a general audience.

Table 2 outlines the differences.

Table 2. LibQUAL+® data in Nesstar and cIRcle

LibQUAL+® data in Nesstar	LibQUAL+® data in cIRcle
Entire data set	Selected data
Search/browse ability	Search/browse ability
All variables	Selected variables
Uploaded using SPSS data	Reformatted from excel file/thermometer charts
Manipulate data	View data only
Create tables/charts online	View tables/charts only
Restricted to authorized users	Open access
Includes data dictionary (metadata)	Includes data dictionary (explanatory notes)
Download data for re-use	Print file downloads

Both methods disseminate information about library data beyond the assessment office and provide search and browse capability. Both add value to the data to make it easier to re-use and understand.

It was hoped that usage tracking would be possible for both projects to determine measures of success related to access, acceptance, usability, usefulness of the data.

Unfortunately, it was not possible to track usage of the Nesstar data set. However, attendees at the

Nesstar training session expressed satisfaction in being able to understand how Nesstar worked, learn data terminology and how data can be viewed and manipulated. One trainee wrote "the tutorial and sessions were excellent and presented us with many possibilities to view and manipulate data."

D. Summary

In summary, the two projects were successful in several ways and the methodology can be replicated in the future. The projects also presented challenges, which may be addressed in future activities.

The first goal, to merge library data with presentation tools to communicate the value of the library more effectively, was realized as follows. Assessment staff were able to add value to the LibQUAL+® data by interpreting the findings, preparing data dictionaries and tutorials. Selective data on topics of general interest was simplified for a non-specialist audience by explaining data concepts and terms and customizing the output to cIRcle. The opportunity to participate in LibQUAL+® data analysis using the Nesstar analytical tool was extended from the assessment office to a wider audience of library staff and users.

The second goal, to explore the open access institutional repository as a container for democratizing library data, resulted in three assessment collections (fifteen items) being added to cIRcle.

The third goal, to raise awareness of assessment methodologies within the library and beyond, was accomplished in several ways. New assessment tools were created to share knowledge about data analysis methodology and, in particular, analysis and findings from the LibQUAL+® survey. Finally, according to the usage statistics, cIRcle's great reach found a wider audience.

Challenges

The biggest challenges related to limited human resources and availability of a single data repository.

First, resources to prepare the documents were limited, both in time and funding. Second, simplifying technical language for a non-specialist audience required many iterations.

Finally, development of a single, multi-purpose shared data repository remained elusive. Two partial solutions are of interest as possible models, but are limited in their content and applicability: Nesstar and Desk Tracker. Nesstar can be used as a data repository for library data if the raw data is generated from SPSS or other statistical software program. In Nesstar, interactive functions are possible, but access is limited to cardholders. Desk Tracker is an example of a single purpose data repository for decentralized input and

viewing of data, but is limited to two library functions: reference and instruction activities.

Future Steps

Data Repository

A data audit of library management data was begun in June 2010. The purpose was to determine what data is available, its format, source, usefulness, comprehensiveness and to document gaps, both for data needs internally and externally. A follow up survey to identify branch libraries' requirements for data and a centralized data repository is underway.

In-house Surveys

Although the LibQUAL+® survey data is rich in data for many purposes, it does not adequately reveal library service successes and concerns for the smaller branches. In-house surveys for four branches (Rare Books and Special Collections, University Archives, Asian Library, Music Library) have been conducted this year and the Assessment office will replicate, enhance, or extend the methodologies used in these cases for other services.

User-centered Spaces, a Strategic Plan Priority

The evidence from the LibQUAL+® data will feed into the planning process for new learning commons models, including spaces and services for graduate students.

Communications Plan for Assessment

A comprehensive communications plan, including resources, is needed to move existing data from the staff intranet or individual desktops to public platforms, the public website, cIRcle, and other media venues. In addition, exploring more ways to merge numeric data with data visualization tools, such as ArcGIS software, presents the opportunity to create visually powerful images for a broader audience.

The UBC Library Assessment Program's goal remains: to democratize library data by extending its reach. **Who gets to view what data, when, and how?**

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Know Thy User: The Duke Libraries User Studies Initiative

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“In the end, to know library users accurately is to know how to reach them effectively with core library values and services.”¹

Abstract

Academic libraries increasingly advocate local user studies as a way to provide library services relevant to the culture and user population of the institution. Many libraries have been fortunate to work with an anthropologist like Foster to design and implement user studies. However, not every library can hire an anthropologist or other specialized research staff. To build a culture of assessment, library staff must develop the ability to design, conduct and utilize research about library users and campus constituencies. Staff development and training need to become a priority. Helping library staff become competent and comfortable with research methods builds a community of practice that is the basis of a culture of assessment.

The Duke Libraries User Studies Initiative was a response to a perceived need on the part of library staff for more training in assessment methods that could be utilized to study library users. Designed as an in-house training and support effort, the Initiative had among its goals to increase knowledge and skills of library staff about social science research methods and best practices for studying user behavior and to build a support structure and network for librarians interested in conducting user studies. The Initiative has been successful in building a cohort of library staff who are competent in basic methods of conducting user studies and confident in their ability to design and implement studies that can provide useful information. It was a low-cost, grassroots staff development effort that drew on campus and local expertise to provide practical and effective training. Library staff members were empowered to launch user studies, report out their findings, and use the information to shape library collections and services.

Introduction

Academic libraries increasingly advocate local user studies as a way to provide library services relevant to the culture and user population of the institution. There has been an explosion of interest in studying library users in the past few years, beginning with *Studying Students*, the seminal 2007 study by Nancy Fried Foster and her collaborators at the University of Rochester.² Many libraries have been fortunate to be able to work with an anthropologist like Foster to design and implement user studies. However, not every library can hire an anthropologist or other specialized research staff.

Beyond user studies, academic libraries are actively embracing a culture of assessment. This culture is being built from inside libraries and imposed at the institutional level through drivers such as accreditation. As libraries build a culture of assessment, develop staff expertise to design, implement and use assessment, research is a critical need. Yet many, perhaps most, academic librarians do not feel equipped to jump into assessment. As Koufogiannakis and Crumley perceptively note, “If librarians know there are gaps in the research base and some of the questions that need answering are being presented to us via research agendas, why are we not all simply choosing a question and conducting research? What is stopping the average librarian from helping to build up this necessary body of research? Practicing librarians face numerous obstacles to conducting research including funding, time, experience, support and access to research.”³

Library staff come with widely divergent backgrounds and widely varying exposure to, and experience with, conducting research. In

many graduate library programs, students take one research methods course (if that) and may or may not have to conduct a full-scale research study. Until recently, assessment was on the back burner in many academic libraries, reduced to statistics (mainly collections based) for ARL and other national organizations.

To build a culture of assessment, library staff must develop the ability to design, conduct and utilize research about library users and campus constituencies. Staff development and training need to become a priority. Helping library staff become competent and comfortable with research methods builds a community of practice that is the basis of a culture of assessment.

The Duke Libraries User Studies Initiative was a response to a need on the part of library staff for more training in assessment methods that could be utilized to study library users. The yearlong staff development effort was directly related to the Libraries new strategic plan, "Sharpening Our Vision," which was completed in 2009. The first strategic initiative in the plan directs the library staff to "[u]nderstand library users' research and library experiences and use that information to shape collections, spaces, and services."⁴ Combined with an emphasis throughout the plan on creating and using information gained through assessment, the strategic plan gave energy to the creation of the User Studies Initiative.

In the spring of 2009, a small group of librarians proposed the Initiative to the Duke Libraries' Executive Group. Designed as an in-house training and support effort, the Initiative had as its goals to . . .

- Increase knowledge and skills of library staff about social science research methods and best practices for studying user behavior
- Provide a forum for discussing important findings from major studies of library user behavior and implications for our services
- Foster collaboration among librarians to conduct user studies
- Build a support structure and network for librarians interested in conducting user studies
- Support at least one user study that results in a report suitable for publication via the library web site and/or local event by June 2010

Formal endorsement by the Libraries administration meant that library staff would be encouraged to actively participate, and those staff members who attended four or more sessions would receive a certificate from the human resources office. Staff were encouraged to include participation in their performance evaluation plans. The Initiative was advertised widely throughout the library system, and programs were scheduled monthly at the same time and place so that staff could build attendance into their calendars. Assessment of the Initiative was put in place at the start.

Initiative facilitators were convinced that there was enough expertise in the Libraries, on the Duke campus, and among local institutions (such as the University of North Carolina) to mitigate the need to hire outside trainers. The Initiative drew on presenters such as an anthropologist who teaches in Duke's Writing Program, a doctoral student at the School of Information and Library Science at UNC, and a statistician who directs the education program at Duke's Social Science Research Institute. Most academic libraries have a wealth of expertise to draw on for training staff in research methods. An unexpected benefit of inviting campus and outside trainers was that they were exposed to research questions of interest to academic librarians.

Monthly training events included an overview of social science research methods and developing research questions as well as presentations on methods such as interviews, ethnographic observation, data mining, and research reports. Additional training opportunities were provided for specific statistical or qualitative analysis tools. At each training event, participants were invited to bring research questions, study ideas, and updates from their own user studies. Library staff were encouraged to launch small user studies and work collaboratively in order to build confidence and a support community. While the User Studies Initiative was underway, the two case studies detailed below were designed and implemented.

Staff development strategies for building a culture of assessment:

A review of the literature

To build and sustain a culture of assessment, libraries must develop staff expertise and foster broad engagement to design, implement, and use

research. As Betsy Wilson noted in her 2008 address to the ARL Library Assessment Conference,

“All assessment is local. We must become user-centric organizations. . . . We must demonstrate impact and outcomes. . . . We must tell compelling stories. . . . Assessment enables wise reallocation of our effort and honing our collective focus.”⁵

To base library planning and decisionmaking on a clear understanding of local users’ needs, research libraries are striving to strengthen their ability to conduct evaluation studies, assessment projects and user initiatives. As noted above, library staff are not necessarily equipped with the skills and experience to plan and execute with confidence user studies and research in their organizations. A growing body of research in the areas of evaluation capacity building and evaluation process use provides insight and recommendations for best practices for organizations hoping to build a culture of assessment through staff development initiatives.

The formal workshops and training sessions that formed the backbone of the User Studies Initiative were a deliberate intention to build evaluation capacity within the library. Evaluation capacity building has been defined as “. . . the intentional work to continuously create and sustain overall organizational processes that make quality evaluation and its uses routine.”⁶ Preskill and Boyd noted that the activity of evaluation capacity building (ECB) may be driven by factors that are either external (e.g., new accountability requirements imposed by the institution) or internal (e.g., organizational changes, a desire to improve programs, a perceived lack of skill within the organization) or perhaps a combination of these. In their review of effective ECB practices, identifying the most significant organizational drivers is a crucial step. They also identified a sequence of key steps shared by effective ECB initiatives, including defining specific, attainable criteria for the success of an ECB initiative endorsed by organizational leaders; ensuring that the key characteristics of potential staff participants are identified and used to specify learning objectives for these participants based on the gaps and needs that the initiative is intended to address; and referring to organizational change theories that are relevant to these contextual

factors.⁷ Overall, the goal of ECB is to create a sustainable organizational culture where evaluative thinking and practice are valued, used in organizational decision-making, and considered a standard aspect of organizational process.⁸ As Preskill and Boyd noted, ECB encompasses the assumption that “. . . key leaders in the organization must share include at least that evaluation is a ‘good’ thing to do, that evaluation can contribute to effective decision making, and that evaluation adds value to the organization.”⁹

The capacity of organizations to conduct evaluations and use evaluation findings effectively can be enhanced by engaging staff more directly in the evaluation process. Michael Quinn Patton coined the term “process use” to describe this phenomenon; namely, the benefit that organizations get from participating in the evaluation process itself, independent of whether the outcomes, findings, or recommendations of the evaluation have an impact. Process use may involve the organizational learning that occurs as a result of clarifying the goals of a program or designing the evaluation of the program.¹⁰ Patton later clarified the meaning of process use to be the “ways in which being engaged in the processes of evaluation can be useful quite apart from the findings that may emerge from these processes.”¹¹ Evaluative thinking contains many critical elements that those who routinely engage in program assessment may take for granted, namely:

“. . . clarity, specificity and focusing; being systematic and making assumptions explicit; operationalizing program concepts, ideas and goals; distinguishing inputs and processes from outcomes; valuing empirical evidence; and separating statements of fact from interpretations and judgments. These values constitute ways of thinking that are not natural to people and that are quite alien to many. When we take people through a process of evaluation—at least in any kind of stakeholder involvement or participatory process—they are in fact learning things about evaluation culture and often learning how to think in these ways.”¹²

According to Patton, specific organizational benefits of process use can include increased capacity to make use of evaluation findings.¹³

Similarly, in their study of the impact of evaluation activities on organizations, Cousins, et al. identified two layers of process use benefits: First, they noted increased skills and use of evaluative logic among staff, but they also identified a deeper organizational benefit; namely, that organizations through process use enhanced their organizational learning capacity and culture of experimentation.¹⁴

Case one: Assessing researcher needs in cultural anthropology

The Duke University Libraries' strategic plan, "Sharpening Our Vision, 2010-2011," places an emphasis on our ability to interact with faculty, staff and students at multiple points in their research, teaching, learning, and publishing as we seek to continually improve services for faculty and graduate students.

A key component to providing better support to faculty and graduate students includes an understanding of research practices and challenges faced by scholars. Shawn Miller, Academic Technology Consultant for the Social Sciences for the Center of Institutional Technology, and Linda Daniel, Research and Reference Services Librarian and subject liaison to the Cultural Anthropology Department, partnered in the fall 2009 semester on a pilot project to interview the faculty and graduate students in Cultural Anthropology. Information was collected about the materials scholars use, collect, and preserve; what services and technology tools they find useful; and the role the library plays (or could play) in their research.

The Department of Cultural Anthropology at Duke ranks among the top programs in the country. This department was chosen for our study because of its size, its perceived use of research methods and technology, and its international scope. At the time of this study, there were fifteen full-time faculty members, all of them world-class experts in their fields. The department offers an undergraduate major, and the graduate program includes both a joint Masters program with the Duke Law School and a doctoral program for students wishing to pursue the PhD degree.

Methodology

Our study included two components, in-person

interviews and an on-line survey, to capture both individual and discipline-based practices and needs. Our interview scripts (see *Appendix A*) and online survey were adapted, with permission, from materials developed by the University of Minnesota Libraries, with a grant from the Andrew W. Mellon Foundation.¹⁵ The final report of the Minnesota study, "A Multi-Dimensional Framework for Academic Support," developed a model for how scholarship could be supported at a large research university.¹⁶ We added two questions about the use of technology in research and teaching to the Minnesota script to give more insight into how faculty and grad students perceive technology's role in their work. The use of tested instruments allowed us to move quickly into the implementation of our project.

We submitted a request to the Duke Institutional Review Board for a screening for exemption for the use of human subjects in non-medical research. The IRB determined that our application did not need approval, as it was considered program improvement. We developed consent forms to ensure compliance with any future studies.

In August, 2009, we met with the chair of the Cultural Anthropology Department to discuss our project, see if he would pilot our surveys, and ask for his support. The chair offered his assistance and emailed departmental faculty to tell them about the study and our intention to set up 30-45 minute interviews. The chair's support was instrumental to the success of our project.

We met with the Cultural Anthropology graduate students at their fall orientation meeting to describe our project and solicit their involvement. Our original plan was to hold a focus group with the graduate students. The students expressed their willingness to be part of our project but, when we contacted the students by email and tried to set up a time for the focus group to meet, we discovered that their busy schedules did not allow time for a group meeting. Individual meetings with the graduate students were the most effective way to ensure participation.

Over the course of the semester, we conducted interviews with twelve faculty and four graduate students. Each interview was recorded on an iPod, with the written consent of the interviewee.

Each interview was conducted by two investigators. One person asked the interview questions and one person took handwritten notes. The recorded interviews were transcribed and used for hand coding. Each interviewee also received a follow-up email to ask them to complete an on-line survey about their research practices.

Findings

We analyzed the results of these interviews and surveys within the framework of the Duke University Libraries' strategic plan, which includes five tactical directions. In our report, we preferred to highlight the voices of the faculty and graduate students rather than our own analysis. We shared the results with the department and gave them time for feedback. We also shared the report with the library. We hope these results will help illuminate current services and inform future improvements, planning, and implementation of library services and programs.

Strategic direction 1: Improve the user experience

We found that cultural anthropologists conduct much of their field research via ethnography. Additional research may include collecting cultural artifacts, tracking related current events, and accessing library archives and other written materials. Researchers did not report a standard set of processes for conducting their field research. Rather, researchers tended to favor individual research habits developed over time, and not necessarily suggested or dictated by the discipline itself. Some mentioned the use of tape recorders, video cameras and other tools to capture conversations, while others rely more exclusively on note-taking.

When using typical library resources, Cultural Anthropology researchers seek out current research and primary sources. Several researchers mention using Google Scholar either as a supplement for, or as a replacement to, library search tools. We also heard how specific library services could be improved to remove barriers to research and teaching.

Strategic direction 2: Provide digital content, tools, and services

Cultural Anthropology researchers collect materials related to their area of focus. Sources

can be text, audio, video, or web-based.

Researchers develop their own methods for capturing, organizing and managing these collections—though many resort to printing or working with complex file structures during the writing process.

Several researchers noted the increasing use of video content in their courses. In addition to using video for teaching, several used video as part of their research. One researcher noted the ongoing struggle to manage video file sizes when collaborating on a video project. Many scholars noted their satisfaction with the library's video collection and services. Several Cultural Anthropology researchers are currently involved in creating and publishing digital scholarship. Other faculty are in the beginning stages of planning for a digital project. Graduate students increasingly incorporate digital elements into their work.

Technological change, and the increasing role that technology plays in research, creates a desire for personalized support. Interest exists for assistance with data storage, organizing tools, video editing, archiving of digital resources, and open access publishing. Graduate students see the need to be innovative in their research and teaching and are interested in trying new technologies.

During several follow-up visits, we demonstrated 'personal notebook' tools which synchronize back to the data 'cloud' and work well with different operating systems and devices. While these applications may help with individual research, gathered data would still remain locked within the personal repositories of the researcher. Increased library involvement would help ensure data portability.

Strategic direction 3: Develop new research and teaching partnerships

Cultural Anthropology faculty collaborate with people in the countries in which they do their field research, with scholars at other universities, with faculty in other Duke departments, with Duke undergraduates and graduate students, and with the library. Faculty and graduate students collaborate with librarians to develop collections, for resource and research assistance, for technical support, for help with language expertise, and to make international contacts.

Faculty and graduate students would like to have seamless availability of library resources and technological support. Access to document delivery services needs to be easy, functional, and timely. As computer systems change, new software is created, and data storage becomes more difficult to manage, technology support becomes integral to research and teaching.

The demands to stay current in one's field, to publish and to teach do not allow time for library systems that do not work well. When these systems do not function properly, use of the library is circumvented and faculty find other ways to do their work.

Faculty and graduate students in the department conduct research that is rooted in the discipline and is often interdisciplinary in its focus. New strategies for the library to work with users should capitalize on the breadth of topics and countries in which faculty and students are involved. Librarians can encourage new collaborations by being aware of research and interests in other departments and programs. The library can be instrumental in its assistance with new research as librarians can help make international connections with faculty, librarians, and archivists.

There is a desire for research tools and services to be customizable and centered on individual needs. The challenge to find the time to balance work and personal demands creates a sense of urgency and the library needs to provide its services at the point of demand.

Strategic direction 4: Support university priorities

For all levels of scholarship, Duke Libraries strive to provide quick access to the library's electronic resources anywhere research is happening; improve the library's processes that create stumbling blocks to research and teaching; provide support (funding, training, and consulting) for faculty to develop projects that support academic goals; and develop and maintain web-based resources for research, teaching, and new technology. As a partner in Duke's digital repository, the library will work to make Cultural Anthropology faculty and grad students aware of the advantages of open access publishing.

Strategic direction 5: Enhance library spaces

Faculty do not tend to use physical library spaces when they work on their research—particularly during the writing process. Many researchers no longer use library spaces due to the increased ability to work at home, where they can shape their own individual spaces for working. Faculty and graduate students both suggested a desire to have access to spaces for collaboration and/or working with colleagues.

Next steps

We anticipate increased involvement with the Cultural Anthropology faculty and graduate students as a result of our interviews and as the Libraries develop programs and services to meet the goals of its strategic plan. Immediate follow-up has included the following:

- Personal database training sessions
- Meetings with faculty to discuss scholarly journal publishing
- Information about new database subscriptions to help with research
- Feedback for new database trials
- Assistance with podcasting
- Information about Center for Instructional Technology digitization services
- Information about the library's Data Services Department
- Assistance with specific software, including Delicious, Zotero, and Evernote
- Library instruction for specific classes
- Video requests
- Assistance with on-demand video training and Multimedia Project Studio information
- Information about possible project for Digital Production Center
- Information about graduate student check-out for faculty loan

Case two: Honors researchers user study

Undergraduate researchers—students engaging in graduate-level mentored research that culminates in a thesis or major project—comprise a user group that a number of libraries are considering in their outreach endeavors. Efforts include recognizing outstanding research with library prizes, coordinating "Personal Librarian" programs, providing course-specific instruction to students enrolled in honors research seminars, scheduling research consultations mandated by students' departments, or designating building

space specifically for undergraduates engaging in high-level research. The connection between librarians and library collections and undergraduate researchers is an obvious one, and the increasing level of importance that universities are placing on undergraduate research underscores the need for librarians to attend to the interests of these particular users.

This attention to undergraduate research is certainly evident at Duke University. In 2005, the administration set as a goal to double the number of undergraduates who complete honors theses or projects and thereby “graduate with distinction.” And in May 2010, Duke achieved its goal: Twenty-six percent of the 2010 graduating class completed honors theses or projects (just twelve percent of the 2005 graduating class earned distinction), and the number continues to grow in every department on campus. The university has developed extensive support mechanisms for these students—honors seminars, a dean and office to oversee the distinction program, an annual symposium—and Duke’s librarians have worked with key stakeholders on campus to ensure that they are an integral part of this infrastructure.

While the libraries’ specialized support services for honors researchers have been well received, librarians did not necessarily have a clear picture of the research process from undergraduates’ points of view before designing these services, tools and resources for this community. In an attempt to increase librarians’ understanding of the research perspective of this user group, Yvonne Belanger, Diane Harvey and Emily Daly designed a user study that documented and analyzed how students navigate their thesis projects—from formulating research questions to writing their final products.

Methodology

Prior to beginning our study, we conducted preliminary conversations with undergraduates who were writing honors theses as part of a general assessment of library services to these students. These initial conversations ultimately served as the basis for defining the scope of a potential study and refining a set of useful questions to focus these interviews.

The lead investigator for the study, Emily Daly,

met with the Directors of Undergraduate Studies (DUSs) in five departments: biology, English, history, public policy and program II. All five DUSs were supportive of the study and offered permission for library staff to recruit participants from among students intending to graduate with distinction from their departments. Approval of Duke’s human subjects review board was obtained for the study protocol, and efforts to recruit students began in the summer and early fall of 2009. Nine volunteers were recruited representing different disciplinary areas: biology (2 students), history (2 students), public policy (3 students) and program II (2 students). Repeated attempts to recruit students from the English department were unsuccessful.

Each of the nine students was interviewed three times over the course of the fall 2009 and spring 2010 semesters (see *Appendix B*). One interview was conducted at the beginning of students’ research, one midway through their thesis process and one after their theses were completed and submitted. Interviews ranged from 15 to 35 minutes in length and were audio recorded. Detailed transcripts were not generated, but recordings were used to check the accuracy of notes taken during the interviews and to identify themes that may not have been captured in these notes. Notes were then systematically reviewed for common themes and trends after each round of interviews (e.g. after all interviewees had completed Interview One). After all interviews were completed, interview notes were reviewed once more, and both broad and discipline-specific patterns, themes and trends were identified in student responses to each interview question.

Findings: Role of Duke Libraries in honors researchers’ work

All nine participants completed the study (i.e. they answered all three sets of questions outlined in *Appendix B*), and all nine submitted theses to their departments, thereby earning graduation with distinction. One student changed advisors and departments midway through the process and essentially started and completed his thesis in one semester; otherwise, students’ research processes spanned at least two academic semesters. These nine students represent 2.5% of the 363 students who graduated with distinction in May 2010 and .6% of their graduating class, totaling 1396 students. Five of the nine graduated

with “high distinction” (one student) or “highest distinction” (four students), an honor conferred by individual departments on the basis of students’ theses. Of the four departments, biology graduated the greatest number of students with distinction (59), while program II graduated the fewest (7). History and public policy had 22 and 21 students graduate with distinction, respectively.

All nine students indicated that they appreciate specialized library services tailored for honors researchers. One student said, “I thought the library would just keep doing what the library does [when I started my thesis], but you’ve gone above and beyond.” All nine students were aware of at least some of the specialized services offered by the library (e.g. study carrels, lockers, group study room), but they took advantage of them to varying degrees.

Two students said that the library needs more lockers and that they would have benefitted from using lockers had there been any available. Other students noted that they tried to use the group study room but found it to be very crowded much of the time. Three students said that they wished they had used services such as the lockers or study carrels but that they forgot that they were available or simply never “got around to using them.”

When asked what role the library played in their research and at what point the library was most critical to their work, six stated that the library was most critical for locating print and electronic resources both locally and through ILL. Four students representing three departments relied on the library as a physical space (including the lockers, group study room and study carrels designated for honors students) for completing their work; four students did the bulk of their work in their apartments or dorm rooms, and one student used both the library and other spaces to complete her thesis.

Four students indicated that the Libraries could do a better job of marketing their services and clarifying the role of the subject librarian in supporting their work. Study participants believe that students (including themselves) are generally not familiar with the research consultation service.

Two of nine study participants met individually with a subject librarian to discuss their research, and one emailed a subject librarian for search strategies and resource recommendations—perhaps it is worth noting that all three of these students received course-integrated library instruction in conjunction with the honors seminar required by their department, and all three graduated with “highest distinction,” the highest honor conferred by the university for students’ honors research. Another student remarked that she “could have taken advantage of librarians’ services but just didn’t.” She said she “would have enjoyed emailing back and forth with a librarian” in her field but was unclear of the role of her subject librarian in this process (note that she was also part of an honors seminar that included library instruction). One participant noted that students “may need a push” to schedule a research consultation, suggesting that requiring honors researchers to meet with a librarian was worth exploring. She believes that “no student would have a problem with it—they just don’t know it exists.”

Study participants said that it makes most sense to incorporate library/research/data instruction and information about specialized services the Libraries provide into honors seminars (offered by some departments but not all). One student believes that office hours designated for honors researchers would also be helpful; she believes other students would like to have the option of meeting with a subject specialist or data services librarian during these hours.

Two students (both in program II) believed that they did not need the library for their research given the nature of their projects. Another student (one who graduated with “highest distinction”) said that he appreciates everything the library does but did not feel that librarians could have “added anything to his research” because it is just so “incredibly specific”; instead, he “asked his advisor or did the search [him]self.”

Over the course of interviewing these nine students, I found that many were unaware of the full extent of library services and resources available to them. For instance, one student did not know that he could access library resources from off campus and rarely used the Libraries homepage to access subscription resources. Two

others were not aware that they could request materials from other institutions until we met (it is worth noting that one of these students was part of an honors seminar that incorporated a library instruction session, and the other graduated not only with distinction but “high distinction”). Many incorrectly named library resources and services but were able to use them to meet their needs. Overall, these nine honors researchers were confident in their abilities to complete high level research (none mentioned “using the library” or “conducting research” when asked, “What do you think will be the most difficult part of the whole process for you?” in their first interviews or “What was the most difficult aspect of your project?” in their last interviews), and all successfully completed theses and graduated with distinction. Several students did, however, demonstrate gaps in their understanding of library services and the most efficient ways to access and evaluate library resources over the course of their interviews.

Next steps

The primary limitation of this study is the small sample size of nine students representing only four departments. The themes identified from interviews with these students could be verified through a broader investigation involving other departments and larger numbers of undergraduate researchers, perhaps via a survey. Also, multiple librarians developed the study questions; however, only one librarian conducted all study interviews. While this helped ensure consistency among interviews, it may have led to interviewer bias. Finally, the study participants were aware that the interviewer was a librarian at Duke, so although the students appeared to be candid and received encouragement from the interviewer to offer criticism when appropriate, their answers may have been influenced by their perceptions of what the interviewer wanted to hear. Because students were interviewed while they were conducting their research, their participation in the study may have heightened their awareness of library resources and services.

In addition, follow-up research might include an assessment of the effectiveness of new library services for honors researchers. Future research could incorporate data from faculty advisors, honors seminar instructors and university administration to understand more fully the

experiences of honors researchers and the role that the Libraries can play to support the success of these students.

Conclusion

The Duke User Studies Initiative has been successful in building a cohort of library staff who are competent in basic methods of conducting user studies and confident in their ability to design and implement studies that can provide useful information. The Initiative was a low-cost, grassroots staff development effort that drew on campus and local expertise to provide practical and effective training. Library staff members were empowered to launch user studies, report out their findings, and use the information to shape library collections and services. Two major user studies have been completed, and these studies have sparked interest in conducting similar studies with other groups of users. An active usability testing effort is underway, which draws on methodologies presented in Initiative training events.

A similar user studies staff development program that takes advantage of campus and local experts could be implemented by any academic library. Structuring the program as a formal staff development effort should increase participation and commitment on the part of library staff. Recognition of participation by library administration through a certificate of participation or a notation in the staff member’s annual performance review is a key factor in getting staff buy-in. An important part of a user studies training program is encouraging participants to launch small, pilot user studies which will serve as test beds and provide a source of reflection and information sharing. Perhaps the biggest benefit to a user studies staff development program is the creation of a user studies community within the library, a community that recognizes the importance of learning more about the unique needs of library users in order to improve library services.

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Appendix A: Interview protocol for faculty and graduate students (Case one)

I. General questions

- Please describe your current research project or projects.
- When you are doing your research, can you describe what you actually, physically, methodologically do?
- What kinds of challenges do you face as a researcher? What is easy, what is hard about your research process or processes?
- [Faculty only] What challenges do you confront that may be specific to your discipline, or to the multiple disciplines in which you operate?
- What kinds of research-related activities require that you spend your own money? What other kinds of financial support do you seek and for what activities?
- If your work is collaborative or interdisciplinary, what special challenges do you face? What are the benefits of interdisciplinary or collaborative methods to your research?

II. Library/Research/Technology support questions

- What role does the library play in your research? At what stages of your research are you most likely to use library resources? What resources do you generally use?
- What kind of library assistance do you need or seek for your research?
- What role does technology play in your research (e.g. digital archives, databases, GIS, Blackboard, social networking tools, etc.)?
- [Faculty only] What tools do your students use in their research? How do your students learn about these tools? How do they learn to use these tools?
- [Faculty only] What role does technology play in your teaching (e.g. digital archives, databases, GIS, Blackboard, social networking tools, etc.)?
- [Grad students only] Do you do any teaching? If so, what course(s) have you taught? What role does technology play in your teaching (e.g. digital archives, databases, GIS, Blackboard, social networking tools, etc.)?

III. Fantasy research

- If I could give you something that would magically make it better for you to do your work, what would it be?

Appendix B: Interview protocol for honors researchers (Case two)

Interview one questions

1. What was your primary motivation in deciding to write an honors thesis?
2. How did you select your topic?
3. How did you select your faculty advisor?
4. At this point, what is your research plan?
5. What are the biggest unknowns for you at this point?
6. What do you think will be the most difficult part of the whole process for you?
7. How might the university/department/library support you as you begin to write your thesis? What are your expectations from each of these groups?

Interview two questions

1. How much progress have you made?
2. Has your topic changed? How & why?
3. What role is your advisor playing at this point?
4. What resources are you using (human or physical)? Are you finding everything you need?
5. Are you finding all the research information you need? What tools are you using to find research information?
6. What tools are you using to track and organize your research?
7. Have you started writing? If so, how did you begin?
8. Do you think your research project is 'on track'? If not, why not?
9. Knowing what you know now, is there anything you would have changed about your initial research plan?

Interview three questions

1. Knowing what you know now, is there anything you would have changed about your research process?
2. What resources or tools were the most significant to you during your research?
3. What role did the library play in your research? At what stage of your research were library services/resources most important to you?
4. Do you think the strategy you used to organize your research was effective? Why or why not?
5. What was the most difficult aspect of your project?
6. Did you receive adequate support from your advisor? What other forms of support and guidance did you take advantage of?
7. If you had to select one or two human or physical resources that were critical to your research, what would they be? How did you find them?
8. Were there resources, services or tools that you wish had been available to you?
9. Are you pleased with the final product?
10. Would you do this again? What did you gain from the experience?
11. Any downsides to writing a thesis? Regrets?
12. Do you plan to publish or do further work on your thesis? Is your work in DukeSpace yet?

Sustaining Feedback: Assessment in the Liberal Arts College Library

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Abstract

Implementing an ongoing assessment program in a small-to-medium sized academic library poses some unique challenges. Identifying time, expertise and commitment with limited staff are the some of the initial hurdles to cross.¹ In addition, due to the scale and size of liberal arts institutions, libraries are often closely tied to the assessment plans of the institution, which calls for close collaboration with faculty and institutional research staff. The purpose of this paper is to offer one model of implementing an assessment plan at Boatwright Memorial Library at the University of Richmond.

Introduction

Past assessment projects at Boatwright Memorial Library had been difficult to sustain, due to lack of staff, time, assessment expertise and support from the institution. Library surveys and other assessment methods had only received close attention when the university was embarking on its reaccreditation process. With the growing emphasis on assessment within higher education and the emergence of a new strategic plan for the university, the University Librarian made a commitment to build a formal library assessment program.² Jim Self and Steve Hiller, Association of Research Libraries (ARL) Consultants, visited the University of Richmond in the fall of 2008 to offer the "Effective, Sustainable and Practical Library Assessment" analysis, their first visit at a small liberal arts institution. The service involves a site visit to each participating library, a report to each library with recommendations on practical and sustainable assessment, and follow-up assistance in implementing the recommendations. Librarians at liberal arts college libraries perform multiple duties and it is rare to find a library staff member totally dedicated to assessment and trained in statistical analysis at such institutions. Our goals for the Hiller-Self visit were to identify strategies

and ideas that might work and prove sustainable in our unique institution. As a result of that visit, the library formed an assessment committee, composed of five individuals representing various departments of the library. Since that time, the committee has made numerous advances in building a culture of assessment in the library. This paper will describe many accomplishments of the committee and library staff; selected assessment findings; challenges; and how assessment results are integrated into the decision-making process of the library.

Institutional Context

The University of Richmond is a private, highly selective, nationally ranked liberal arts university. Located in Virginia's capital city, the University of Richmond offers the atmosphere of a small college with strong academic, research and cultural opportunities. It also provides a unique combination of undergraduate and graduate programs through its school of arts and sciences, business, leadership studies, law and continuing studies. The institution has an enrollment of 3,900 students and offers 60 undergraduate majors and a small number of graduate programs (i.e., MBA, Law, and School of Continuing Studies). Over 350 full-time faculty members teach at the university and the average student-faculty ratio is 8:1.

Boatwright Memorial Library strives to provide University of Richmond students, faculty, and staff with information resources and services that enable them to excel in their academic and intellectual pursuits. The Library includes major collections in the sciences, fine arts, music, humanities, social sciences, film, maps, theater, government documents, and rare books and manuscripts. At present, there are close to half a million volumes of books, more than 30,000 electronic and print periodicals, and thousands of multimedia items in the collection. Numerous

electronic resources are available through the library and the college's computer labs, as well as from outside the library through the Library's web site. The library is an extremely popular destination on campus, serving as a social, study and cultural center, and had over 573,000 visits in 2008-2009. In the past year, the library has created a five year strategic plan, focusing on "creating inspiring space for student, staff and faculty, providing resources to promote learning, and emphasizing communication and education to accelerate innovation and discovery."³

Establishing the Assessment Program

The Library Assessment Committee has provided the primary impetus and enthusiasm for establishing a culture of assessment within Boatwright Library. Chaired by the Director of Outreach Services, the committee consists of five members who represent a variety of positions and departments within the library. Our first task as a committee was to establish the following charge and assessment goals:

Committee Charge: The Library Assessment Committee is responsible for coordinating and providing oversight of various assessment activities in Boatwright Memorial Library; educating staff on library assessment; publishing and promoting assessment results; collaborating with the Office of Institutional Effectiveness; and promoting a culture of assessment that is user-focused.

Committee Goals:

- To respond to the needs of our users.
- To maintain and improve our programs, collections, and services.
- To assist all library staff in "taking action" to monitor and improve services.
- To assist staff in using data, not assumptions, to make decisions.
- To identify library services that relate to the library goals and the university's strategic plan.

In addition to creating our charge and developing goals, we also devoted time to educating ourselves about library assessment. Hiller and Self had provided numerous readings, reports, etc. during their visit and we followed up on many of those recommendations. We also read other books and articles on the subject and shared our

collective knowledge on assessment among the group. In those first few months of the committee's existence, we focused on the assessment data that the library had readily available, such as annual statistics, reports from an internal "think team" process, and faculty/student interviews conducted by liaison librarians. Reviewing and analyzing the existing data gave the group a sense of focus and purpose, in addition to helping the group solidify its working relationship.

Another early priority of the committee was to educate and inform the staff on what assessment means to them, the library organization and the institution. Many staff felt threatened by the term and thought it meant that they would be constantly evaluated. We tried to alleviate these fears by sharing minutes of our meetings; sending out informative emails to the entire staff; and holding all-staff assessment forums. During that first year, we were also instrumental in establishing a goals process for the library and worked with an organizational consultant to plan an annual retreat, focusing on the revision of the library's annual goals and the creation of a vision statement for the library. As the months passed, all of these components came together with the creation of an assessment plan to guide our work within the library.⁴ The plan includes the library's mission statement, vision statement, annual library goals, and the committee's charge as well as assessment goals and priorities for each year.

A high priority for the committee was to design and create a library assessment webpage, in order to promote our assessment efforts to the library staff, to provide transparency of assessment data and to share our progress with the university community.⁵ This resource has become an important component of our emphasis on assessment for both the library and the university. Our vision was to create an assessment page that was more than statistics and numbers, and offered colorful and interesting graphics to appeal to viewers. After reviewing numerous assessment webpages at other academic and public libraries, we decided on a design that would highlight specific statistics with rotating graphics and that would then link out to detailed statistics. We also posted assessment plans, reports and studies on various surveys and interviews and other pertinent assessment information. The webpage

provides a central place for library staff, the university community and other libraries to discover our assessment efforts and statistical data.

Collaboration with the Office of Institutional Effectiveness has been an important component of our implementation. Assessment specialists from the office have met with the Director of Outreach Services frequently, offering advice and guiding us through the annual SACS (Southern Association of Colleges and Schools) assessment plans and reports. The Institutional Effectiveness office staff members have enthusiastically endorsed the library's interest in assessment and they often refer to us as a model unit on campus.

Assessment Tools

Since the fall of 2008, the committee has also initiated several assessment projects, both large and small. Assessment tools have varied, but in these first two years, we have primarily relied on survey methods. Without a statistician on the library staff, we were creative in identifying options for surveys that offer built-in analyses and results. For example, in the last two years the library was involved in utilizing three national survey packages, *Counting Opinions* survey, the *HEDS/NITLE Research Practices Survey* and *MISO (Merged Information Services Survey)*. Small-scale surveys for various specific library services, such as course reserves, document delivery and library space issues, have been accomplished through the use of *StudentVoice* software survey, a collaborative effort with the Student Development Office. Funded by the Student Development Division at the University of Richmond, the survey software is open to use by other departments at the university.

StudentVoice is a user-friendly survey system and the software combines elements of data collection, reporting, organization, and integration. In addition, assessment specialists at *StudentVoice* are available for consultation and review of surveys. Even though the name emphasizes "student," the survey software is easily adaptable to faculty and staff surveys.

In addition to online surveys, some library departments have found value in using brief print surveys to obtain user feedback on specific services, such as netbook circulation in the library. The library's main service desk has circulated

laptops to students within the building for many years and when there was a need for an equipment upgrade, we chose to purchase netbooks, rather than laptops. In order to gauge student satisfaction/dissatisfaction with this change, the staff asked students to fill out a brief paper survey after each checkout session. This method offered a quick way to obtain user feedback on an important student service.

Other assessment tools include observation studies and the continued analysis of library statistical data. For example, the library's Electronic Resources Librarian (and also a member of the Library Assessment Committee) regularly uses database and journal use statistics to assist liaison librarians in making decisions about cancelling print journal subscriptions, ordering new electronic journals, etc.

Assessment Findings

Boatwright Library's areas of assessment emphasis include student learning, user services and building facilities. Student learning assessment strategies in the past two years focused on data collected through the *HEDS/NITLE Research Practices Survey*. Currently, we are focused on assessing the information literacy goals of the university's new First Year Seminars, where library workshops are required of each first year student. We plan to collaborate with faculty in assessing the information literacy component of the First Year Seminars with the use of a rubric tool. In addition, librarians are receiving continuous user feedback from newly created LIBGUIDES and small, in-class surveys on the effectiveness of course-specific LIBGUIDES. In the past year, we have used the *Counting Opinions* Survey, *MISO* Survey and focused *StudentVoice* surveys to assess user services. A combination of methods have been used to assess building facilities, including observation studies, *StudentVoice* survey, data extracted from the *Counting Opinions* Survey and *MISO* Survey, Strategic Plan SWOT analysis, and feedback collected from the library's suggestion box.

How have we used the above assessment tools and how have the results made a difference in our library services and sources? Thorough, detailed analysis of all our results cannot be shared in this paper, but I would like to share representative

examples of our various tools, including a description of the tool; why we chose it; what we learned; and practical implications.

HEDS/NITLE Research Practices Survey

Description of Survey

The *HEDS/NITLE Research Practices Survey* (Higher Education Data Sharing Consortium/National Institute for Technology in Liberal Education) is a 15-minute survey exploring the experiences and opinions of college students concerning academic research. Its purposes are to 1) study students' research habits 2) use these findings to improve the ways we help students develop their research skills and 3) determine what changes occur in research abilities as students progress through their academic careers. The instrument was developed by a group of librarians, classroom faculty, assessment professionals, and information technology professionals from eight NITLE participating institutions in fall 2004. After piloting and revision in 2005-06, it was administered in 2006-07 in twenty different institutions and the University of Richmond used it in the spring of 2009.

Why We Chose It

Since the survey was developed by a group of librarians and faculty at liberal arts schools, we thought the approach and content of the survey would be very appropriate for the University of Richmond. Our Office of Institutional Effectiveness also encouraged us to participate, in addition to paying the administrative fees as well as the user incentives for the survey. Also, the University of Richmond was undergoing a major change with its curriculum that would influence the library's information literacy program. The survey provided an opportunity to gain baseline information on students' skills to shape the new program.

What We Learned

A full report on the HEDS/NITLE Survey results can be found on our assessment webpage, but some of the highlights of the assessment are included here.⁶

- 473 students (15% response rate) completed the survey (98–Freshmen; 114–Sophomores; 122–Juniors; 139–Seniors)
- 45% of these students indicated that they use the library at least once a week or more.

- The most frequent reason for using the library is to do a variety of academic work (studying, doing homework, group projects, etc.).
- 71.2% had used library books; 90.1% had used Google; and 90.7% had used online journals.

In terms of library research skills, the results showed that students need further assistance or instruction in understanding Boolean operators; how to truncate a term; how to use subject headings; and how to distinguish between academic journals and popular magazines.

Practical Implications

The information obtained by the HEDS/NITLE Survey affirmed anecdotal observations and supported our instructional goals in the first year library lab session. For example, the survey emphasized that books are still important and that electronic journals are used heavily by students. Students still need help with distinguishing between academic and popular magazines and that we need to include learning activities that discuss and help them make these determinations.

Counting Opinions LIBSAT Survey

Description of Survey

Counting Opinions LIBSAT Survey is an instantaneous, continuous customer feedback system that enables libraries to measure customer satisfaction and the impacts and outcomes of various endeavors over time. The Counting Opinions Survey was available on the library's website from October 1, 2009 through April 30, 2010 as a center feature or as a flip-down advertisement. Targeted email messages were sent throughout the year, reminding students, staff and faculty to complete the survey. 191 users responded to the survey; 57% of respondents were undergraduates and 31% were faculty/staff. The remaining numbers included graduate students, alumni, visitors and other students.

Why we chose it

The committee wanted to use a national survey package that would give us feedback on overall customer service satisfaction, easily compile results, and offer the opportunity to compare our library against similar libraries. Many libraries across the United States and Canada use the software and support for implementation has been excellent. After viewing various

demonstrations of *Counting Opinions* at conferences and through webinars, we decided to move forward with using the survey for three years. *Counting Opinions* also acts as a continuous feedback survey, since it is on our website for most of the academic year.

What We Learned

Many questions in the *Counting Opinions* survey

asked participants to rank their answers on a scale of 1-7. A **rank of 7 means “strongly agree,”** a **rank of 6 means “agree”** and a **rank of 5 means “somewhat agree”**. Other questions focused on **satisfaction** and **importance** with various services and those responses are also on a 7 point scale (*Very Satisfied* (7) to *Very Dissatisfied* (1) or *Very Important* (7) to *Very Unimportant* (1)). Most respondents ranked the library in all areas between 5 and 6.



Practical Implications

The survey provides detailed data on numerous questions and we will continue to analyze results.⁷ The *Counting Opinions* Survey provided feedback that our services are ranked highly and they are appreciated by the university community. The survey results also highlighted areas for improvement, especially with our physical facility and the need to add more study space, additional tables, computers, etc. We are currently using the feedback to make adjustments with our physical space. For example, many users were concerned about restrooms in the library and University Facilities has planned future improvements for that space. We are also pursuing options for additional study space, particularly more tables. During the summer of 2010, the Library Assessment Committee gathered comments and ratings from *Counting Opinions* on physical space and combined it with our observation studies and other data to create a focused report on physical and environmental needs in Boatwright Library.

Document Delivery Satisfaction Survey Description of Survey

Document Delivery provides delivery of books, articles, and reference book chapters for items that Boatwright Library owns in print format to all faculty and staff. Articles are scanned and sent to faculty and staff via email, while books are delivered on campus to departments. The document delivery service is a cooperative effort between two library services, Interlibrary Loan (ILL) and the Media Resource Center (MRC), and makes use of both full time and student employees. During the 2008-2009 academic year, the library chose to assess the document delivery service as one of the outcomes for the SACS (Southern Association of Colleges and Universities) Assessment Plan. Two measures were used to evaluate the service. Interlibrary Loan and Media Resource Center staff tracked the number of books processed for document delivery and the number of books delivered within two working days. The second measure was a short survey developed using the *StudentVoice* Survey software.

Why We Chose It

The Document Delivery service is very popular on campus, but we wanted to make sure faculty were receiving materials when promised and if they were any suggestions that would improve the service. It also gave us the chance to initiate the first use of the *StudentVoice* survey tool on a small scale, since the survey would only be taken by faculty and staff that had used the service.

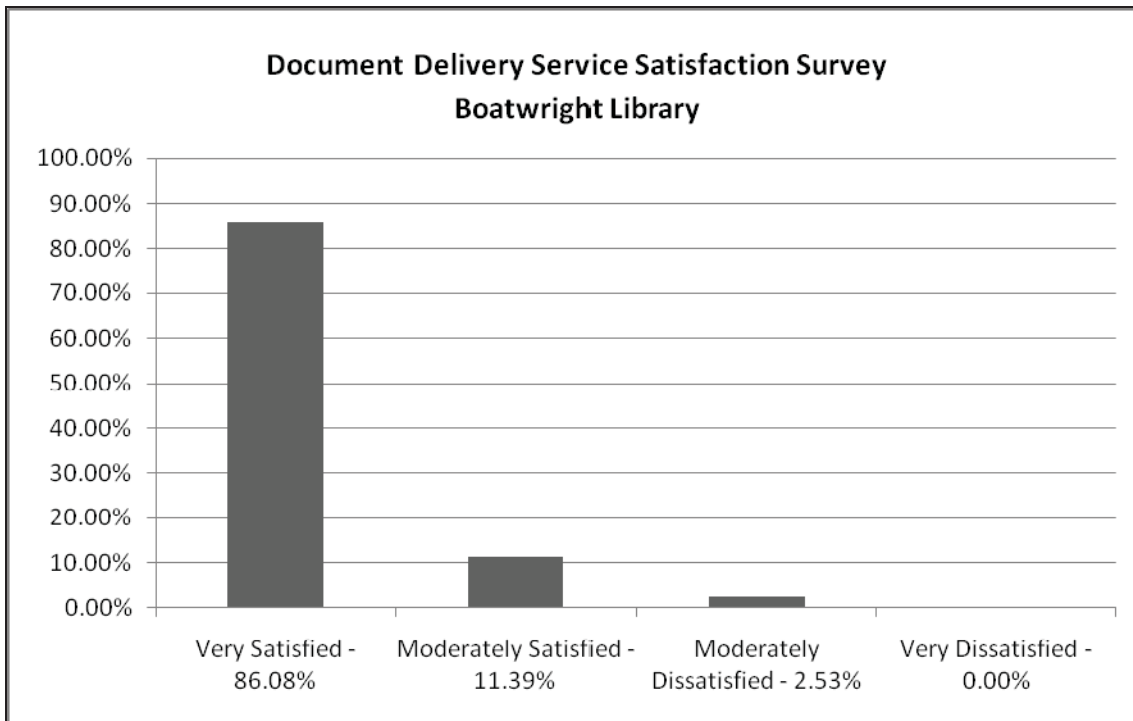
What We Learned

The data collected by MRC staff revealed that between January and April of 2009 over 1,000 books were delivered to faculty and staff. Of the books delivered, 99% were delivered within two business days. This was significantly higher than the predicted target of 80% and validated the efficiency of the service. The *StudentVoice* survey data closely matched the data collected by Interlibrary Loan and the MRC. The survey was emailed to all users of the service and responses were anonymous. Two questions were included in the survey. The first question focused on

delivery time to offices and the second question asked about their overall satisfaction with the service. A section for comments was also provided. This survey revealed that 88.34% of items were delivered within 2 business days, well above the target of 80%.⁸

Practical Implications

We found that although users were very satisfied with the service, they did not fully understand various aspects of the service, such as why library staff could not deliver more than five items per day, why items could not be picked up from office departments, a lack of understanding on how to search for DVDs in the system, and dissatisfaction with the online form for both interlibrary loan and document delivery. These additional comments enabled library staff to respond to survey respondents directly with clarification on the above issues. The faculty comments about the online form helped interlibrary loan staff explore other options, such as ILLIAD software, for the service’s interface form.



Quiet and Group Study Observations and Survey

Description of Survey

Boatwright Library is a very popular place on campus and students often complain that more

space, both quiet and group, is needed. As another outcome measure for the library’s 2009-2010 SACS assessment plan, the assessment committee decided to gather information on quiet and group area use through the use of observation studies and a *StudentVoice* Survey.

The observers (library staff and student library assistants) noted user behavior in the quiet and collaborative areas of the library. Observers used a form that allowed one to record what he or she witnessed during an observation. The primary question to be answered was “are users using group and quiet spaces as intended?” Observers wrote in key information such as locations, day, time, and number of patrons. Then observers were free to record observations from their perspective. Observations generally ranged in time from five minutes to a half hour depending on activity in the observation area.

Why We Chose It

Facility use is often difficult to measure and we felt that the combination of two methods, an observation study and a student survey, would offer different perspectives, but it would also offer a chance to compare the data to identify common or different trends. This method was also our first effort with observation studies and its small scale focus was an excellent way to begin learning more about observational methods.

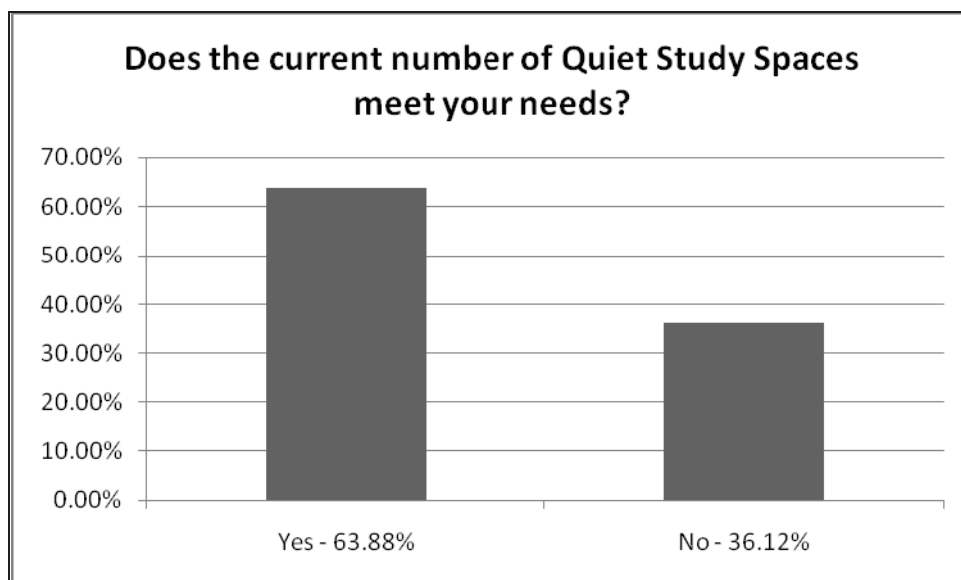
What We Learned

The observation study took place during the 2009-2010 academic year at Boatwright Library. Results

revealed that quiet and group study areas were being used for the intended purpose 80% of the time. The study noted several other trends, such as users’ tendency to carry a lot of items with them. These items include multiple bags, purses, food, multiple forms of technology, books and notebooks for class work. Most of the time, the items are crowded around a library user, limiting the useable work space for them and occasionally their classmates at a shared table. The *StudentVoice* survey had a very high response rate of over 600 responses. Although most students are satisfied with the quiet and group study areas, the satisfaction rates are not as high as we would like. The survey comments were very valuable in helping us identify the need for more tables, more space, etc.

Practical Implications

The quiet/group observation study and survey assisted us in combining information about the library building facility from numerous surveys (*Counting Opinions*, *MISO Survey* and a *SWOT Analysis* survey) to write a complete report on user comments and opinions about user space. This data is proving to be very helpful to library administrators as they find a solution to crowded stacks and crowded user space.⁹



Course Reserves

Description of Survey

During the summer of 2009, library staff made several changes with course reserve processing and we wanted to find out if these changes had

made a difference with faculty’s use of library course reserves.

Why We Chose It

After our success with using *StudentVoice* Survey

software with the document delivery study, we used this software again for the Course Reserves survey. However, for this particular survey, we surveyed all university faculty members, not just those who regularly use reserves, because we also wanted to find out why faculty do not use reserve service.

What We Learned

Since this survey was sent to all faculty, the response rate was not as high as the document delivery survey, but we still gained excellent insight into how faculty are using (or not using) library course reserves. One major theme was that faculty wanted a more streamlined approach to submitting reserve requests. We also found evidence that faculty are posting their own reserve readings through Blackboard and other courseware options. With the growing availability of digital articles, both in library online collections and on the web, using library course reserve systems are often seen as a hurdle to cross.

Practical Implications

The survey results, as well as anecdotal information from faculty interactions, prompted a group of library staff to discuss even further revisions and approaches to course reserves. Based on the data that we received in the survey, we have made further changes for course reserves processing for the coming year, including the use of one form for all reserve requests, clear explanations of what the library will scan for course reserves, how to link directly to digital articles and how to post and link articles within Blackboard courses.

Conclusion

Assessment can be accomplished in a small liberal arts institution with support from the library director, commitment to assessment at the university level, and motivation and desire among the library staff. Boatwright Library's successes in the past eighteen months have shown that persistent and focused activities have resulted in a sustainable program. However, it is important to recognize that implementing an effective program must be taken in small steps, using the staff time that is realistically available. Staff interest and appreciation of how assessment can help librarians understand our users' perspectives has benefited the library staff, both internally and externally. Boatwright's

Assessment Committee is enthusiastic, energetic and committed and the work of Laura Horne-Popp, Travis Smith, Anna Creech, and Crista LaPrade, have made much of this success possible. The assessment webpage has enabled the library to share key assessment data with the larger community and plans for the coming year include a regular electronic newsletter and a digital annual report, which will provide further ways to tell the library's story and value.

The committee's focus is changing as we have become confident with how assessment fits into our organization and with our goals. Our first year focused on how to form a committee, how to write an assessment plan, etc. and the group met twice a month in order to establish that ground level of functionality. As we complete almost two years as a committee, we are spending more time on analyzing data and developing methods of more "hands on" assessment with other library staff. For example, we are in the midst of establishing a small ethnographic team, consisting of one assessment committee member and two other library staff members. We have also noticed that various staff members around the library are embarking on their own assessment projects. Slowly, but surely, a culture of assessment is taking place in our environment.

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Assessing a Library within a University Context

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Abstract

The University of Mississippi (UM) implemented a campus wide assessment program in 1994 under the direction of James O. Nichols, then Director, University Planning and Institutional Research, that required all campus programs and units to submit a biannual report consisting of at least three objectives with multiple means of assessment for each objective. In this program, each unit submits its assessment report in October of the reporting year. In order to improve the process for units, in 2007 they began to submit a plan for the assessment report early in the assessment cycle. The primary purpose of assessment is to systematically improve the quality of student learning, teaching, research, service, and processes at UM.¹

Method

Each assessment report has several required components. First, a unit must include a mission statement that is in alignment with the University's mission statement and select which of the University's eight "Missions and Goals"² it is working to improve. The unit then creates at least three Outcomes Statements which are based on the University Mission, unit mission, national standards, etc. Each Outcome must be stated in terms of the current services or programs of the unit, be focused and be under the control of the unit. The requirement for the outcome statements to be focused has forced units to be more specific and less explanatory about their intended outcomes. For example, the Outcome Statements for the 1993-1995 Assessment Report were:

- Collection Development—acquiring core collections of information resources to support both curriculum and research needs
- Information Access
 - Via online public access catalog, open access shelving, and knowledgeable staff at service points
 - Superior Interlibrary Loan service

- Bibliographic Instruction—both formal classroom and informal point of use instruction.³

The corresponding outcome statements in the 2007-2009 Assessment Report were

- Library will provide adequate collections
- Library will provide adequate facilities
- Library will provide adequate services to all uses
- Library will demonstrate student learning from Information Literacy initiatives⁴

For each outcome statement should include at least two Means of Assessment.(MOA). The MOAs are the actual assessment activities. They can cover the entire two year period or any amount of time therein. The MOA are supposed to reasonably measure all aspects of the outcome statement and should provide data detailed enough to identify areas for improvement (e.g., item or component analyses). It is preferred if a mixture of assessment methods are used and in particular direct measures (rubrics, metrics, counts, etc.) are encouraged rather than a sole reliance on user satisfaction surveys. The library has always tried to mix broad assessment measures such as LibQUAL+® with very specific efforts. For example, in the 2007-2009 Assessment Report the means of assessment for the collections outcome were:

- A comparison will be made of book circulation by call number/subject area and the monographic funds allocated to the specific disciplines. Data from FY04-05 through FY 08-09 will be examined.
- The ARL (Association of Research Libraries) LibQUAL+® survey will be administered to all faculty and all students to assess satisfaction with library services. The survey measures the gap between minimum service level and perceived service level of the survey participants; this measure is called the

adequacy gap. A negative adequacy gap score means that the survey participants perceived that the service they received from the library was below their minimum requirements. A positive adequacy gap shows that the survey participants felt the library was exceeding their minimum service requirements.

Questions pertaining to library collections will be examined for this objective.

- The journal article publications (2004-2008) by faculty in the School of Business Administration will be examined to determine the most frequently cited journals. The most frequently cited journal titles will be compared with library current subscription holdings.

These MOA represent a mixture of methodologies and scopes. The LibQUAL+® survey allows the library to look at its level of service longitudinally by looking at the same questions over time. The citation analysis is the second such effort with the first examining the publications of the faculty in the School of Pharmacy for the 2005-2007 Assessment Report. The 2009-2011 Assessment Report will include a comparable study of the publications of the faculty in the School of Education. The circulation study was an effort to examine the effectiveness of the monographic acquisition efforts, but the number of uncontrollable variables significantly restricted its utility and the library has dropped this assessment method from its future assessment reports.

For each MOA a Criteria for Excellence (prior to 2010 this was a Criteria for Success but the name was changed to encourage a higher standard of assessment) is included. For the MOA listed above the Criteria for Excellence were:

- The criterion is met if difference ratio between the circulation of each fund area and the amount allocated to each fund is less than 10%.
- The adequacy gap scores for each question should be zero or positive indicating neutral or high levels of satisfaction with collections and related services.
- The criterion will be met if the library has current subscriptions to at least 75% of the top two thirds of cited journals.

These criteria are clear and if not met, would

suggest specific areas of improvement.

The MOA can change significantly over time even within a single Outcome statement. In the 1995-1997 Assessment Report one MOA examined student learning in bibliographic instruction sessions. A survey of students was conducted following bibliographic instruction sessions. The results showed that

- 50% could answer 2 of 4 questions about how to find a book
- 60% could answer 2 of 5 questions about how to find a journal article
- 90% correctly identified where to go for help in the library

In 2008 another study of student learning was conducted in a series of courses aimed at students who had demonstrated poor academic skills. In this study

- Clickers were used as an active learning tool in instruction sessions
- Criteria for success—80% accuracy rate
- Results—70% of the questions answered correctly by 75% of the students
- Use of Results—program revised to include pre and post tests to augment use of clickers

Some MOA can be problematic for unexpected reasons. In the 2005-2007 Assessment Report, an examination of the library facilities was undertaken to determine if they met the standards for library buildings outlined in *Planning Academic and Research Libraries*.⁵ The criteria for success required the library to meet 90% of each standard. All were met except for the seating standard which called for seating for 25-30% of residential students which for the University of Mississippi would be 3805. The library had seating for 925. In response to this some areas of the library were reorganized to make more efficient use of space and additional seating was acquired. Unexpectedly, the level of seating the library resulted in comment in 2008 SACS accreditation process. When examined at the broader institutional level, assessment results can at times take on added importance.

The Assessment Reports are not simply submitted and filed away, but rather the university has established a program of assessment for its assessment program. The University Assessment Committee in conjunction with the Office of

Institutional Research and Assessment is responsible for “performing peer reviews assessment work for each of the reporting units using rubrics for academic programs and nonacademic units to increase consistency and reliability of feedback to the units. The UAC recommends improvements in the assessment process, and informally assists units in planning and conducting assessments by sharing ideas and procedures.”⁶ The peer review process consists of a small group of committee members evaluating each report or plan according to an established set of standards and making recommendations for

improvement when necessary. The staff of the Office of Institutional Research and Assessment and the UAC Chair then normalize the evaluations for consistency across the university.

The methods and standards for evaluation change over time to improve the overall assessment program and to represent the most current understanding of assessment in higher education. The first reports were evaluated with a checklist with a five point Likert Scale for scoring each question.

**The University of Mississippi
University Assessment Committee
Check-List Review of the 1999-2001 Assessment Record**

Program/Unit Reviewed: University Libraries

Relationship to University Mission

		Strongly Agree	Agree	Disagree	Strongly Disagree
1. The Record utilizes the University's <i>statement of purpose</i> (focus statement and University goal(s) for instructional units; University goal(s) and unit mission for educational support and administrative units).	<input checked="" type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
<u>Statement of Intended Educational (Student) Outcomes or Administrative Objectives</u>					
2. a. The Record states 3-5 outcomes or objectives that seem appropriate to assess.	<input checked="" type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
b. The Record states 3-5 outcomes or objectives that seem measurable for purposes of assessment.	<input checked="" type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
3. Instructional Units: The statements are formulated in terms of what students should be able to think, know, or do.	<input checked="" type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
4. Educational Support and Administrative Units: The statements describe what the Unit would accomplish, what services it would provide to its clients, or what its clients would think, know or do after the provision of services.	<input checked="" type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
<u>Means of Assessment and Criteria for Success</u>					
5. The <i>means of assessment</i> appear to measure the accomplishment of the intended outcomes or objectives.	<input checked="" type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
6. The <i>means of assessment</i> appear feasible and appropriate in terms of resources.	<input checked="" type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
7. Multiple <i>means of assessment</i> are described for most outcomes or objectives.	<input checked="" type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
8. <i>Criteria for success</i> are established by the Unit for each of the <i>means of assessment</i> .	<input checked="" type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
<u>Assessment Results</u>					
9. The Record includes sufficient data to determine whether assessment actually took place.	<input checked="" type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
10. There was sufficient analysis or reflection for the Unit to judge the success of outcomes or objectives.	<input checked="" type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
<u>Use of Assessment Results</u>					
11. There is evidence of Unit faculty/staff involvement in deciding how to use assessment results.	<input checked="" type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
12. The described uses of assessment results appear reasonably likely to foster the intended outcome or objective.	<input checked="" type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>

This is a copy of the evaluation of the 1999-2001 Assessment Report for the University Libraries. The structure and basic requirements of the report are fully represented here but there is no opportunity for feedback nor is there an established definition for success. This changed in 2005 with the introduction of a rubric with which

to evaluate the assessment reports. The rubric has undergone a number of changes since its introduction based on feedback from committee members and from the assessment coordinators throughout the university. See the 2010 version of the rubric below.

The University of Mississippi Assessment Evaluation Rubric for Administrative & Educational Support Units
(Including Research & Public Service Units)

	3 (excellent)	2 (acceptable)	1 (in need of improvement)
PLAN: Outcome Statement An appropriate Outcome measures unit's services and processes An Outcome Statement should be focused Unit must have some responsibility/control for Outcome	Outcome is stated in terms of current services or processes or what clients know or are able to do as a result of services Statement describes a single, focused Outcome Unit has full or significant responsibility/control for Outcome	Outcome statement is not clearly stated in terms of current services or processes or learning outcomes (what clients know or can do as a result of services) Statement describes two or more Outcomes that are related Unit has modest responsibility/control for Outcome	Outcome is stated in terms of unit characteristics or inputs or in terms of unit's strategic Outcomes (future oriented), or directly relates to individual's performance Statement describes multiple, unrelated Outcomes Unit has little or no responsibility/control for Outcome
PLAN: Means of Assessment Multiple Means of Assessment (MOA) strengthen findings Means of Assessment (MOA) must be valid to assess services, processes, or learning Means of Assessment must be linked to the Outcome Means of Assessment likely to identify specific areas for improvement	More than one Means of Assessment are proposed At least one MOA directly measures services using rubrics, counts, percentages, or other appropriate measures Means of Assessment reasonably measure all aspects of the Outcome statement Means of assessment and method of summarizing data will likely provide data detailed enough to identify improvements (e.g., item or component analyses).	One Means of Assessment is proposed Means of Assessment use only client surveys that are indirect measures. Means of Assessment reasonably measure some, but not all, aspects of the Outcome Means of assessment or method of summarizing data will likely identify only general areas for improvement (e.g., overall scores on a survey).	No Means of Assessment is proposed Means of Assessment measure strategic Outcomes or pose "yes/no" results Means of Assessment not directly linked to, and will not measure the desired Outcome (not applicable)
PLAN: Criteria for Success Criteria for Success should be established	Specific Criteria for Success are proposed	Criteria for Success are proposed but vague	Criteria for Success are missing
RESULTS: Data Sufficient data reported Data should be linked to the Criteria for Success	Sufficient data reported in adequate detail to confidently assess the Outcome Whether or not the collected data meet the Criteria for Success is clear	Data reported, but more data and/or detail would increase confidence in the results Unclear whether data are linked to Criteria for Success; or, incomplete report	Inadequate data were collected to assess the Outcome Data not linked to Criteria for Success
RESULTS: Use of Results Assessment results spark specific improvements Improvements should already have been implemented	Specific unit improvements that clearly stem from assessment results and seem likely to improve services and/or client satisfaction are described; or, At least one unit improvement is already in place; or criteria for success were met	Vague statements are made of unit improvements Unit improvements have been identified and are scheduled for implementation	No unit improvements related to assessment results were proposed, even though Criteria for Success were not met Needed program improvements have not been identified
OVERALL: Entire Report Staff should be involved in the assessment planning and implementation process Report should be clearly written Assessment results should be used to make program improvements Evidence that previous program modifications improved services	Broad staff involvement in the assessment planning and implementation process is clearly evident Clearly written and concise At least one substantial improvement stemming from assessment has been implemented; may be service, assessment process/tool, policy, or other unit-related improvement that should lead to improved services, processes, or outcomes or student/client learning Results indicate that the implemented improvements actually improved services, processes or student/client learning (may require examination of results across assessment cycles)	Some staff involvement in the assessment planning and implementation process Generally well written, but parts are not clear Improvement stemming from assessment has been partially implemented; may be service, assessment process/tool, policy, or other unit-related improvement that should lead to improved services, processes, or student/client learning Results do not show improved services; however, additional improvements are proposed or additional time is required before results likely to show improvement	Staff involvement in the assessment planning and implementation process appears to be lacking Poorly written, rambling, or opaque No substantial improvement stemming from assessment has been partially or completely implemented (not applicable)

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Conclusion

The University of Mississippi's assessment program has been a driving force in developing a program of assessment within the University Libraries. The requirements have helped library staff to develop assessment efforts that focus on university's strategic priorities and mission. By aligning the library's efforts with the Missions and Goals of the university, the library staff and administration established objectives the library as a whole, or units within the library, need to meet in order to further the university's mission. Assessment efforts have been organized around those objectives for the biannual effort but culture of assessment that has grown up have led to new ideas from throughout the library and the need to assessment to determine the efficacy of services and programs has been well established. It is important to remember that not all assessment efforts yield usable results. Sometimes the assessment models are flawed and the development of quality methods is an essential part of the assessment effort.

Finally, assessment has to lead to changes to processes or services that are based on the results. Without this final step, assessment efforts have no lasting significance. This is why the university has just added a requirement for at least one identifiable improvement to services or processes from each Assessment Report, even if all the Criteria for Excellence have been met. The improvement of services based on ongoing assessments must be the ultimate goal of any assessment program and the University of

Mississippi is striving to establish that goal throughout the university and within the library it drives decision making at all levels.

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Notes

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The Impact of Library Instruction on Freshman Performance and Retention

Rachel Kirk, Jason Vance, and Justin G. Gardner
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Abstract

This study examines the relationship between formal library instruction and undergraduate student success and retention in higher education. Researchers analyzed two years of data collected from first time freshmen who entered in fall 2008 at Middle Tennessee State University in an attempt to quantify the effect of librarian-led classroom instruction on students' college persistence and overall academic achievement.

Introduction

Academic librarians have worked to demonstrate the impact on the success of their students for years. Unfortunately, they have not been able to establish the effect of academic libraries on student success beyond correlations of resources provided by the library. Benchmark measurements are most often quantifications of volumes acquired, money spent on materials, number of librarians and staff, and other investments of resources. The resources expended are evaluated in relation to student success, most often defined by retention or graduation rates, to justify library expenditures. These analyses conflate other contributing factors such as the overall financial position of the university, the demographics and academic preparation of the students that attend it, and educational focus of the institution.

As the necessity of proving educational outcomes increases through increased competition for funding for higher education as well as legislative pressure,¹ Middle Tennessee State University (MTSU) has renewed its efforts to demonstrate and quantify student persistence and graduation rates. This retention theme has emerged as one of the dominant issues in state- and campus-wide discussions of quality, mission and funding. Accordingly, MTSU's James E. Walker Library has

begun to examine and assess its effect on retention and graduation rates of undergraduate students.

Literature Review

Legislatures, higher education commissions, and academic professionals have focused on student retention for decades. The roots of the literature on student retention extend back several decades.² Extensive literature about retention in higher education exists at the institution level, while literature that seeks to demonstrate the impact of the academic library on retention is modest in scope.

Vincent Tinto, arguably one of the most influential researchers in this field, postulates a model of student retention that focuses on the student's academic and social integration.³ Tinto has identified four conditions that promote student retention.⁴ The first condition is the university's commitment to retention, which entails an expectation that students will persist and eventually earn a degree. Students will rise to meet these expectations. Second, the university must provide academic and social support to the students. This may include things like providing quality library faculty,⁵ or developing a community within the classroom.⁶ Tinto's third condition is student involvement. Students that are academically and socially involved are more likely to stay and finish their degree. Tinto's fourth condition is learning. According to Tinto "The more students learn the more value they find in learning . . ."⁷

Leppel, writing from the perspective of an economist, took a utility function approach to analyzing student retention and persistence.⁸ If the satisfaction, both present and future, from obtaining a degree exceeds the utility from dropping out the student will persist and finish

the degree. As is usually the case with most temporal analysis Leppel assumes that future utility, resulting from a better job for example, is discounted. Students that are struggling, for any reason, are likely to quit school because the current utility drops. From here we can study known factors that influence persistence in a theoretical context. Students with lower family incomes are more likely to struggle because they have to work or take out student loans. Leppel hypothesizes that some factors could have positive or negative motivational effects, such as age and marital status. Students that are older or married may have higher motivational levels relative to traditional students, but an older student has a shorter time span to enjoy future benefits of a degree and a married student may have constraints that single students do not. Leppel found that age, marriage and hours of employment decreased the odds of persistence, while family income increased the odds of persistence. In the context of Leppel's framework library instruction could increase a student's current utility by improving their ability to perform in other classes. Hence, we should expect students that receive library instruction to have higher chances of success.

Much of the library literature on undergraduate retention can be divided into one of four broad categories. The first category includes studies that address the impact of traditional library use on retention rates. The theme of "the library as place" where environment and technology are optimized for student learning and engagement constitutes the second category. The third category of literature quantifies the relationship of library expenditures and student retention rates. The final category explores the impact of librarians partnered with teaching faculty in campus-wide retention programs.

One of the earliest library retention studies focused on traditional library use in the 1960s at California State Polytechnic College, Pomona.⁹ Researchers found that students who checked out more books were retained at a higher rate from fall to fall. Since this study, other libraries have attempted to tie library use to student persistence. While it is generally acknowledged that student employment on university campuses positively affects undergraduate persistence, Wilder asserted there are additional advantages for

student employees of university libraries. These advantages included demystifying the library, placing at-risk students in an academic environment, and exposing students to physical library collections, though the author provided no data to support these assertions.¹⁰ In a later study, Rushing and Poole expanded upon Wilder's assertion and found that students who held student worker positions in Loyola University New Orleans' libraries were retained at a higher rate than those who did not.¹¹ The authors attributed the correlation to their students' increased knowledge of library operations and personal interaction with librarians.

Malinckrodt and Sedlacek surveyed undergraduate students at the University of Maryland, and found that those who reported using the library were more likely to stay in school.¹² This can be interpreted as support of much-cited studies by Tinto and Astin that suggest that libraries can serve as places where students can become socially and academically integrated into their campus communities.¹³

Not all studies reported finding positive relationships between library use and academic success. Hiscock tested eight hypotheses about the effects of libraries on academic performance and found little measurable effect at the South Australian College of Advanced Education.¹⁴

The second theme in the library literature explores the relationship of physical library spaces and undergraduate retention. The concept of "library as place," popularized by Buschman and Leckie,¹⁵ incorporates a variety of recent works on "information commons" and "learning commons" projects in libraries as well as the recent trend of inviting non-library services into the library.¹⁶ Pierard & Graves outline the shift from libraries as static buildings to more dynamic centers that include writing centers, computer labs, cafes, art galleries, etc. These spaces seek to be student-friendly and are deliberately designed to encourage collaboration and peer learning.¹⁷

Such activities cast the library as an important environmental factor allowing students to become part of a social and academic community. This trend continues to gain popularity, though Pierard and Graves points out the lack of

empirical evidence tying such activities to student retention.¹⁸

The third theme of the academic library and its impact on student persistence emphasizes quantification of library resources, comparison of these resources across institutions, and computing correlations between resources expended and rates of student persistence. Meznick measured the effect of library expenditures and the number of professional library staff on student persistence.¹⁹ Not surprisingly, she found that schools spending more money on libraries and employing more library staff tended to have higher retention of students than those with lower expenditures and staffing levels. She did not, however, take into account other mitigating factors like students' personal, academic, and socio-economic characteristics that they bring to their respective schools. Similar to Meznick, Emmons and Wilkinson looked at figures from US libraries in the Association of Research Libraries and found that libraries with higher library staff to student ratios had higher retention rates.²⁰ However, the authors cautioned that they did not have the data needed to account for the overall quality of the universities in their study or the student support offered by the schools they studied. The authors used an ordinary least squares regression model. If the missing variables are correlated with the number of library faculty or library expenditures then the estimated coefficients are biased.

Despite the studies that attempt to tie library activities to undergraduate student retention, Pierard and Graves again "found a paucity of data demonstrating connections between student use and knowledge of how to use libraries and their academic success and persistence, either during or after the first year."²¹

The final theme that emerges from the library literature on student retention is the promotion of librarians as partners in campus-wide retention efforts. These articles are mostly editorial in nature, and serve as calls to action for academic librarians. Maurie Kelly argues that librarians could best take an active role in undergraduate student retention by gathering data about students and by getting involved in first year programs.²² The latter sentiment was echoed by Gardner & Hardesty, who contended that

librarians should become actively involved in first year experience programs and work to integrate information literacy into the freshmen curriculum, working with learning communities, and collaborating with first year programs.²³

Watts recommends ten ways that academic librarians and libraries can make themselves relevant partners in first-year retention efforts. These include financial, curricular, and environmental elements, but ultimately, Watts says that "the place of the library should be central to challenging and supporting first-year students."²⁴

Methods

Our objective is to test the hypothesis that attending a library instruction session has a positive impact on freshman retention. We do this by estimating a regression model and testing to see if the coefficient on a library instruction dummy variable is statistically significant.

The literature on student performance and retention seems to have inconsistent standards regarding statistical hypothesis testing. It is common to find papers that demonstrate correlation between outcome variables and the factors believed to impact the outcome variables.²⁵ Such an analysis is too simple to for the complex problem of student retention. Consider the impact of a student's high school grade point average and retention rates. Clearly these two variables should be positively correlated, and the literature has confirmed this relationship.²⁶ However, a correlation coefficient can only prove that two variables are correlated and the direction of that correlation. We cannot use a correlation coefficient to predict how a change in high school grade point average will impact retention. It is also common to find published research that provides a simple unconditional comparison of means between two groups.²⁷ Again such an analysis is too simple because unconditional comparisons of means between two groups cannot take into account the impact of other variables.²⁸ In order to correctly identify the factors that lead to student performance and learn how these factors impact performance a regression approach is required.

Regression models are not without their pitfalls, it is common to find retention literature that

employs stepwise regression.²⁹ There are numerous problems with stepwise regression. The results from a stepwise regression procedure are inappropriate for hypothesis testing because the process inflates alpha levels thus increasing the chances of a type I error.³⁰ A type I error is a false positive, leading us to conclude that a relationship between the dependent and independent variables exist where it may not. Studenmund points out that in the presence of collinear independent variables that stepwise methods are unable to detect the best variables for inclusion.³¹ In the context of student retention we should expect collinear predictor variables, a student's ACT score and high school GPA, for example, should be correlated. Studenmund adds that the model resulting from a stepwise process may have no basis in theory. In disciplines where theory does not drive statistical modeling this is a non issue. However, there is a significant body of retention literature that develops a theory of retention so a computer algorithm to select variables is not appropriate.

Another issue that we must consider is endogeneity. There are several ways that endogeneity can manifest itself. It occurs when a variable, that is typically unobserved, simultaneously determines a dependent variable and the independent variable in a regression model. We might not have data on a student's motivation, and motivation can simultaneously influence the decision to stay in school and the student's grades. As a result estimates of the impact of student grades on retention are biased. Sometimes endogeneity presents itself in the form of selection bias. Students that check out more books may have a higher retention rate, but the higher retention rate and the number of books a student checks out could be a function of some other variable. Without a carefully designed study it is impossible to determine the true cause of a student's performance. There are numerous strategies to counter endogeneity; the simplest perhaps is to seek better data. Economists frequently use instrumental variables methods, which work well assuming that a good instrument is available. Instrumental variables should be uncorrelated with the error term in the regression model. Leppel used an instrumental variable method which consisted of running a first-stage equation to predict GPA, and then used the predicted GPA as an instrument for the actual

GPA.³² Consult Greene for a detailed explanation of instrumental variable methods.³³

Typically, retention studies have a binary dependent variable. If a student returns the following academic year then the retention variable is equal to one, and zero otherwise. Ordinary least squares (OLS) regression is not appropriate in these situations. It is common to find logit models,³⁴ although probit models are also appropriate.³⁵ Some retention studies have a continuous dependent variable. Emmons and Wilkinson and Mezick used OLS models to explain factors that influenced a given institution's retention rate. OLS may be inappropriate in these situations because the dependent variable is bounded between zero and one, making a logistic regression a better tool. Researchers should estimate both logistic and OLS models in these situations and present the results of both models. For our purposes either a logit or a probit model is appropriate. However, we would like to employ an instrumental variables method in our model. Since STATA contains a procedure for estimating instrumental variable probit models we choose to use a probit model.

Data

The MTSU Records Office provided data for students that were first time freshmen in the fall of 2008, excluding minors. The university retains all student demographic and academic information in a data warehouse designed by the university's systems division. Information such as grades, age, courses taken, declared major were queried in the data warehouse using standard query language (SQL) by the authors. Provisions were taken to protect student privacy. In some cases, such as when obtaining financial aid data, only systems analysts from the Information Technology Division could retrieve and provide financial data. There were a total of 3,381 observations

This data was then linked, using course enrollment records, to library instruction records. Information that could be used to identify individuals was removed from the dataset and replaced with accession numbers. Data has been reported at the aggregate level only. A limitation of this study is that we were only able to verify that a student was enrolled in a class that

attended a library instruction session; there was no way to verify that the enrolled student actually attended the library instruction session with the class. Students who were prone to skip the library session of a class might also miss other classes and be less likely to succeed in the class and be retained. If this is the case then our estimate of the impact of library instruction will be biased downward.

Table 1 contains a description of the variables used in estimation as well as the variable means and standard deviations. The dependent variable in our model, retained, is an indicator variable set to 1 if the student returned in the fall of 2009. The mean is 0.73, implying a 73 percent retention rate. The library variable is also an indicator variable set to 1 if the student was enrolled in a class that attended a library session. The mean is 0.51, implying that 51% of the 3,381 first time freshmen in our dataset were enrolled in a class that attended a library session. While the actual number may be lower because some students may have missed class we feel that reaching almost 1,700 students is a success even if we cannot directly connect library instruction with retention. ACT, HSGPA and FGPA represent the students ACT Composite Score, high school grade point average and First year grade point average, respectively. The Average ACT score was 22.49, the average high school GPA was 3.25 and the average first year grade point average is 2.71. The Female, Hispanic, African American and Other Minority variables are indicator variables set to 1 if the student is a member of one of the ethnic or racial groups. The 2008 freshman class was 52 percent female, 19 percent African American, and less than 6 percent were Hispanic or other minorities. The mean household income was \$78.6 thousand, and a third of these students were first generation college students.

Results

We estimated five probit models in order to test the hypothesis that attending a library instruction session has an impact on student retention. The null hypothesis is that library instruction has no impact on student retention, implying that the coefficient on the library instruction variable will not be statistically significant. The alternative hypothesis is that library instruction has an impact on student retention. If the library instruction coefficient is statistically significant

then we can reject the null hypothesis in favor of the alternative hypothesis. These models can be found in Table 2, all models are statistically significant based on a χ^2 test of overall significance. Models 1 and 3 have adequate explanatory power, with a Pseudo R^2 of 0.282 and 0.289 respectively, while models 4 and 5 have little explanatory power with a Pseudo R^2 of 0.064 and 0.011. No Pseudo R^2 is reported for Model 2.

In Model 1 freshman grade point average is statistically significant and positive implying that students with higher grades are more likely to be retained. The female indicator variable is statistically significant and negative implying that, holding everything else constant; females have a lower retention rate. The African American and Other Minority indicator variables have statistically significant and positive coefficients. Compared to Caucasians these groups have higher retention rates. The Hispanic, first generation and Household coefficients are not statistically significant. The library coefficient is negative, but it is not statistically significant thus implying that library instruction has no impact on student retention, but we must first explore the potential for endogeneity before we can reach any conclusion.

Model 2 was estimated using an instrumental variables procedure. ACT scores and High School GPA were used as instruments for library instruction. Like model one this model is statistically significant overall. Hispanic and library instruction coefficients are statistically significant. Both are positive, this implies that library instruction may indeed have a positive impact on freshman retention. The χ^2 statistic for the endogeneity test is statistically significant implying that our instruments are appropriate. However, this model seems to have some issues that need to be addressed. Note that, other than the constant term, none of the remaining variables are statistically significant. In this case the instrumental variables procedure is not appropriate because the instruments are correlated with the dependent variable, which we will see as we examine the other models.

Model 3 is a “kitchen sink” model which includes the instruments from model 2. With these extra variables we see that the female coefficient is no longer statistically significant, otherwise all of the

variables that are statically significant in model 1 are also statically significant in model 2. Note that some of the coefficient estimates have changed. The ACT coefficient is not statically significant while the High School GPA coefficient is statistically significant and negative. The negative coefficient on the High School GPA variable is not consistent with theory, but this result is an excellent example of how collinearity can impact estimation results.

Model 4, which does not include the freshman GPA variable, exemplifies the impact of collinearity. Now the high school GPA, household income and ACT coefficients are statistically significant and positive. Taking this a step further, in model 5, removing the ACT and high school GPA leads to statistically significant and negative coefficients for the first generation variable and the library variable. However the library coefficient is only statistically significant at the 10 percent level. When adding or removing a variable has a major impact on the significance, size and magnitude of other coefficients in the model collinearity is often the culprit. As mentioned above we should expect collinearity. More importantly the instruments used in model 2 should not be correlated with the remaining variables in the model. Hence the instrumental variable estimates are not valid. Likewise Model 5 is not valid because it leaves out a key predictor, freshman GPA.

The main result is that the coefficient on the library instruction variable is not statistically significant. This study failed to reject the null hypothesis that library instruction has no impact on retention. There are a number of factors that could be driving this result. It is difficult to isolate the impact of any variable due to the collinear nature of the variables commonly used to predict retention. Academic performance variables, such as the high school and freshman GPA, are strongly correlated with each other and the resulting collinearity will inflate standard errors, increasing the chances that we will fail to reject the null hypothesis when in fact we should reject the null hypothesis. In other words collinearity increases the odds of a false negative.

Class attendance was not called during the library instruction sessions. If a large number of students, especially those that did not return to school the

next fall, were absent during the library session then we would not be able to establish a statistically significant link between library instruction and retention. While it is reasonable to suspect that an introduction to the library will help a student integrate into campus life and thus increase retention rates, is it reasonable to think that a single one-hour sessions in the library will be enough to impact retention? Perhaps it would be more appropriate to examine the impact of library instruction on specific student learning outcomes within general education, research intensive, or benchmark classes.

Conclusion

Based on the results of this study, we were not able to establish a direct link between first-year retention and library instruction. The study did, however, yield some useful results and opened new avenues for more targeted assessment of library instruction and retention.

Prior to this study, we had no concept of how much of MTSU's freshmen class we were reaching with our library instruction classes. As participation in library instruction is at the discretion of the classroom instructor (not mandatory), librarians were providing instruction to an unknown percentage of the freshman class. Now, we know that our saturation level for this group is roughly 51%. In 2008, more than half of the first-time freshmen at MTSU had access to library instruction during one of their courses.

Although library instruction's effect on freshman-to-sophomore retention is not quantifiable, we believe that library instruction in the freshmen year does contribute to a new student's integration into campus life along with the library's physical building, collections, services, and professional staff. Future work should strive to use data on actual attendance on the day of library instruction.

Further study might use our model to show if sustained library instruction throughout students' undergraduate careers has a measurable impact, especially as students do more research-intensive work in upper level courses in their majors. Such longitudinal studies could examine the effect of library instruction on grade point averages and 6-year graduation rates. Future studies could also examine the effect of library instruction on course-

level grades and learning outcomes, conduct longitudinal studies following student cohorts,

and test different programmatic instruction models.

Table 1. Variable Descriptions and Descriptive Statistics

Variable	Description	Observations	Mean	Standard Deviation
Retained	=1 if the student returned for a second year	3,381	0.73	0.45
Library	=1 if the student was registered for a class that attended a library instruction session	3,381	0.51	0.50
ACT	ACT composite score	3,223	22.49	3.52
HSGPA	High school grade point average	3,381	3.25	0.51
FGPA	First year grade point average	3,064	2.71	0.87
Female	=1 if the student is female	3,381	0.52	0.50
Hispanic	=1 if the student is Hispanic	3,381	0.02	0.15
African American	=1 if the student is African American	3,381	0.19	0.39
Other Minority	=1 if the student is some other minority	3,381	0.04	0.20
Household Income	Household Income in Thousands	3,212	78.60	75.28
First Generation	=1 if the student is a first generation college student	3,381	0.33	0.47

Table 2: Tobit Model Results, Independent Variable = Retained

	Model 1	Model 2	Model 3	Model 4	Model 5
FGPA	0.957*** (0.0386)	0.387 (0.242)	1.015*** (0.0445)		
Female	-0.106* (0.0615)	0.00231 (0.0531)	-0.0865 (0.0646)	0.00384 (0.0516)	0.120** (0.0478)
Hispanic	0.164 (0.213)	0.266* (0.161)	0.313 (0.235)	0.107 (0.167)	-0.0218 (0.155)
African American	0.459*** (0.0815)	0.0229 (0.135)	0.412*** (0.0869)	0.476*** (0.0710)	0.281*** (0.0643)
Other Minority	0.344** (0.167)	0.0803 (0.141)	0.305* (0.176)	0.446*** (0.140)	0.343*** (0.131)
Household Income	0.000290 (0.000412)	-0.000404 (0.000303)	0.000189 (0.000420)	0.000875** (0.000361)	0.000734** (0.000345)
First Generation	-0.0706 (0.0642)	0.00373 (0.0491)	-0.0701 (0.0662)	-0.0735 (0.0535)	-0.100** (0.0509)
ACT			0.000867 (0.0104)	0.0227*** (0.00820)	
HS GPA			-0.183** (0.0782)	0.663*** (0.0552)	
Library	-0.0454 (0.0608)	1.869*** (0.203)	-0.0344 (0.0624)	-0.0510 (0.0502)	-0.0878* (0.0478)
Constant	-1.623*** (0.118)	-1.628*** (0.318)	-1.181*** (0.293)	-2.139*** (0.232)	0.519*** (0.0572)
Observations	2929	2823	2823	3092	3212
Pseudo R ²	0.282		0.289	0.064	0.011
Overall χ^2	846.3***	3066***	829.0***	228.2***	40.58**
Endogeneity Test χ^2		4.865***			

Standard errors in parentheses

*** p<0.01, ** p<0.05, * p<0.1

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Finding the Library: An Institutional Assessment of the Undergraduate Experience

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Abstract

The paper discusses the development of Mount Royal University's Assessment Seminar, the importance of this institutional project to understanding the value of the library, and the implications of the findings for continuous improvement to the student experience. Based on an adaptation of the Harvard Assessment Seminar model, the research employs semi-structured interviews to gather the perspectives of undergraduate students on their university experience. Textual analysis is used to examine the extensive qualitative data generated through nearly 100 student interviews. Responses to specific questions, as well as consideration of unsolicited student comments on the library and its services are considered. Findings discuss the value of these unsolicited responses, and the importance of understanding the role of the library from the student experience perspective.

Introduction

In the spring of 2009, Mount Royal University embarked on a qualitative assessment exercise that attempted to capture the perceptions and experiences of students entering the first year of degree programs. The university had just launched six new undergraduate degrees, had applied for membership in the Association of Universities and Colleges of Canada, and had submitted a request to the provincial government to officially change its status (and name) from college to university. Timing was of the essence for this assessment project. With a reputation for being a student-focused institution, there was great interest in knowing if the change from a two year college with applied degrees and degree transfer programs, to a four year undergraduate degree granting university, would alter the student experience, and if so, in what ways. It was also an opportunity to take stock of student

perceptions and to test our assumptions about institutional values and uniqueness. Perhaps most importantly, this research was intended to be action oriented, pointing out both strengths to build upon, and areas for improvement.

This paper explores data gathered through this institutional research project with a particular focus on the academic library. It examines students' perceptions of the nature of the university library within the context of their lived academic experience. This research project adds to the understanding of the value of the academic library within the institutional context. Exploration of the academic library from a student's perspective is not particularly new, but to do so in an integrated, institutionally-focused way, without asking any direct questions about the library, was a unique opportunity to understand students' perceptions and experience of the library.

Academic Library Context

Academic libraries have grappled with finding meaningful ways to assess and explicitly demonstrate their value to the academic enterprise. Measuring and articulating this value is a complex pursuit. It demands attention, fortitude, and creativity. It requires understanding of the library and its role within the university, the educational system as a whole, and most importantly, the academic and intellectual lives of students and faculty.

Traditional input measures attempt to quantify importance and value through mass, volume and usage. Gate counts, circulation figures, website usage, page-views and downloads, interlibrary loan counts, volumes purchase, dollars spent, reference questions answered, class hours logged,

and one-on-one instruction sessions, provide only marginally useful signifiers for what the library contributes to teaching and learning. Useful for benchmarking and identifying patterns of growth and decline, this evidence provides a measure of what has been the most easy to quantify. These measures remain limited, and at times, limiting.

Assessment techniques that endeavor to measure outcomes are more challenging to develop and execute, and may be more time consuming and complex to interpret, but we are confident their results are more meaningful. How do we know how much of a role the library played in a student's success? Did the one-to-one instruction at the reference desk lead to a student to find better resources and therefore deeper understanding of the assignment? Did our efforts to provide information literacy instruction contribute to a student's understanding of the course content and to her final grade? What long term learning did a student discover through such instruction? Is a student's success impacted by her/his use of the library, its resources, and its services? Even with well-craft questions, it remains unclear as to whether students will be able to discern and articulate the role of the library in the ways we are seeking. Gibbons and Fried Foster's¹ work emphasizes, a richer approach may be to consider evidence, and draw conclusions about the role of the academic library based on the learning needs and practices of students.

It is not to suggest that input and output assessments are of no use, or value. They are pieces of the puzzle, and when combined with other types of data they will reveal a more nuanced and full assessment of the value of academic libraries. In recent years, we have begun as a community to focus on the latter and to connect the dots between our services and student success and achievement. User-focused standardized surveys such as LibQUAL+® have provided both insight into our users' perspectives but have done so in a standardized way which fosters benchmarking and improvement.²

Academic libraries, as parts of larger institutions, are wise to align their assessment efforts with the interests and requirements of their parent institution.³ Constrained budgets, and increasing demand for accountability, contribution and value

is at issue for our institutions and therefore for our libraries. ACRL's *Value of Academic Libraries: A Comprehensive Research Review and Report*⁴ has eloquently captured our need to claim our place within institutional assessment and evaluation, and has provided practical advice on how we might succeed in these efforts.

Institutional Context

Mount Royal University is a publically funded undergraduate university located in Calgary, Alberta, Canada. With an institutional budget of approximately 173 million dollars, Mount Royal has an enrollment of more than 8,200 FTE (or 12,000 students), employs approximately 380 FTE faculty (more than 1,500 individuals), and over 750 support staff.⁵ With a brand of "face to face," the university is well-known for its emphasis on exceptional teaching and personalized learning, boasting smaller class sizes and a strong identity as a supportive learning and teaching community.

The university currently offers bachelor degrees in Nursing, Arts, Business Administration, Science, Computer Science, Justice Studies, and Communication Studies and currently has 11,300 credit students taking degrees through 68 different programs. A recently developed General Education program is incorporated into all degrees. Quality teaching and learning informed by scholarship, are supported by an expanding number of research institutes which foster faculty scholarship and undergraduate research. The current complement includes: the Institute for the Scholarship of Teaching and Learning, the Institute for Non-profit Studies, and the Integrated Health Institute.

For Mount Royal University, the Assessment Seminar provided an opportunity to consider the student experience and student learning at a critical juncture in its history and at a point of significant institutional change. With the ambitious goal articulated by the University President, Mount Royal was charged with becoming "the best undergraduate university in Canada by every measure of student satisfaction and success." Institutional assessments such as the *CUSC 2010 First-Year Student Survey*⁶ and *NESSE*⁷ and popular press rankings,⁸ had confirmed long held anecdotal evidence that the institution was known for its supportive student environment; a place with a strong emphasis on

student success defined by achievement. As one of the Assessment Seminar student members aptly put it “faculty members actually *want* students to succeed.”

Methodology

Mount Royal University came to the Assessment Seminar model through exposure to Dr. Richard Light’s work and resulting book, *Making the Most of College: Students Speak their Minds*.⁹ Based on more than 10 years of data collected from in-depth interviews with Harvard students regarding their experiences, needs, and expectations of college, this book provides a unique picture of the successes and shortcomings of post-secondary education through the lens of the student experience. Grounded in action research, Dr. Light states “our goal was and is to explore innovation in teaching, in curriculum and in advising. We work to understand the effectiveness of each innovation.”¹⁰ Listening to, and responding to, the student experience with tangible improvements is central to the Assessment Seminar model.

Essential for the success of the action-orientated research model proposed by Light, is broad-based institutional involvement. Like Harvard, Mount Royal pursued representation on the Assessment Seminar from both the academic and administrative “sides” of the university, and was careful to ensure student, administrative staff, faculty, and support staff membership. With strong endorsement and support from the Provost and VP Academic who initiated the project, a Seminar Steering Committee was created. Chaired by the Dean of the Faculty of Teaching and Learning (principle investigator) this 10 member Committee provided input and advice on the development of the project including the creation of the 50 plus member Assessment Seminar group. This larger group was constituted through a process of invitation which allowed for voluntary and appointed membership of between 2 and 4 representatives from each academic and administrative unit, as well as numerous student representatives.

Through a series of monthly meetings, as well as smaller team projects, the Seminar Group worked through its vision for the Assessment Seminar at Mount Royal and built an institutionally relevant interview instrument. Aided by consultation and

a site visit by Dr. Light, as well as Harvard’s sample questionnaire, the Assessment Seminar group was able to develop a robust and meaningful instrument for implementation at Mount Royal in the spring of 2010.

The intent of the project in its initial form was three-fold. First to capture (early on, in the first year) a baseline for measuring the success of new degrees and to monitor and to continually improve degree offerings, and the student experience, as we moved through full implementation of all four years. Secondly, to explore the General Education program which is a unique feature of Mount Royal University’s degree programs and still in the early stages of its implementation. Thirdly, to be able to identify, confirm, and build upon our institutional strengths and uniqueness—those features that made us an institution of choice for students.

Population and Sampling

With these three foci in mind, a questionnaire was developed to collect data from degree students regarding their undergraduate experience at Mount Royal University. Data were collected through one-on-one interviews using a semi-structured interview protocol where students had the opportunity to share perspectives on all aspects of their undergraduate experience (academics; learner support services; campus life engagement, etc.).

A stratified random sampling approach was used to derive the sample of 600 degree students in their first or second year of study. Gender and degree program were also criterion in the development of this representative sample. Invitations for participation were extended via email from the Provost & VP Academic to all those identified in the sample. Follow-up phone calls confirmed interview times with 114 students (meeting our goal of 100 interviews), and resulted in 97 interviews (57 females, 39 males, 1 unidentified). Degree programs and number of participants in each degree area were: Arts (33); Business Administration (13); Communication Studies (11); Criminal Justice (10); Nursing (17); Science (13), Computer Science (0).

Data Collection

The final interview instrument consisted of twenty-two interview questions falling into eight

broad aspects of the student experience: readiness and transition, teaching and learning, personal growth, relationships with faculty and staff, campus engagement, academic supports, orientation and advising, and the General Education program. Ranging from the very broad to the more specific, each of the twenty open-ended interview questions included standardized prompts to assist respondents, and to guide the interviewers with consistent wording. Two questions asked students to rate their experiences on a scale of 1-10, but also allowed for comments.

For the purposes of this particular paper it is important to emphasize that the survey instrument did *not* include any direct or specific questions regarding the library or its services.

The instrument also included basic demographic data including program of study, year of degree program, number of courses taken in the current academic year, gender, age-range, place of residence in terms of type of viable commute (walk, drive, on campus), employment status, and typical hours of work per week.

Interviews were conducted on-campus by 10 specifically-trained, student interviewers over a period of six days in March 2010. Interviews ranged in length from 35-75 minutes, and the digital recordings of the interviews yielded approximately 1,300 pages of verbatim transcripts. As per human ethics research requirements, each participant was asked to complete an informed consent form before the interview started.

Data Analysis

At the institutional level, the process for analyzing the data was in keeping with the collaborative approach that had informed the Assessment Seminar's work in the formulation of the instrument. Seminar members were grouped into 10 review teams and each team received approximately 10 transcripts for review. Teams were charged with examining the data for recurring themes, for surprising elements in the data, and for particularly descriptive or compelling quotes. This initial review has facilitated the selection and prioritization of particular themes for more in-depth analysis, which will be supported by the Office of Institutional Analysis and Planning, and include

the use of textual analysis aided by NVivo software. This work is currently in progress and we look forward to recommendations in the spring of 2011.

Finding the Library

The Assessment Seminar project, with its intensely rich qualitative data and the broad focus on the whole student experience, was an excellent opportunity to approach the assessment of the library in a new integrated way; situated naturally within the academic enterprise and the life of the student. Early on in the instrument development process I made the conscious decision *not* to recommend specific questions related to the library. Not only did I lack confidence in the results of even a well-crafted question or questions, but I also felt that this might reduce the interest of students to comment on the library as part of other questions. Adding one or two questions seemed limiting, rather than capturing meaningful insight into the very complex role we hope the library plays in the fabric of a student's personal and academic growth during university.

What might be revealed about the role of the library if no specific question about the library was asked? Where in the questionnaire themes would students reflect on the library? How would they perceive its importance, role, and function in their experiences? What would students tell us if unprompted? What would it mean if students did *not* mention the library or its services? Would we be able to "find" the library anywhere in the student experience?

Library Context

Before attempting to explore these questions through the examination of the findings of the Assessment Seminar project, it is important to provide some basic contextual information for Mount Royal University Library.

The library employs approximately 60 staff, including 17 faculty librarians. In keeping with university's focus on teaching and learning, the library has an extremely active embedded information literacy instruction program with library faculty teaching more than 750 instruction sessions each academic year. The library, though now dated in its 1976 open floor plan, is extremely busy with gate counts tracking a daily average of 3,500 visits, and peaking at about 5,000 during

high-use periods. Over the last three years, the library has also experienced a small increase circulation (a rarity in most academic libraries these days), a tripling in demand for interlibrary loan, and recently launched a very successful chat reference service.

With the transition to a four year degree granting undergraduate university, the library has enjoyed significant investment in both base, and one-time funding, primarily in support of acquisitions but also staffing. This investment has been critical in the library's ability to support degree programs and the increasing demands of both faculty and student scholarship. New consortia memberships have expanded our electronic collections considerably, and we are currently engaging in a retrospective collection development project to meet degree program needs.

Plans for a new, stand-alone, Library and Learning Centre facility have been developed and submitted to government for funding approval. Pressure on our current facilities is extreme as a result of increased student enrollment, a more committed student population due to four year degrees, and changing pedagogical approaches, most notably group work.

Interpretation of Findings

Reading the complete set of transcripts for context and nuance was an essential initial step in the review of the data. Textual analysis was also facilitated by the use of the NVivo software which allowed for contextual word searching and more complex coding and tracking of themes.¹¹ The work of the Assessment Seminar review teams was also incorporated into the analysis.

Word searches identified 48 of the 97 (49%) transcripts included direct references to the "library" or "librarian(s)." The word "library" occurred across the transcripts 147 times, while "librarian" or "librarians" were mentioned 23 specific times. Although not recorded in the transcripts, it was also the case that students often knew their liaison librarian by name. Further analysis revealed 11 occurrences of the words "citation" or "bibliography" within these 48 transcripts which formed the core of the data set for the purposes of this paper.

Demographic data for these 48 transcripts were reviewed to determine if there were any patterns to their responses or any unusual outliers. The data reflected many similarities with the overall demographic characteristics of the respondents: 62 % female; 58% first-year; enrolled in an average of 4 courses; and from a representative distribution of degree programs. 44% of the respondents in this sample of (48) were working more than half-time (20 or more hours per week) with 29 % indicating they were not working at all.

Analysis of the data was pursued from two main frames of reference. The first approach identified what students said specifically about the library, the nature of those comments, and under what questions those comments occurred. In essence, how did students perceive and value the library? The second approach to the data was to consider in what ways the overarching themes and issues, identified at the institutional level, aligned with the library's findings. In what ways could we respond to student needs to improve their experience at Mount Royal? What data might give rise to new projects and initiatives to address student needs or concerns?

The Power of Not Asking

Within the interview data, the keywords of "library" and "librarians" occurred in relation to three main categories of comments: library spaces, the teaching role of librarians, and the importance of library staff. The selected terms were then mapped to the corresponding questions (Figure 1) further illuminating the place of the library within the student experience.

Space

The prominence of student comments on library facilities was not a surprising finding. The library, as noted earlier, handles a high volume of users in an out-dated, open concept design that does not support a diversity of study needs. Issues of noise, inadequate group space, limited seating and long lineups for computer have been a problem for some time, and students have been very vocal in their dissatisfaction. In fact, during the same time period as the Assessment Seminar interviews, the library was in the process of planning for minor renovations to create more defined study zones and to develop a new communication plan to positively enforce appropriate behavior in the

library. The Assessment Seminar data provided us with confirmation of our direction, and helped to reassure library staff that these changes would result in a positive outcome for all. Comments on noise were the most impassioned: "The noise in the library is phenomenal. I have got to wear . . . headphones to drown out the noise around me," another student commented "The library is a joke.

You go in there and there's people talking on cell phones and yelling at each other across . . . the computers." Accordingly, the questions that generated the most space-related comments were those that asked students what was surprising about coming to Mount Royal, what they would change, and their least positive experience.

Figure 1 – Library Themes and Question Distribution

	Space	Teaching	People
What would you change?	✓		
Biggest surprise?	✓		✓
Involvement in campus life?	✓		
Least positive experience?	✓		
Most effective out of class learning experiences?		✓	
Assignments with best learning?		✓	
Challenges in transition?		✓	
Academically prepared?		✓	✓
Academic supports you have used?		✓	✓
What would you include in orientation?		✓	✓
Shown caring and concern?			✓
Best advice you wished you had received?			✓

Teaching

The second category of responses captured students' perceptions and experience with library instruction sessions. Students, though not using the term "information literacy," explicitly mentioned these classes, often identifying the value of such instruction in considerable detail. As one student explained: ". . . how to use the resources from the library. I think that's really, really, really important. So like even if you do it twice a semester, like it's always worth doing because there's always something new to learn and new resources." Another student commented

that: ". . . finding sources . . . that are scholarly is kind of hard to do, having a librarian help teach you, it makes it fun [and] easier." When asked about a useful out-of-class learning experience, another student responded: ". . . going to the library and figuring out how to search a book . . . with the quotations and the 'ands' and the 'ors.'"

The impact of information literacy instruction can also be noted in the following response to the question about the biggest surprise experienced at Mount Royal: "The library and all it has to offer. It keeps surprising me because I never really went

to libraries in general.” The student continues on to comment on the role of library staff: “They know cute little short cuts on the web, they know how to properly type in the search engine, and they even have like library chat messenger, which is just so cool!”

Students also commented that embedded library instruction is often not afforded enough time for students’ to learn concepts. One student suggested that the instruction was too fast and could have been distributed over two sessions. Many students shared their frustration with trying to understand the how’s and why’s of citation and referencing. They commented on being unprepared when they arrive from high school where citation styles were not taught, nor the need for referencing explained, as one student put it: “. . . you get into university and you are blinded by it.”

Responses related to library instruction matters generally fell into questions surrounding students’ experience with assignments, transition issues, and academic preparedness.

People

The final category of comment related to the importance of knowledgeable and helpful library staff. Library desk staff and liaison librarians were often mentioned specifically in the data, with students providing examples of how particular librarians had gone out of their way to be helpful. One student noted that orientation should include: “. . . those things that you learn in your second year where it’s like ‘this librarian’s really awesome,’ or like I can get a free breakfast up in Wykham house every day.” Another student identified a faculty member’s advice to visit the library and meet her liaison librarian as the best piece of advice she received. Another respondent noted “. . . we do have the librarian helping us teach too, so having her around is a lot easier than just going to someone random . . .” A less satisfied student, when seeking help with citations commented that: “. . . I went to the library and I thought would just ask a librarian and I finally got one to look it over and she said, ‘yeah it’s OK’ but there was no feed back or anything.”

Comments on these personal interactions, and in particular their content and value, recurred in questions about academic preparation, skills and

supports as well as examples of particularly caring individuals students have encountered.

Summary

Through these few examples, the power of *not* asking about the library is clearly evident. Not asking generated both expected and surprising data about the library; some positive and some not so glowing. Perhaps most importantly, it provided evidence that the value of the library is very clear to many students when asked about their academic experiences. The library is seen as a space to study and learn and it is frustrating when it is noisy and busy. The library is identified as having information resources, even for students who are using online journals. Library staff members are seen most often as supportive and helpful, and having assigned liaison librarians provides students with the personalized help and instruction that they value.

What was most surprising in the data was the degree to which student’s understood and could articulate the value of information literacy instruction. Students’ description of the challenges in finding scholarly resources, the importance of good search construction, and noting that there is benefit in attending multiple library instruction sessions speaks volume to the success of our embedded information literacy instruction program.

Answers Waiting for Questions

The second approach to the interpretation of the data was to consider the library’s response to the institutional-level themes identified by the Assessment Seminar group. These themes included: teaching and learning; General Education; transition issues; campus engagement; and personal connections. These broad themes reflect the recurring issues within the interview data. They provide the basis for shaping our institutional discussion of actionable next steps, as well as areas that require additional consideration through deeper analysis of the data. They may also be possible topics for future Assessment Seminar research.

Teaching and Learning

Findings through the first phase of analysis strongly indicate that the library’s information literacy instruction program positively impacts student learning. Students can articulate

particular skills and understand the value of those skills. Expansion of an already successful program should be considered, and new ways to measure value and impact on student achievement should be pursued. The new Library and Learning Centre's impact on teaching and learning should not be underestimated.

General Education

The data also suggests that there is a role for library faculty to contribute to and support pedagogical improvement across the institution, and in particular, to continue to explore ways to participate in and support the General Education program. The intention of General Education aligns well with the tenants of information literacy instruction and the development of critical thinking skills. Opportunities for integrated approaches to information literacy instruction within General Education courses should continue to be explored.

Transition Issues

The library is well placed to assist students with their transition to the university environment. We can participate in entrance programs and lead first-year experience initiatives. Expanded partnerships with other student learning support services and redesigned orientation programs may also be beneficial. Reaching into the high school curriculum to work with secondary teacher-librarian colleagues may also be a proactive way to ensure a more positive experience for first-year students.

Campus Engagement

As a central, shared space, open to all students the library is well placed to help foster increased engagement through expanded hours and new programming. Partnering with student clubs, creating programs for those commuting and those living in residence, and seeking opportunities to showcase and partner with other units, are some tangible ways that student engagement might be improved. With so many of our students working substantial numbers of hours each week, it is also an indication that we may need to reevaluate our service hours and our hours of operation.

Personal Connections

Held in esteem for being helpful and supportive, library staff are also important individuals in the personal networks of students. Important for both

retention, and student success, these interpersonal relationships can easily be fostered by liaison librarians and front line service staff. Seen as a trusted and safe place for students to learn and be supported by personalized help places the library and its staff in an incredibly privileged and influential position. We should take this responsibility seriously and understand how even the most simple encouragement and assistance can transform a student's academic experience.

Next Steps

This two phased analysis of the data offers a balanced approach to putting research results into action. It identifies student perceptions of the most valuable aspects of library services, and then applies these factors to institutionally supported action areas; demonstrating both value and alignment in a tangible way.

The richness of the data lends itself to ongoing analysis and interpretation. A more in-depth review of other library-relevant terms such as "research" (a complex and often ambiguous notion) or "study" might expand our understanding of library value even further. Recommendations coming out of the in-depth review of priority areas may also result in new ways to consider the library's contribution to improving student success.

A comparison of the Assessment Seminar findings with data from NESSE and CUSC or other key performance measures for the institution, is another opportunity to demonstrate academic library value and to ensure that institutional priorities are supported and informed by this work.

The next iteration of the Assessment Seminar offers an opportunity to explore student perceptions at the 3rd and 4th year level. The ability to compare the changing perception of students over the course of their undergraduate education will no doubt shed additional light on academic library value.

Conclusions

The Mount Royal Assessment Seminar provided a unique opportunity to explore, in an integrated way, the complexities of the first-year student experience. The opportunity to *discover* the library's value within that experience was

informative and encouraging. Reframing the question to be about the learning, rather than the library proved very successful. The study also confirmed that “finding the library” within institutional mission, and the student experience, was not difficult.

This study provides an example of an alternative approach to measuring and articulating the value of the academic library. Participating in an institutionally focused assessment exercise added validity to the findings within the institution, and helped ensure that the conclusions were incorporated into the institutional responses of this action-oriented research. It is also the author’s hope that this research contributes to the ongoing discussion to better understand and measure the value of academic libraries.

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We Don't Know What the Future Will Be, Only That There Will Be One: The ARL 2030 Scenarios Project

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Abstract

This conference offers an opportunity to discuss, for the first time, a new project that ARL is initiating. We believe that we are building a better planning “mousetrap.” It is titled “The ARL 2030 Scenarios Project.” For instance, in considering the normal process of strategic planning, it is standard practice to do an environmental scan to help in assessing the near-term problems that an organization faces. Once that is done, too often, the plan that emerges looks a lot like the present or is—at best—slightly incremental in looking forward. This is true in libraries, like any other organization. Yet, our literature, our meetings—indeed our daily conversations—all are replete with references to the uncertain future and the need for new transformational strategies to carry us into the future. But what is the future going to look like? Nobody seems to have a clear crystal ball, and the record of “future casting” is spotty at best. Perhaps, all we know about the future is that there is likely to be one—which makes it easier to avoid the exercise of trying to anticipate it and simply crank out humdrum strategies that do not transform anything. If we really do believe that libraries are awash in change, however, somehow we have to break this pattern and find a way to imagine a different future.

Introduction

Scenario planning is a tested method for us to explore. Three quotes from John Maynard Keynes offer reasons to break the mold of standard thinking about the future:

- “The difficulty lies not so much in developing new ideas, but in escaping from old ones.”
- “The long run is a misleading guide to current affairs. In the long run we are all dead.” This has been variously interpreted to mean that he was interested in short term, rather than long term gains. In fact, Keynes was saying that inflation would inevitably get out

of hand if left to take care of itself over the long haul—so is true for the future of libraries.

- “It’s better to be roughly right than precisely wrong.”

There are three elements of scenario thinking that are captured by this great economist in the proceeding quotes:

- Breaking out of traditionally framed modes of thinking about the future is essential
- Assuring that our thinking is truly aimed at managing a future that will surely differ drastically from the present
- Framing our thinking about the future around enough “roughly” correct scenarios so that we are prepared for what happens in the end

Scenario Planning

Scenario planning is designed to help us accomplish this and, as defined by Jonathan Star and Doug Randall, “is a well-established tool for helping managers deal with situations of significant uncertainty. A scenario project involves a series of exercises where management teams creatively and collaboratively drill into the uncertainties that an organization faces today and may encounter in the future. The result is a set of narratives usually three or four that describe the different directions that the future could plausibly take. Having created and considered these alternative futures, management teams are better able to navigate both denial and paralysis, and reach sound decisions about emerging growth opportunities. Scenarios help deal with denial. By articulating challenging, yet plausible ways in which the future could evolve, scenarios encourage management teams to ‘think the unthinkable,’ anticipate surprises, and rehearse new possibilities. In scenario exercises, we encourage teams to think about what strategies they would pursue under very different scenarios

or external circumstances.”¹

Scenario planning has come into wide use in business and government, and its use is expanding into the not-for-profit world. The advantage of scenario planning is that it postulates not one but a variety of possible futures and uses them as rubrics to think about and deal with different organizational futures. No single scenario ever captures the future with accuracy. Instead, the set of scenarios, as a whole, contains the elements and the conditions that the organization will face in the future. This is why it is important to consider the full set of scenarios in planning and not choose one or consider one more likely than another. By exploring the strategic implications of a scenario set, organizations are able to create a strategy that is robust across a broad range of challenges and opportunities.

Equally important, the scenarios stretch thinking because they are set in the more distant future. It is a very interesting coincidence—but indicative of the utility of the tool—that, early this year, the Association of Research Libraries began its effort “Envisioning Research Library Futures: A Scenario Thinking Project” at the same time that the “Libraries of the Future Project” was launched in UK by a group of key associations in cooperation with the British Library.²

ARL’s Scenario Development Project has had several phases, and we are now at the end of that effort. We began with data gathering early in 2010. The first step in this process was to define the strategic focus for the scenarios and strategic conversation to follow. The data gathering explored and uncovered the core strategic questions on the minds of key decision-makers in member research libraries as they consider future challenges and opportunities facing their organizations. In addition, interviews with external thinkers on the future of research libraries and the strategic challenges that they face expanded the set of strategic questions that were identified. A report that summarizes the findings of that process can be found on the ARL Scenario Planning Project Web site.³

Through this internal data gathering processes, the strategic focus for the scenarios emerged as a single question:

How do we transform our organization(s) to create differential value for future users (individuals, institutions, and beyond), given the external dynamics redefining the research environment over the next 20 years?

It is necessary to clarify some of the generic terms for the reader.

- “We” refers to the ARL member research libraries.
- “Our organization(s)” was captured in both the singular and plural, as member libraries shared an interest in both individual strategic planning, as well as, collaborative strategic planning.
- “Transform” is a term that carries a legacy. In this context, the word refers to the opportunity to use the scenario set to help research libraries to redefine themselves to maintain and grow a differential value in the market. That being said, it is important to note that research libraries are all at different points in their individual evolution.
- Everyone that shared insights with ARL brought up concerns about maintaining and/or building relevancy that could be sustained and valued by users. Sustained value, by definition, must have some differentiating characteristic that ensures that value for users is maintained over time. As such, the terminology “differential value” seems to most accurately capture the strategic imperative most frequently focused on by member organizations. Value is always for the customer—or in this case—the user. Members discussed how the user group for research libraries was changing and expanding. As such, we chose to clarify the focus on “future users.” Some members focused primarily on the parent institutions, others on individual users.
- “Research environment” is deliberately selected as a manageable scope. It narrows the consideration of the broad number of dynamics that we know will affect the entire process of research. It intentionally avoids the larger environment of the academic library, specifically the “research and learning environment,” which becomes unmanageably broad. However, it is important to note that, although this scenario exercise did not focus on the full set of dynamics that are changing the future of learning, learning—and its

critical role in the research process—are considered part of the “research environment.”

A Scenario Development Workshop was held in June 2010. A group of 30 representative libraries of the North American membership, along with external “provocateurs” and ARL staff, participated in the workshop. “Provocateurs” are a standard part of scenario development and are identified as individuals with a particular expertise who can help “push the envelope” on group thinking, which often gets bogged down in near-term concerns. During the workshop, participants considered a wide variety of social, economic, technological, political, and environmental drivers of change relevant to research library futures. Starting with that large number of drivers of change, the participants chose a set of scenarios most relevant to ARL members and their strategic focus. The ARL 2030 scenarios are captured on a 2 x 2 matrix in which the two axes represent the framing of critical uncertainties.

- Research Enterprise: The horizontal axis asks, “Will research be highly distributed and organic, or will it be integrated across organizations?”
- Individual Users and Researchers: The vertical axis asks, “Will the research process and product empower users and researchers or not? Who is most valued in the research process?”

When these two critical uncertainties are combined, four highly divergent and rich scenarios emerge. Each scenario offers a contextual story of how the future of research may play out in four highly divergent ways. Each story explores the dynamics of change associated with a rich set of critical uncertainties.

ARL’s scenarios are set in 2030, where as the UK scenarios are set in 2050. Despite the differences, the emerging scenarios share some common characteristics. It is not relevant at this time to do a compare-and-contrast, but merely to point out the common strategy on both sides of the Atlantic in the face of common problems. Whether one thinks in terms of 20-or-40 years out is immaterial because many of the current problems/challenges (such as collective storage of print, market and access for monographs, collaborative/cloud

strategies for digital collections and so on) are probably going to be solved; but how they are solved will determine the role of the research library. The purpose of developing scenarios so far distant is that it frees up thinking about current conditions, liberating us from the grip of the here-and-now. It is a proven effective strategy for helping organizations think anew in challenging situations. More to the point, the scenarios developed in both projects do not describe libraries but the larger environment in which libraries function. They frame the way libraries respond in creating organizational change.

The three 2050 UK scenarios are called:

- Wild West—briefly described, “The challenges of the 21st century have created major disruptions to academic institutions and institutional life. Much that we see as the role of the state in higher education today has been taken over by the market and by new organizations and social enterprises, many of them regional.”
- Bee Hive—briefly described, “On a worldwide scale, and in the US, UK, and Europe especially, employer expectations now dictate that virtually all skilled or professional employment requires at least some post-18 education. In the UK these drivers have resulted in a state-sponsored system that retains elements of the traditional university experience for a select few institutions while the majority of young people enter a system where courses are so tightly focused on employability they are near-vocational.”
- Walled Garden—briefly described, “Technological advances, whilst allowing some of the challenges faced earlier in the century to be overcome, has also brought its problems. The ability for people to connect with like-minded individuals around the world has led to an entrenchment of firmly held beliefs, closed values and the loss of the sense of universal knowledge. This has resulted in a highly fragmented HE system, with a variety of funders, regulators, business models and organisations that are driven by their specific values and market specialisation. However, ‘grand challenges’ of national importance goes some way to galvanising the sector.”⁴

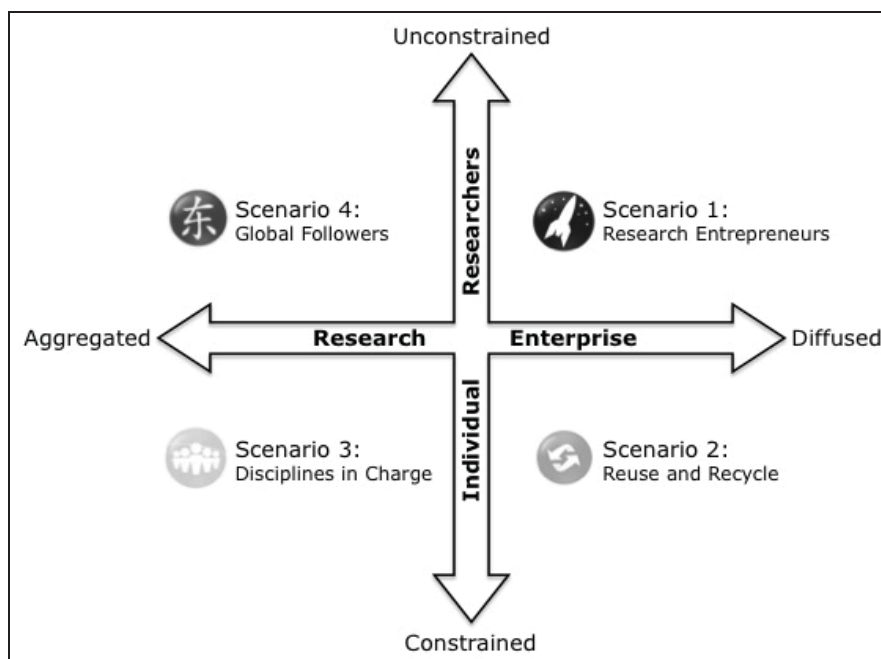
The ARL 2030 scenarios allow members the opportunity to suspend disbelief and stretch beyond conventional wisdom about our future. Although the scenarios are far into the future, member organizations can use them effectively for current planning that aims at shaping actions over the next one to five years.

The four ARL scenarios are called:

- **Research Entrepreneurs**—briefly described, “This is a future shaped by the rise of entrepreneurial research; individual researchers are the stars of the story. The path of technological developments has acted to empower researchers as creators of high-value new knowledge. Speed and innovation are rewarded by corporate sources of support. New conceptions of translating research to market have opened avenues for more entrepreneurially rooted models of business investment in research, including venture capital. Relative reductions in government funding have freed researchers to seek funding from new sources and have encouraged philanthropists to seek opportunities to influence knowledge creation by supporting researchers directly.”
- **Reuse and Recycle**—briefly described, “This is a world where recycling and reuse predominate in research activities. Disinvestment in the research enterprise has cut across society. Ongoing scarcity of economic resources has led to an emphasis on reuse of basic research and repetitive applications of research findings to basic “business problems.” Government’s ability to fund research and research-intensive

education has become limited to non-existent. As networked communication and other popular mass technologies evolve and spread knowledge widely, the perceived value of new information becomes reduced, accelerating the devaluation of the research enterprise and individual researchers.

- **Disciplines in Charge**—briefly described, “By 2030, research using computational approaches to data analysis dominates the research enterprise. The new research modalities prove to be powerful drivers for organizing the research enterprise to address grand research challenges and support technology evolution. As a result, scholars, whether humanists or scientists, have been forced to align themselves around data stores and computational capacity that address large-scale research questions within their research field.”
- **Global Followers**—briefly described, “In this future the research enterprise is relatively familiar, but the cultural context that frames the enterprise shifts profoundly. Key structures such as universities, faculty, and graduate students persist, but the locus of the funding that drives the enterprise migrates from North America and developed Western nations to nations in the Middle East and Asia. These Middle Eastern and Asian cultures, which are able to build technical infrastructures that catalyze breakthrough research and attract top talent, can organize the activity into projects of relevance to their societies. Existing organizations and individuals act to realign themselves with the new sources of support.”⁵



I should reiterate that the scenarios are designed for a particular community—North American research libraries. Thus, the scenarios have been developed to be useful to a broad audience but do not attempt to address all of the possible concerns of research libraries—not to mention all the possible futures that one might imagine. While the scenarios touch on developments in related activities—for instance undergraduate education—a different scenario set would need to be developed to look deeply at uncertainties around a topic such as the future of undergraduate education. However, there is sufficient depth within the scenarios to support conversation and planning around the changing relationship between teaching and research.

Conclusion

The culmination of the ARL 2030 Scenarios Project was the development of a user guide that was released October 19th and that will provide direction to libraries for adopting this methodology in their planning. The user's guide was developed to advance local planning at ARL member libraries. It is written for library leaders, writ large, and for anyone leading or contributing to research library planning processes. One does not need advanced facilitation skills to benefit from this guide, but facilitators charged with supporting scenario planning should find the detailed designs particularly helpful. For leaders,

planners, and facilitators, alike—the user guide introduces the ARL 2030 scenarios and explains many of the ways that one can strengthen the institution's planning by using them. Scenario planning is a methodology that requires substantial time and other resources to implement. To more fully benefit from scenario planning, libraries will need to make more significant, longer-term investments to implement the advanced designs that the user's guide offers.

While there are real challenges in adjusting to this innovative technique for thinking about the uncertain future, I am confident that it will provide the kind of tool that allows us to adapt better to horizon change. One way in which the user guide might be used is as a substitute for the usual environmental scan to initiate and supercharge a libraries strategic planning process. On the other hand, scenario planning can also be used by itself to help stimulate current decision-making for organizational development and change. So, stay tuned as ARL rolls out the user guide and begins to build a community of practice around its use. I might add, as well, that the UK project will be ending next spring and can provide an additional and a different perspective on scenarios.

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Notes

1. Jonathan Star and Doug Randall, "Growth Scenarios: Tools to Resolve Leaders' Denial and Paralysis," *Strategy & Leadership* 35, 2 (2007): 56-59
2. See "Envisioning Research Library Futures: A Scenario Thinking Project," <http://www.arl.org/rtl/plan/scenarios/index.shtml> and "Libraries of the Future," <http://www.futurelibraries.info/content/page/scenarios-2050>.
3. <http://www.arl.org/rtl/plan/scenarios/index.shtml>.
4. "Libraries of the Future," <http://www.futurelibraries.info/content/page/scenarios-2050>.
5. See <http://www.arl.org/bm~doc/scenarios-data-gathering-summary-082010.pdf>.

Value, Impact and the Transcendent Library: Progress and Pressures in Performance Measurement and Evaluation

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Abstract

This paper is a response to the assumption that libraries are under pressure to prove their worth, and that library leaders have not achieved this fully and successfully. The paper suggests that this proof of worth will be measured by what higher order beneficial effects libraries deliver, and that evaluation within currently used performance frames of reference will therefore be insufficient. The paper contends that what is sought includes an indication of transcendent contribution; that is beyond the immediate or currently recognised temporal, spatial and influential boundaries of libraries. Because what is sought is transcendent; then the right place to seek answers to value contribution will not be in immediate goals, but in values, as concepts of value depend entirely on values systems. The paper therefore suggests a new higher order framework for evaluation and performance measurement, based potentially on a values scorecard. In conclusion the paper argues that this is not merely a measurement issue but a strategic one, because the indications are that current measures based on short term goals might influence behaviour and activity in a way that reduces transcendent value rather than increases it.

Worth is used above to incorporate concepts of both the value and impact of libraries. Further discussion of terminology used in the paper is provided. The paper is focused mainly on the growing requirement for value and impact measurement in academic and research libraries, but may be seen to be relevant to other library sectors. A natural history of library performance measurement is proposed which places the requirement in context, and a reflection on the meaning of value for libraries is presented. The concept of the transcendent library, which

contributes to organisational and social values, rather than simply to a narrow notion of economic value, is offered as a route to further progress.

Context and cross pressures

The aims of the academy and scholarship are transcendent, relying on a shared belief that there is an impact of higher education on individuals and society, and beyond that there is a value arising from being educated, which relates in a fundamental way to human flourishing. This has always been difficult to quantify and measure. Academic and research libraries have historically been considered to be distinctively “academic” services, implying that they also contribute to these higher and broader goals and values.

In the first Library Assessment Conference, a demand for proof of worth was voiced by a University leader,¹ which when developed² suggested that there were only two ‘bottom line’ measures of worth: impact on research (and ultimately research reputation), and impact on the financial bottom line. This reflected the two lines which have recently been developing in library assessment: the quest for impact and value measures. The term ‘worth’ is used to mean the combination of these two strands, although it will become clear later that value should be used as the more appropriate collective term (incorporating impact).

This demand for proof of worth is an additional pressure on libraries, and does not reduce or replace the need for the many other forms of assessment in use. There is however an associated danger of reductionist thinking by stakeholders and librarians in understanding and responding to this pressure, especially when paymasters

attempt to reconfigure broader aims and values towards a limited range of utilitarian measures.

A recent paper based on focus groups with senior UK academic librarians commissioned by the Research Information Network is worth quoting at length³; the author was a member of one of the focus groups:

“... there is a strong feeling among senior librarians that they have failed effectively to communicate the value of their services ... there is an increasing risk that much of what libraries actually do may be invisible in a virtual environment. ... we believe it is important that libraries should be able to show ... that they provide services with demonstrable links to success in achieving institutional goals. Return on investment is thus an increasingly important issue. Libraries need to be more proactive in seeking to understand user behaviour and workflows; and in rigorously demonstrating the value of their activities. ... The focus of performance indicators up to now has tended to be on inputs and outputs ... rather than addressing the much harder issues relating to impact and value. ... we believe it is essential that more work is done to analyse the relationships between library activities ... and learning and research outcomes ...”

This is a helpful summary of the current position, and also hints at some potential answers. In simple terms it suggests that we need to understand our users better, as this will be a route to value, and we need tools such as Return on Investment (ROI) to make the link to value and ultimately to institutional goals. As will become clear later specific assumptions are made here which define solutions perhaps before sufficient analysis has taken place.

A key element of our current context is the world changing economic crisis. A positive side effect may be that a dominant world view focused on a limited range of economic values and judgements is being challenged. An example of this thinking is Professor Michael Sandel's 2009 Reith Lectures as commented on in a British newspaper editorial,⁴ based on a new appreciation of the common good:

“the credit crunch has exposed myriad mirages, demonstrating how the market can

get things badly wrong when it comes to valuing things ... when bureaucracies price things which should not be priced, they start trading them off against other objectives, instead of appreciating their absolute obligations.”

This suggests that a simplistic move to adding a few economic value indicators to our current assessment armamentarium may not be the right response: “cost benefit analysis can have nasty results.” What is needed first is broader reassessment of value in terms of these absolute obligations.

There has already been recognition of the cross pressures on library performance measurement arising from different value sets. To quote an example:⁵

“civil society has more to do with attitudes, feelings and symbols ... leadership [sees] an increasing emphasis on values ... value-based management is second only to change management [in importance to leaders for continuing education] ... but most organisations consist of different value sets ... there is a focus on the importance of leaders as value creators.”

This suggests that there are conflicting values between different trends in public sector management, but that an understanding of values will be critical to effective future performance. Again these demands do not replace the other many existing cross pressures for data and evidence arising from earlier management trends, such as the quality movement.

The conclusion is that there is a specific new pressure for proof of value, which libraries have not yet succeeded in developing. However a response based solely on a limited economic model may not be the answer, but rather there is a need for a broader assessment of the meaning of value; and recognition that value is dependent on values sets or systems.

Transcendence and value

In developing the idea of value measurement it is probably important to consider both the general and more technical understandings of the term. The exploration below is developed from a paper

delivered at the 2009 Northumbria conference in Florence.⁶

Value has been variously defined as worth, desirability, utility; or on the qualities that these depend; or on estimated worth; or as a financial exchange or other form of equivalent relation.⁷ More generally value as “The quality or fact of being excellent, useful or desirable” has been used as a starting point for discussions of value theory, accompanied by conclusions that precise terminology has not yet been obtained.⁸ There has been much philosophical debate about what constitutes value over more than two thousand years, so it is not possible to do full justice to that here. There are some points worth noting from that debate. First there is ambiguity over what value means. Consequently value will mean different things to different people. Value is an idea; in other words it has no independent existence, and like any idea it can be described as ‘arbitrary’; and there is not likely to be a single wholly satisfactory answer to value measurement.⁹

For libraries the challenge is to compute their own value. Because values are manifested, there will be something that we can measure arising from the way values are enacted in our libraries, and the way value is generated as a result.

Additionally we would like any assessment to be comparable across institutions, but the above suggests this might be optimistic.

A philosophical debate exists around the value of an object being intrinsic or extrinsic.¹⁰ If libraries have intrinsic value then they would have value for their own sake. It seems that one of the difficulties of the current context is that an assumption of libraries delivering a timeless list of intrinsic goods is no longer broadly held to be true. This may have been the view in a past where collections were unique and libraries had monopoly on access, but it is increasingly challenged in the digital age. The concept of libraries having extrinsic value seems more appealing; we exist for the sake of something else; our value is largely instrumental value, and we can develop measures of value around our relational properties. However there would seem to be a danger of instrumental concepts of value becoming horizon limiting, hence the need to seek

a more encompassing term on which to base a value framework.

A key problem with the computation of value is that it needs to be holistic. All current measurement frameworks we employ have failed to meet this need, otherwise we would not be under pressure to provide more. In the next section the history of our evaluation efforts will be considered in more detail. It is sufficient here to note that internal and immediate external measures have not delivered proof of value because they are neither holistic nor high level enough to be satisfying. The value of the whole as being more than the sum of its parts requires a different approach to analytical separation of categories or dimensions of service. The recognition of the system value of a library needs to be placed within a broader accepted value system. In this way some of the contribution to higher goods which are missing from current analyses might be captured. Some library leaders maintain a pessimistic view that libraries would not have been invented if we had started within the current digital context. This kind of thinking demonstrates exactly the lack of recognition of value which libraries add as a system, and to a misunderstanding of where we can and should add value.

A better expression of the level of value proof we are seeking lies beyond these debates, and might best be categorised as **transcendent**, in the sense of above or outside the immediate. This is a more appropriate view in the digital world where libraries transcend their physical space, but the strength of the term is more importantly in recognition of the full value of libraries in their contribution to more intangible wider benefits, which seems to be what stakeholders are seeking when talking about value and impact measures. However this is also relational to something more than the instrumental benefit of the immediate needs and demands of parent organisations, but to other less concrete aspects of institutional or societal intent.

This presents a different level of challenge, and justifies offering the concept of the transcendent library; one in which the value can be judged beyond the immediate, and which contributes not only to institutional objectives or immediate

bottom lines alone, but also to broader value systems within the institution, and beyond, to a higher order beneficial contribution to individuals, groups and societies.

In the next section reviewing the history of library evaluation, we will see that it is possible to arrive at some similar conclusions from the way in which library performance measurement has developed and is developing.

Library evaluation: a natural history

The previous section might be seen to imply some criticism of our performance measurement and evaluation efforts. In reality the history of performance measurement in libraries is very rich and strong, and central to effective management.¹¹ Few areas of public endeavour have such a long, thoughtful and active tradition of measurement and evaluation. Nothing in this paper should suggest that any of these efforts have not been worthwhile, or added to our understanding of our work, or to improved performance. Much of this previous work is likely to contribute to a broader holistic value story told by the library.

Nearly sixty years ago a prescient paper was written which suggested a natural history of the development of academic libraries,¹² and by implication the way in measurement systems might also develop, and this was taken up later.¹³ It suggested a history of three phases of focus for academic libraries: storehouse; service; education. This seems both valid and useful, and also can be used to characterise the history of evaluation: largely internal measures based on the original value proposition of the Library as storehouse, followed by the recognition of service and service quality driven by the broader quality movement, and now in the current challenge to link our measures to the broader aims of our institutions (education in the case of academic libraries). This may simplify the picture too much; there has perhaps always been some evaluation activity across the whole spectrum. However the evidence of the balance of content of successive conferences appears supportive. What is predicted is a shift towards value related measures and evaluation, and again the evidence from this 2010 Library Assessment Conference reflects this, with proportionally many more papers in this area than hitherto.

Almost thirty years ago an influential paper¹⁴ distinguished between the 'how good' of libraries as opposed to the 'how much good is done' by them, laying the framework for the former as reflecting quality (equated with effectiveness) and the latter as reflecting library value (equated with benefit). Orr did not reflect specifically on the philosophy of value, as the paper was a response to perceived pressures to incorporate new management science into libraries, but the distinction between these two aspects thus characterised has held good. Whilst there has been great progress in measurement of quality, measurement of value has remained more intractable. Later work¹⁵ suggested this is because what is lacking is coherence; a sense of the whole, in our measurement systems.

Ten years ago this author¹⁶ produced a paper reflecting on frameworks for evaluation, and the way in which choice of measures might inhibit rather than support performance. One challenge which remains largely unanswered from that paper, is the development of measures for staff, and this would seem to be an essential element of value based measurement, given the large expenditure commitment made in this area, and the uncertainty of stakeholders around what value is added by staff. The conclusion of that paper supports this one. Our interest should remain focused on what will lead us to valuable performance as opposed merely to value measures; and what constitutes valuable performance requires some consideration prior to developing practical measurement.

Value and impact measurement in libraries

Thus the challenge of developing value measures has existed for some time, and the resurfacing of a demand for proof of value is not surprising. What is perhaps surprising is the lack of data and focus on financial measures in our profession. This might simply demonstrate that there are more interesting truths to discover about libraries. However these truths may be in danger of being submerged in a world which knows the price of everything and the value of nothing.

In the UK and Ireland developing and collating a coordinated response to the demand for value and impact measurement in academic libraries has been through the SCONUL Value and Impact

programme (known as VAMP), and reported previously in various assessment conferences.¹⁷ At the outset value and impact were seen to be two distinctively different things, but accompanied by recognition that they are both about measuring the beneficial contribution of libraries.

When SCONUL began its programme, there was already a body of theory and practice from existing work in UK further and higher education,¹⁸ including the LIRG/SCONUL Impact Initiative¹⁹ on which to draw. The SCONUL impact initiative was considered to be the basis for a model for evaluation and measurement in this field. An impact tool was subsequently commissioned, developed and mounted on the VAMP site.²⁰ Interestingly the majority of test beds in this programme were related to information literacy, despite the initial desire to concentrate on research impact, and it would seem that the development of information literacy in individuals is a very good example of something transcendent created which continues to deliver value well beyond the boundaries of the library or parent institution. With the advent of information literacy the idea of a contribution which was both transforming from the individual's point of view, and an addition of transcendent value from the library's perspective has helped sharpen concepts of impact in a positive way. The optimism of clear and accepted measures and unambiguous proof of impact has perhaps not been fully realised in this case, but was at least felt to be in sight. The SCONUL work sits alongside other efforts to measure outcome, and there is insufficient space here to analyse these in depth for their underlying assumptions about value. It may be that these connections are obvious, but they remain difficult to quantify.

Turning to value measurement, what follows is a brief review of recent views on value measurement, again taken from the Northumbria 2009 presentation.²¹ This reveals some concerns about the danger of seeking the single magic bullet which is going to solve our value measurement problem, arising from the assumption that value measures will be framed on economic value alone.

Missingham²² reviewed a range of recent value studies. In so doing she proposed a natural

history of value initiatives, suggesting three steps on the road:

- Activity based costing for output efficiency
- Perceived value based on labour saving
- Balanced scorecard pressure for 'hard' value measurement

Note that this assumes value to be solely an economic question, although Missingham does however also make the key point that the demonstration of value needs to be linked to the organisation's value statements. The paper's conclusions were based on five studies, including the British Library, 3 US Public Library systems, and a national bibliographic service in New Zealand. These initiatives suggested varying benefit ratios for libraries around the 1:4-6.5 level. Some questions arise from this. Does the variation reflect real differences across communities? Larger libraries give higher returns, but what is the precise level of good? A 1:4 return might appear slight in absolute terms.

In a more recent study (a "meta-analysis") of return on investment,²³ Aabo considered this to be a new field, and driven by the financial crisis, Aabo's work is a review of reviews, covering 17 US Public libraries and 43 other international initiatives. It finds a lack of consistency in methodology, limiting valuation comparisons, but again the scores are generally within the 1:4 range. Notably 80% of the studies are from the US, and over 80% are from public libraries. The variety of methods included cost-benefit analysis, contingent valuation, and secondary economic impact.

White²⁴ considers ROI as an old tool with potentially new uses. This paper recognises that use of the tool in libraries has often been defensive or reactive, and echoes the previous conclusions that there is currently no professional consensus on methodology for value determination. White suggests a more internal and instrumental use of the tool for predictive small-scale investment decision making, for post implementation value assessment, and for introspective use to evaluate unit to unit service within the library. A key comment is that these tools could also be applied in more offensive use for library intangible benefits, and this seems an important suggestion, leading towards methods

which might answer the need for a more holistic picture of library value.

Thus the last selected paper is one on intangible assets,²⁵ because the recognition and evaluation of the full range of value of assets is key to assessment of overall value. The valuation of intangible assets will supplement that of real assets, which have tended to be based on the concepts of the library as storehouse, or a set of clearly defined service processes, and therefore do not satisfy the criteria of transcendence or of holism. This paper equates intangible assets with knowledge assets, and these are recognised as difficult to evaluate. However there are methods for resolving this, and an approach of this type requires an intellectual capital reporting model, using similar tools to those already recognised above such as ROI and contingent valuation. A key area where this paper broadens the viewpoint towards the holistic and the transcendent is in the recognition of additional dimensions suggested for assessment:

- Human capital
- Structural capital
- Relational capital

This begins to recognise that there are valuations to be computed not simply for what the library does in instrumental terms, but that there is also a value in what has been built by the library in terms of its staff capability and capacity, in the services built around both real and virtual collections, and in the relationships which the library has with both its immediate stakeholders and broader society. Most of these aspects are not only not measured by current frameworks, they are not yet generally recognised as being objects for measurement and evaluation.

The conclusion from this is that the traditional tools for value measurement will only provide a partial answer to the demand for proof of worth. Economic value tools may be primarily instrumental; offering something new within our current frame of reference, but not providing a transcendental answer of the kind sought. Some of these tools may be better employed internally for individual valuations rather than a whole library approach, because their frame of reference fails to take into account either intangible assets or broader definitions of value.

Value, values and valuation

The connection between the quest for value measurement in academic libraries and their related values systems does not appear to have been made. Gorman²⁶ has been a strong exponent of values in the broadest sense underpinning library work, with the apparent intent to define a timeless (and therefore transcendent) list of values. However Gorman takes the position of rejecting current existing values which conflict with those more traditional values offered. This is not sufficient to resolve the real existence of conflicting values and to deal with the current context of cross pressures for measures and proofs which library leaders face. We have to place our values measurement firmly in today's context, resolve conflicting values debates, and provide evidence of contribution to values achievement beyond mere espousal.

It is worth returning to theories and philosophies of value, and to use these and some experience of practical work on values to make the important connection between values definition and value measurement. Firstly, some further relevant quotations:

- "Whenever valuation takes place ... values must enter in ... in evaluation an indispensable recourse to underlying values is involved"
- "values cannot be deduced from ... data or logic ... they have to be chosen"
- "Acts or series of acts are steered by multiple and changing clusters of values"²⁷

This suggests clearly that there is a link between values and value; that values are a matter of choice, and that values are manifested in what people do and the choices they make. This manifestation helps to make them measurable or observable, and consequently values guide conduct. Thus a values based approach to measurement within libraries may be a better basis than traditional measurement systems which tend to treat both users and staff as blind actors in a rational process of exchange, and one which might therefore need to be squeezed to be as efficient as possible. A values perspective might suggest that these often messy interactions are also a source of real value creation, generating

relational capital in the trust confidence and knowledge on which new forms of service can be built.

There would seem to be a broadly accepted management science view that values and value are connected, and that both are relevant to effective organisational performance:

“Value creation is the objective of every enterprise, every worker and every leader.”²⁸

Core values in the work situation provide purpose to a job on the part of individuals, and motivation is considered to be proportional to the values perceived in the job. Because a value represents a slogan for the rationalization of action, values will be key to correct actions, which then lead to value creation. Many libraries have value statements, but it may be that these have not been fully recognised or utilised to support improved performance or to help recognise how value is being added other than in superficial or general ways. An example from industry of the way this link has been recognised was the IBM experience²⁹ when the company saw a need to improve ‘working together’ within to reflect the company’s new integrated solutions offerings for the external market. The solution was seen as a new set of corporate values, achieved through a “Values-Jam”; an intranet discussion amongst 320,000 employees to ‘weigh in’ on the new set of corporate values. 10,000 comments were received, mainly dissonant and discontented, but the company leadership had the confidence to let the debate run, eventually leading to resurfacing of some original company values lost in the recent transition: dedication; innovation; and trust. Note that these may be difficult to measure, but it was accepted that soft corporate values (and by implication measures of those) had to coexist alongside hard financial metrics.

At the University of York Library & Archives we used this inspiration to conduct our own values investigation using a Web 2.0 consultation tool, followed by an all staff conference to settle a new statement of values.³⁰ This included recognition of conflicting values sets as characterised by Cameron et al.³¹ Whilst this started out as an investigation of staff values, we extended the question to what users valued or would value about our services. This would make the link between our internal value set and the adding or

creation of value for the broader academic community. By asking what users value, instead of what they want, need or rate as satisfactory, we received answers which were surprisingly different to what we had learnt through quality approaches. A holistic academic vision of the library as the physical expression of knowledge emerged, which revealed current weaknesses in our appreciation of what is needed to deliver the virtual equivalent of former physical libraries. This had not been identified through our satisfaction surveys, which separate content, service and physical dimensions. The student vision also revealed a new set of priorities, much more closely linked with day-to-day pressures and contextual experiences, and suggesting a need for much closer involvement of this group in design and delivery of service. Almost no response to our question suggested economic tools as being particularly relevant to proofs of value, although value for money was an issue for students in an increasingly difficult economic climate.

A number of conclusions appear to arise from the above. Value measurement must be linked to values, and in this sense it may be qualitatively different to rational instrumental measures, which require little sense of the shared beliefs inherent in values sets. Because values are chosen, value measures cannot be formed before the values set is agreed. Much of this relates to people, and therefore relevant measures are going to be closer to people than to process. The source for values measurement is therefore not in institutional goals but rather in institutional value statements. These value statements give more ready insight into how we should act, as opposed to what we should do; the latter in the past being given more focus, and also being more readily accessible and quantifiable.

Synthesis: the transcendent library

How might we use the concept of the transcendent library to assist the development of assessment of value? This seems to require a response to four questions. Firstly, what are the value propositions of the transcendent library? Secondly, how do we compute the value which libraries are adding? Thirdly, how should we present our valuations? Fourthly, why is it necessary to engage with these ideas and questions?

It is probably already clear that the answer to the question 'What is value?' is to a certain extent contextual. Value reflects values, and these are chosen. However the act of defining and agreeing what values sets underpin value assumptions is an important part of this process, and for academic libraries may result in resolving conflicting values within the library and beyond it amongst institutional stakeholders. It is apparent that values set statements produced by many academic libraries have a common core. However a revisit of these, engaging a wider range of inputs from other stakeholders in the process may well be worthwhile. Part of this process will be recognition of competing and shifting values. This is not a problem, but an essential part of the process of evaluation because values must be actively chosen. This work also helps to reclaim the agenda and to move away from the narrow values sets espoused by some stakeholders. The value propositions of the library should arise from these statements, providing that the approach has been holistic and collective, and has sought values which transcend immediate institutional or library goals and capture those broader common goods to which we contribute. These should include more than the obvious range of individual impact or contribution to institutional income, ranking or reputation (important though these are), but reflect more intangible value created within and beyond the institution.

It is not possible to present a full answer here to the question of how to compute value associated with value propositions, as these will differ in different contexts. It is already recognised that value has been difficult to measure and prove hitherto. Some existing data and measures will be useful in providing approaches or surrogates for value, particularly where these are focused on outcomes (as opposed to inputs or outputs), and of course most of our current activities and processes do add value and therefore will remain the objects of study. What is different is the conceptual consideration; what needs to be drawn out is the higher order or transcendent effect delivered, rather than the immediate quality of the process or service. Academic libraries have spent much of the past twenty years rightly focused on quality improvement, but it is now time to broaden our viewpoint. Quality may be where the user says it is, but value requires an

opinion from a much broader range of stakeholders.

What might a values based scorecard look like and include? Such a framework will need to reflect the chosen values, and provide some specific measures or indicators associated with each. It will be important here to recognise the difference between the traditional balanced scorecard based on balancing stakeholder interests, still focused largely on input/output/satisfaction, and this higher level values scorecard. It may be that in some places value measurement already figures in such a framework. This is not to say that existing balanced scorecards can be abandoned; the focus of these on service and institutional goals and strategies remains essential.

The starting point for the development of the values scorecard will probably be the organisation's view of itself as a creator of value and a holder of values. This may be in the form of, say, a mission statement that describes the University as a player in knowledge processes, and with a set of values statements that provide some clear directions as to how the addition of value is conceived. At the University of York, for example, values statements include the co-creation and custodianship of knowledge; assisting students to achieve their full potential; and participation and openness. In many of these it is not difficult to recognise that the Library is contributing and adding value, but our current measures are generally directed towards narrower and more instrumental concerns, or towards quality rather than the addition of value. In the work of creating value measures it will be important to eschew narrow, individual or reductionist approaches, or to merely reproduce existing process measurement in a different form. The transcendent contribution of the library and a holistic viewpoint should always be guiding principles. This means moving beyond the immediate pressures to achieve practical goals of efficiency, satisfaction, cost effectiveness, and staff capability to more transcendent goals, recognising the Library's broadest influence on, for example, education, research, knowledge assets, corporate health, innovation, inclusivity, internationalisation, and partnerships. The concept of the library as a service has been very helpful to us over the past twenty years; it is now

time to remind ourselves that we are not only an information delivery service but also a key nexus of knowledge related activity within and beyond the institution.

These new valuations will need to be based on a deeper understanding of both our own and user behaviour and context in a changing world, and recent and further work on understanding and improving student experience will be helpful here. The assessment of intangible value added will be key to developing a compelling story around our overall value proposition. The established three-fold approach to the measurement of knowledge/intangible assets is likely to be a good starting point for recognising areas for developing new measures, or in some cases revitalising older ones. The area of structural capital demands a refocus on some of our traditional professional strengths in building and deploying knowledge systems, and to demonstrate how our new digital libraries and retrieval systems add value as both an intrinsic and extrinsic good. The area of relational capital suggests clearer recognition of not only internal institutional partnerships and collaborations which add value and support institutional values, but also the many external relationships which libraries build for long term benefit. Finally, the evaluation of our great asset in human capital remains a neglected area, and diminishing in general appreciation in the digital age. Much, if not all, of the added value we create is initially built on the skills and capabilities of staff, and yet we still lack any full coherent framework for proof of worth in this area.

The presentation of proofs is often as important as the proofs themselves. It may be that we already have enough evidence available to demonstrate value, but the impression remains that we have not done so. It seems likely that the form of this will be largely based on narrative than through numbers alone, and this is not surprising in the current context.³²

Finally, it is an important truth that libraries have always been an act of faith in something beyond the immediate. Great libraries have always transcended their parent organisations, not just by physical presence or through collections and service, but also in more subtle contributions to education, research and scholarship. That

contribution is worth recognising and recording, and may be essential for survival in the digital age.

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Assessing Organizational Effectiveness: The Role of Frameworks

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Abstract

A brief overview of the challenges associated with demonstrating organizational effectiveness and the role of performance measures as surrogates for demonstrating effectiveness are provided. The complexity of analysis and the importance of use of performance measures provide a way to review the strengths and weakness of eight different ways to utilize performance measures. Among the topics to be addressed are: dashboards, process improvement initiatives, self-assessment award frameworks, and integrated management frameworks including the Balanced Scorecard. Finally, the article discusses which frameworks should be used for what purposes and what criteria should be used to select a framework.

Introduction

Despite a fairly lengthy history of inquiry, much confusion exists about the concept of organizational effectiveness.¹ Conceptual questions, such as *what* to measure rather than *how* to measure effectiveness; *how* to define various factors and *how* to link these factors in the assessment process to the organization's goals, objectives and functions still persist. Thus, the three primary challenges that must be confronted when considering organizational effectiveness are the definition, measurement, and determinants of effectiveness. Clearly the definition of effectiveness is going to be multidimensional, since a single perspective is not going to be able to capture the effectiveness of any organization.

This article focuses on providing a brief overview of the challenges associated with organizational effectiveness and the role of performance measures as surrogates for demonstrating effectiveness. Examining the complexity of analysis and the importance of use of performance measures provides a way to review the strengths and weakness of eight different

ways to utilize performance measures.

Among the problems that must be confronted when assessing organizational effectiveness include: Different approaches to assess effectiveness are products of varying, arbitrary models of organizations; effectiveness is a reflection of individual values and preferences; the construct of effectiveness has never been bounded; and not all relevant effectiveness criteria have been identified.² Despite these challenges, Cunningham identified seven theoretical orientations or perspectives concerning organizational effectiveness:³

- *Rational goals model* – reaching goals
- *System resource models* – optimal distribution of resources within the organization
- *Managerial process models* – good organizational processes
- *Organizational development models* – good problem solving and renewal capabilities
- *Bargaining models* – processes of accommodation and adjustment between organizational elements
- *Structural models* – developing structures that support organizational elements
- *Functional models* – the social consequences of the organization's actions.

Probably a better remembered and certainly more frequently used classification of approaches to assessing organizational effectiveness are the four major approaches articulated by Kim Cameron that include:⁴

- The *goal model*, (sometimes called the *goal attainment model* or the *rational system model*) views effectiveness in terms of achievement of specific goals and objectives. The focus is on productivity and outputs. Establishing goals maybe arbitrary or

subjective. If a library does not have clearly defined goals then it will be impossible to articulate criteria of effectiveness thus rendering this model useless. The challenge in using this model is the complexity, ambiguity, diffuseness and changeability that typify educational goals.

- The *internal process model* (sometimes called the *natural systems model*) sees an organization seeking to achieve goals as well as desiring to maintain itself as a social unit. Organizational health, stability, internal processes and the attainment of goals measure effectiveness.
- The *open systems model* or *system resource model* focuses on the interdependence of the organization with its environment. The organizational survival and growth is dependent upon acquiring resources, in particular budgetary resources, from external groups.
- The *multiple constituencies' model* or the *participant satisfaction model* sees effectiveness as the degree to which the needs of the various constituencies or stakeholders are met. Some of the stakeholders to be satisfied are not going to control needed fiscal resources (which is the system resource model). The challenge with this perspective is to reconcile the often-conflicting needs and wishes of different stakeholders, each of whom will have different criteria of effectiveness.

It may be that an organizational effectiveness model should change with the organization's life-cycle stages.⁵ And Quinn and Rohrbaugh have suggested using a competing values model with three value dimensions (control-flexibility, internal-external, and means-ends).⁶ The significant challenges of assessing organizational effectiveness has been noted by March and Olson who have observed that organizations in higher education are "*complex 'garbage cans' into which a striking variety of problems, solutions, and participants may be dumped.*"⁷

In almost every organization, performance measures are used to assess and measure organizational effectiveness. Cameron conducted a study and found nine dimensions of organizational effectiveness in institutions of higher education:⁸

1. Student educational satisfaction
2. Student academic development
3. Student career development
4. Student personal development
5. Faculty and administration employment satisfaction
6. Professional development and quality of the faculty
7. System openness and community interaction
8. Ability to acquire resources
9. Organizational health.

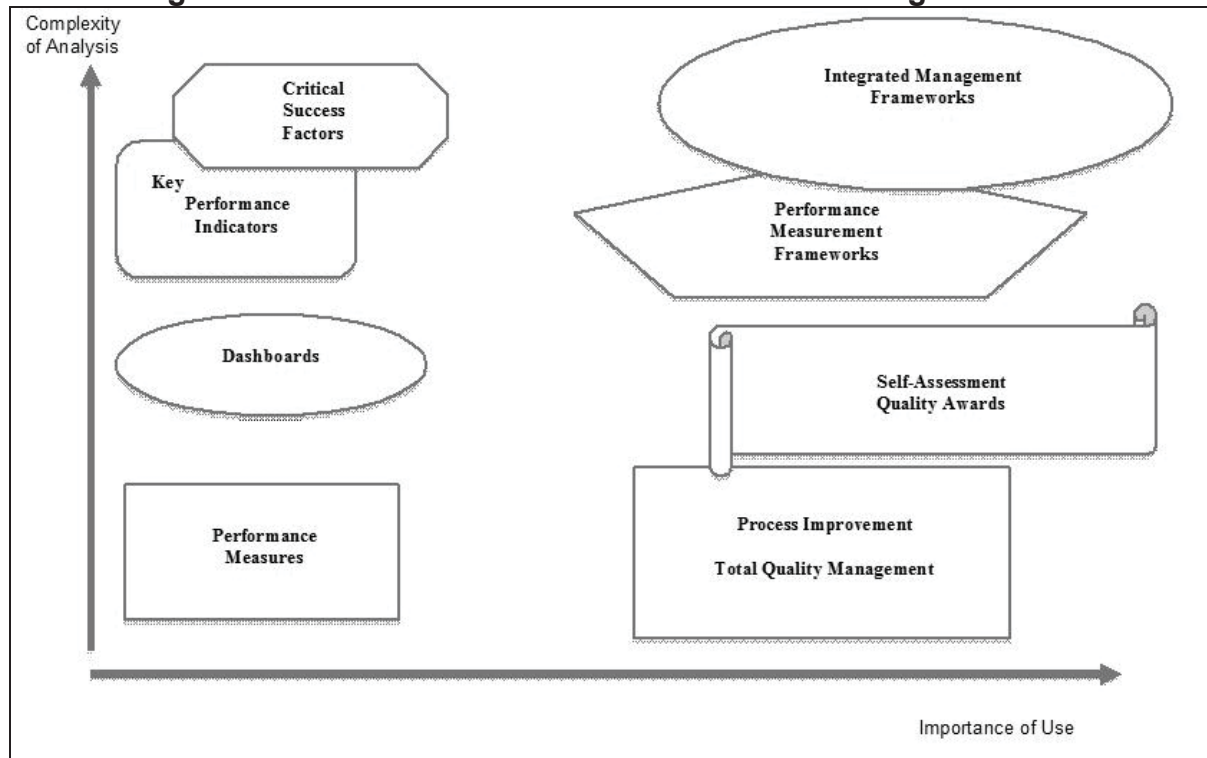
Cameron's four models have been used by others to study the applicability of these models in assessing organizational effectiveness in a library setting.⁹ One of the real challenges facing academic libraries is a lack of consensus about the goals and objectives of the library. One of the factors contributing to this failure, according to Thomas Childers and Nancy Van House, who have observed the lack of a connection between library services offered and the availability of revenues.¹⁰ Specifically the author's note:

- Revenues and outputs are separated
- The lack of a common metric (the "bottom line" in corporations) is lacking
- The decision making process is bigger than the library
- The library has neither champions nor foes
- Library benefits are not widely self-evident.

Role of Performance Measures

Performance measures can play a variety of roles in an organization as shown in Figure 1. While performance measures can stand alone, they can also be combined with other management techniques to create more useful organizational tools.

Figure 1. Overview of Performance Measures in Organizations



Performance Measures

Performance measures have been used for a considerable period of time for a variety of purposes. Performance is measured through the use of *performance measurement* which is a metric used to quantify the efficiency or effectiveness of an activity. Almost all organizations will collect a plethora of performance measures, which are all characterized by the ease of their collection. The real value of performance measures is when an organization goes through a planning process that identifies performance measures that are linked to organization's vision, goals and objectives – whether they are easy to collect or not.

When a library is established it is provided with a set of *resources*. Those resources are organized and directed so that they become transformed and have the *capability* to provide a set of services. These capabilities are then *utilized*. And once used, the information and/or service that have been provided has the potential for a positive, beneficial *impact or effect* on the community or organization. Richard Orr organized a set of performance measures reflecting these activities

in a library setting into his Input-Process-Output-Outcomes model.¹¹

Input measures are the easiest to quantify and gather and have been used by librarians for a long time. Typically input measures are grouped into five broad categories: budget, staff, collections, facilities, and technology. Input measures are usually counts or a numeric value.

Process measures or productivity measures are focused on the activities that transform resources into services offered by the library and as such are internally directed. Process measures are reflected in an analysis that will quantify the cost or time to perform a specific task or activity. Process measures are ultimately about efficiency and thus answers the question "Are we doing *things right?*" Process measures are typically either a cost per activity or a time per activity measure. Usually a library will compare their process measures with a group of peer libraries in order to provide an assessment of how efficient the library is.

Output measures are used to indicate the degree to which the library and its services are being

utilized. More often than not, output measures are simply counts to indicate volume of activity. Historically, use of output measures has been regarded as measures of goodness – after all, the library’s collection (physical and electronic) and its services were being used, often intensively so! Therefore, the library was doing “good.” A multiplicity of measures exists to demonstrate use of services, use of the collection (physical and electronic), use of facilities (gate count, program attendance), visits to the library’s Web site and so forth.

Broadly speaking, *outcomes* indicate the effect of this exposure on the customer. It is also important to note that outcomes can be planned (sometimes called goals) or unintended, and that the actual outcomes may be less than, equal to or greater than what was intended. Outcomes occur first in an individual and then in the larger context – the organization or community. Outcomes allow a library to assess its effectiveness and to answer a very important question, “Are we doing the *right things?*”

Good performance measures are:

- Balanced – include both financial and non-financial measures
- Aligned to the organization’s strategies
- Flexible – can be changed as needed
- Timely and accurate
- Simple to understand
- Focused on improvement.¹²

It has been suggested that good performance measures are also SMART. The measure has a **S**pecific purpose, it is **M**easurable, the defined targets have to be **A**chievable, the measure has to be **R**elevant to measure (and thereby to manage) and it must be **T**ime phased, which means the value or outcomes are shown for a predefined and relevant period.

Dashboards

Some organizations assemble a large number of performance measures and present this information in the form of a dashboard – somewhat similar to the dashboard of an automobile or airplane instrument panel. In many cases these dashboards are only made available to the senior managers in the organization. Unfortunately the plethora of measures displayed on the dashboard typically is

not carefully selected nor has the organization attempted to understand whether a causal relationship exists among these performance measures.

Key Performance Indicators

Key performance indicators (KPI) help an organization define and evaluate how successful it is, typically in terms of making progress towards its long-term organizational goals. Key performance indicators will differ by type of organization. A university or college might consider the 5-year graduation rate as a key performance indicator while an academic library might use a collection availability rate as a key performance indicator. The idea is to select a few key performance indicators that are reflective of organizational effectiveness.

Critical Success Factors

Critical Success Factor (CSF) is the term for an element that is necessary for an organization or project to achieve its vision. Success factors are those activities and capabilities that define the continuing success of an organization. The concept of “success factors” was developed by Ronald Daniel¹³ and refined by Jack Rockart.¹⁴ The method has been applied in a number of settings: business process management,¹⁵ information systems, product development,¹⁶ new service development,¹⁷ institutional repositories,¹⁸ a library digitization project,¹⁹ and management of a special library.²⁰

While critical success factors might include one or more key performance indicators, the factors are more concerned about what leads to organizational success. These factors might include such topics as customer satisfaction, employee competencies and retention, service quality, innovation, information technology, and so forth. Having a clear picture of the critical success factors will do much in assisting a library in developing a clear understanding of how a library adds value.

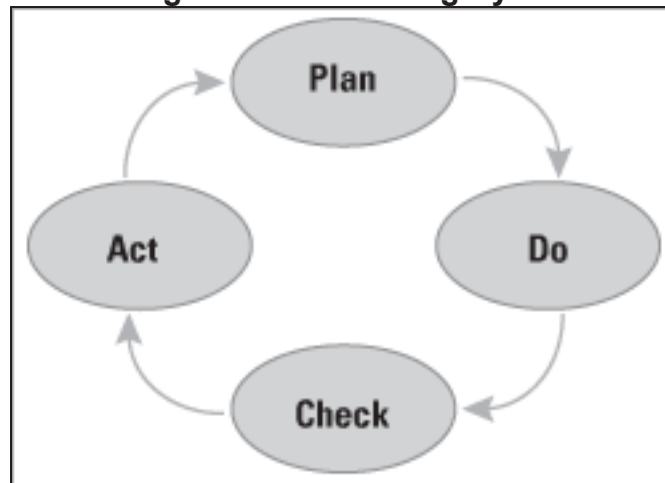
Process Improvement Initiatives

W. Edwards Deming, Phillip Crosby and others who created the Total Quality Management (TQM) movement have brought greater focus to the importance of non-financial approaches and a management approach for implementing improvement activities. In particular, TQM

focuses on using statistical process control methods to control and improve processes in organizations. Every process has variation and tracking the quality of a process allows for the determination if the variation exceeds the upper

and lower natural process limits. Deming introduced a Plan-Do-Check-Act model as shown in Figure 2 that has been implemented in a great many organizations.

Figure 2. The Deming Cycle



Six Sigma. The term Six Sigma was developed by a Motorola engineer named Bill Smith in the 1980s when it became clear that a method was needed to start measuring electronics manufacturing defects per million opportunities, as opposed to per thousand opportunities. Six Sigma proponents believe that if the number of defects in a process is measured, these defects can be systematically eliminated. For a company to achieve Six Sigma excellence, it cannot produce more than 3.4 defects per million opportunities (an opportunity is defined as a chance for nonconformance). Can you imagine a library achieving Six Sigma for its circulation-related processes? If you don't consider this a realistic goal for your library, why not?

Self-Assessment Award Models

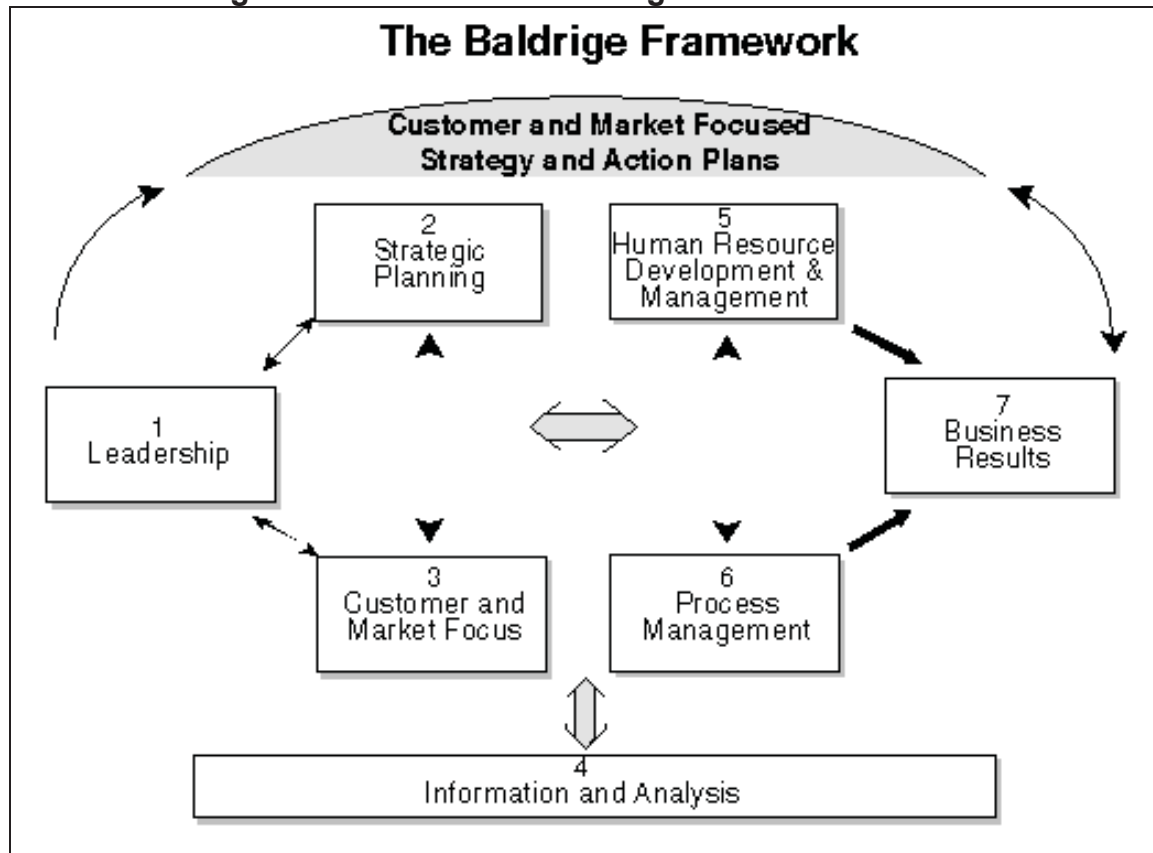
In the early 1980s, both government and industry began to push for greater productivity in business operations. The integration of both financial and non-financial approaches has guided the development of the quality award models for managers to assess their business excellence. The best-known models emerged in the late 1980s and

early 1990s and were developed for the Malcolm Baldrige National Quality Awards (MBNQA) and the European Foundation for Quality Management (EFQM) Award. Other countries, Australia and Canada for example, have named their quality awards "Business Excellence Models."

Malcolm Baldrige National Quality Award (MBNQA)

In 1987 in an attempt to stimulate quality awareness in the business sector an act was passed by the US Congress to create the MBNQA. Since that time a review process has been undertaken to determine the Baldrige Award winners based on a set of seven criteria. These criteria include; leadership, the system, strategic planning, human resource development and management, process management, business results, customer focus and satisfaction. These categories can also be defined by two key performance constructs of *results* and *drivers* – see Figure 3.

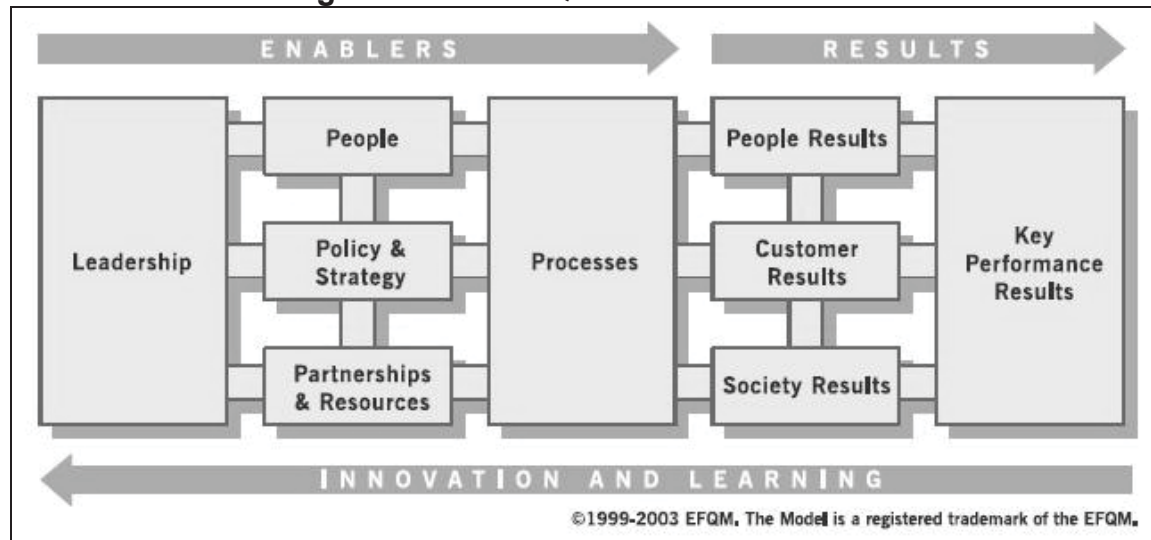
Figure 3. The Malcolm Baldrige Award Framework



Despite the popularity of the Baldrige Award, a great deal of debate surrounds the fairness and the selection of the award winners.²¹ The award criteria are believed to provide organizations with a do-it-yourself checklist of key areas that determine quality excellence and business performance. Some organizations have lost sight of the objective of the award by focusing on the process in an attempt to win the award rather than the end – high quality products and services.²²

EFQM Excellence Model – A performance self-assessment tool

The primary purpose of the EFQM model is to provide a common language for communicating and sharing best practice among firms. Over time the EFQM Excellence Model has evolved and is now used by a wide range of business organizations throughout Europe. Figure 4 presents the EFQM model and the components, which, like the Baldrige award criteria, have been used for self-assessment purposes, as well as scoring by the awards judges.

Figure 4. The EFQM Award Framework

The EFQM Excellence Model is based on nine criteria, which reflect what is considered to be leading edge management practices. These criteria are closely aligned to the performance constructs of *drivers* and *results*. The five criteria that are controllable by managers are called 'enablers' (or drivers) and the four criteria named 'results' are what an organization can achieve.

An important key difference between the Baldrige model and EFQM model is that the latter provides an understanding of performance management via a systems perspective.²³ Essentially, the EFQM model principle is that leadership drives policy and strategy, people, partnerships and resources and processes. The results of these efforts are measured in the model by people satisfaction (employee and customer) and impact on society. The ultimate outcome is excellence in key performance results. For those firms using the model as part of the award assessment system, the scores for the 'enablers' are given on the basis of two factors – the degree of excellence of the approach as well as the degree of deployment of the approach. Likewise, the 'result' criteria are scored on the basis of – the degree of excellence of the results and the scope of the results.²⁴

One concern is that strict adherence to the principles of the model seem to be more important than modifying the model to accurately reflect the unique strategic priorities of the organization. Therefore, the EFQM model is not considered to be effective as a tool for driving

changes in behaviors, which are aligned to strategy, within any particular organization. While the model is used widely by organizations throughout Europe, it is generally accepted that the EFQM model is a self-assessment tool or static auditing tool and, as such, the performance management framework is used for operational reporting instead of creating a dynamic interplay with business strategy.²⁵

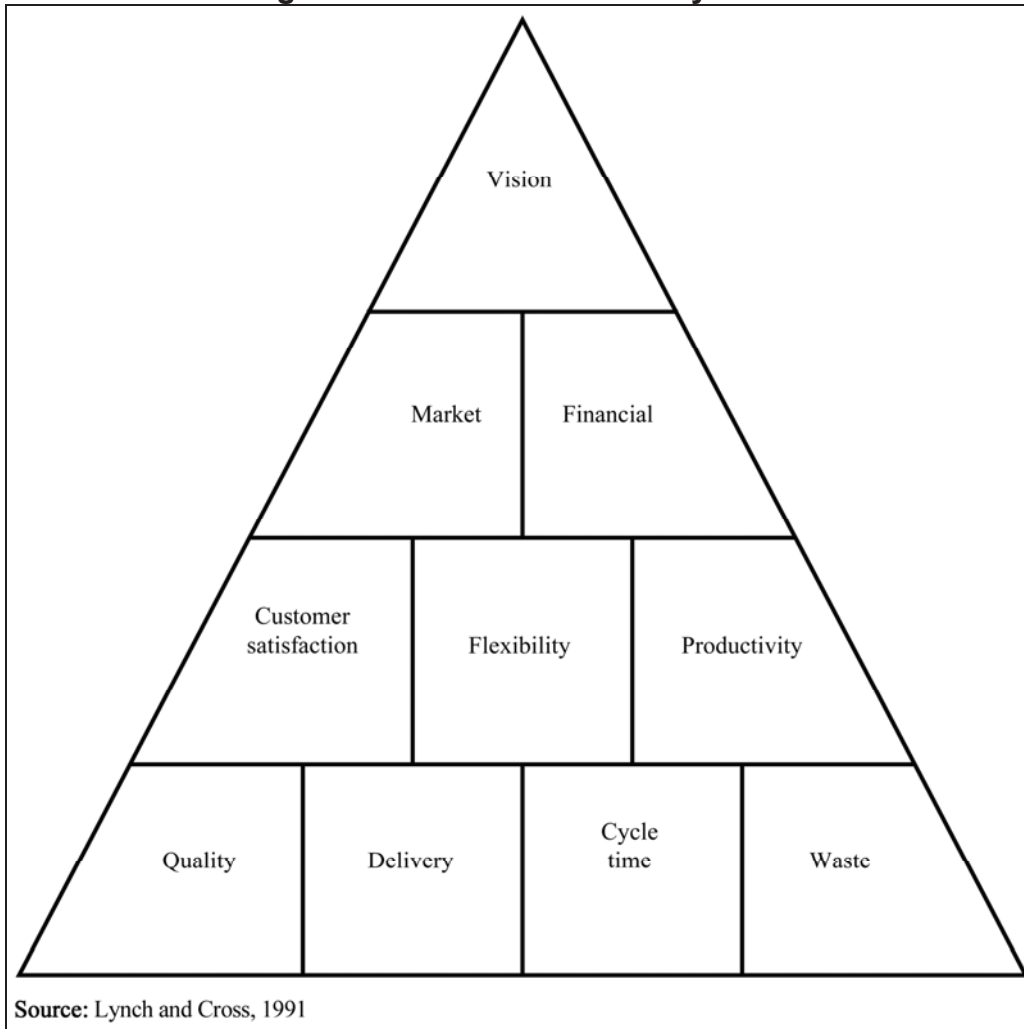
Performance Measurement Frameworks

Several frameworks have been developed that provide a framework for organizing a collection of related performance measures. Among these frameworks are:

- The Performance Pyramid
- The Performance Prism
- The Service Performance Framework.

The Performance Pyramid

The Strategic Measurement Analysis and Reporting Technique (SMART) system, also known as the Performance Pyramid, was created as a management control system to define and sustain success as shown in Figure 5.²⁶ This framework is designed for large corporations that have multiple operating units. The top level focuses on the organization's mission, vision, and strategies. The second level defines the objectives for each operating unit while the third level provides more specific measures of operating success. The fourth level provides measures that are applicable for a department or unit within the business unit.

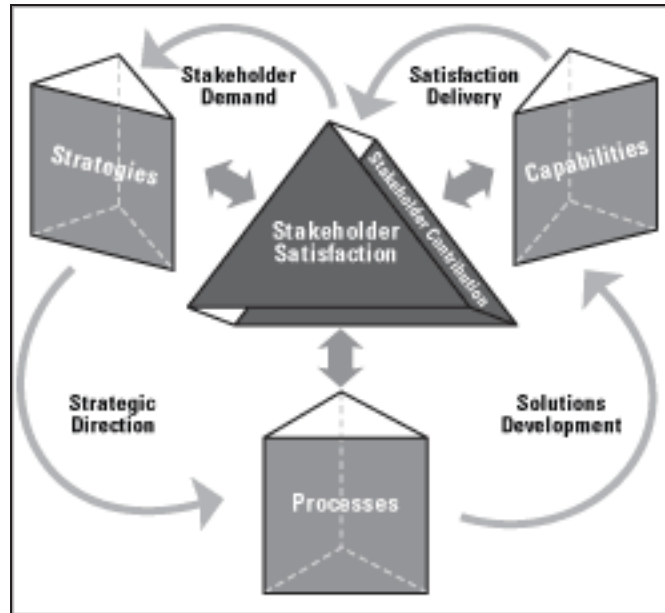
Figure 5. The Performance Pyramid

The Performance Prism

The Performance Prism is designed to assist managers in the process of selecting the best performance measures for their organization.²⁷ The Performance Prism, which is illustrated in Figure 6, is comprised of five interrelated facets. The first facet of 'stakeholder satisfaction' is considered to be the most important aspect of performance measurement. This facet is meant to encourage managers to, firstly, identify who are

the important stakeholders and then clarify their wants and needs. Stakeholders could include employees, suppliers, investors, intermediaries, alliance partners, regulators and the community. The second facet relates to 'strategies', which should be focused on delivering value to the stakeholders. Therefore, this facet addresses the question – what are the strategies required to ensure that the wants and needs of the stakeholders are satisfied?

Figure 6. The Five Facets of the Performance Prism



The third facet, 'processes', deals with the generic processes that underpin most organizations and that should be put in place in order to allow the firm's strategies to be delivered. Processes include generating demand, fulfilling demand, developing new products and services and planning and managing the organization. 'Capabilities', which is the fourth facet of the prism, is the combination of people, practices, infrastructure and technology that enable the execution of the firm's processes. This facet addresses the question – What are the capabilities required to operate the business processes? The final facet of 'stakeholder contribution' recognizes the importance of the firm's relationship with their stakeholders. The reciprocal relationship between the firm and the stakeholder is important to organizational performance. For example, employees want safety, security and recognition and the organization wants employee contribution in the form of expertise, reliability and loyalty.

The Performance Prism is not intended to be a prescriptive measurement framework; instead managers of large organizations have used it as a tool to assist reflection. It is the inter-relationships between the five components of the prism that best helps managers to understand the factors that drive performance. The Prism is most like the EFQM model, whereby the facets could be seen as components of a system. The Prism can therefore help managers analyze their operations for performance improvement purposes.

The Service Performance Framework

The Service Performance Framework which was developed for service business, profit and non-profit, includes six financial and non-financial criteria considered to be important to competitive success. Four factors *determine* competitive success (quality of service, flexibility, resource utilization, and innovation) while two factors reflect the *results* of success (competitiveness and financial performance) as shown in Figure 7.²⁸

Figure 7. The Service Performance Framework

	<i>Dimensions of Performance</i>	<i>Types of Measures</i>
D E T E R M I N E N T S	Quality of service	Reliability Responsiveness Aesthetics/Appearance Cleanliness/Tidiness Comfort Friendliness Communication Courtesy Access Availability Security
	Flexibility	Volume flexibility Delivery speed flexibility Specification flexibility
	Resource utilization	Productivity Efficiency
	Innovation	Performance of the innovation process Performance of individual innovations
R E S U L T S	Competitiveness	Relative market share and position Sales growth Measures of the customer base
	Financial performance	Profitability Liquidity Capital structure Market ratios

Measurement against this range of criteria as suggested in this framework may make visible the trade-offs, which can exist between two or more performance measures. Such trade-offs might include short-term versus long-term financial returns, resource utilization and service quality.

Integrated Frameworks

A more integrated and balanced approach to measurement also became popular in the early 1990s. This approach focused on providing both financial and non-financial performances measures using a framework that would

encourage manager to gain a better understanding about what leads to organizational success. The objectives of such frameworks are to help organizations to define a set of measures that reflect their objectives and assess their performance appropriately.

Among the models or frameworks that have been developed include:

- The Results and Determinants Matrix
- The 3 Rs
- The Balanced Scorecard.

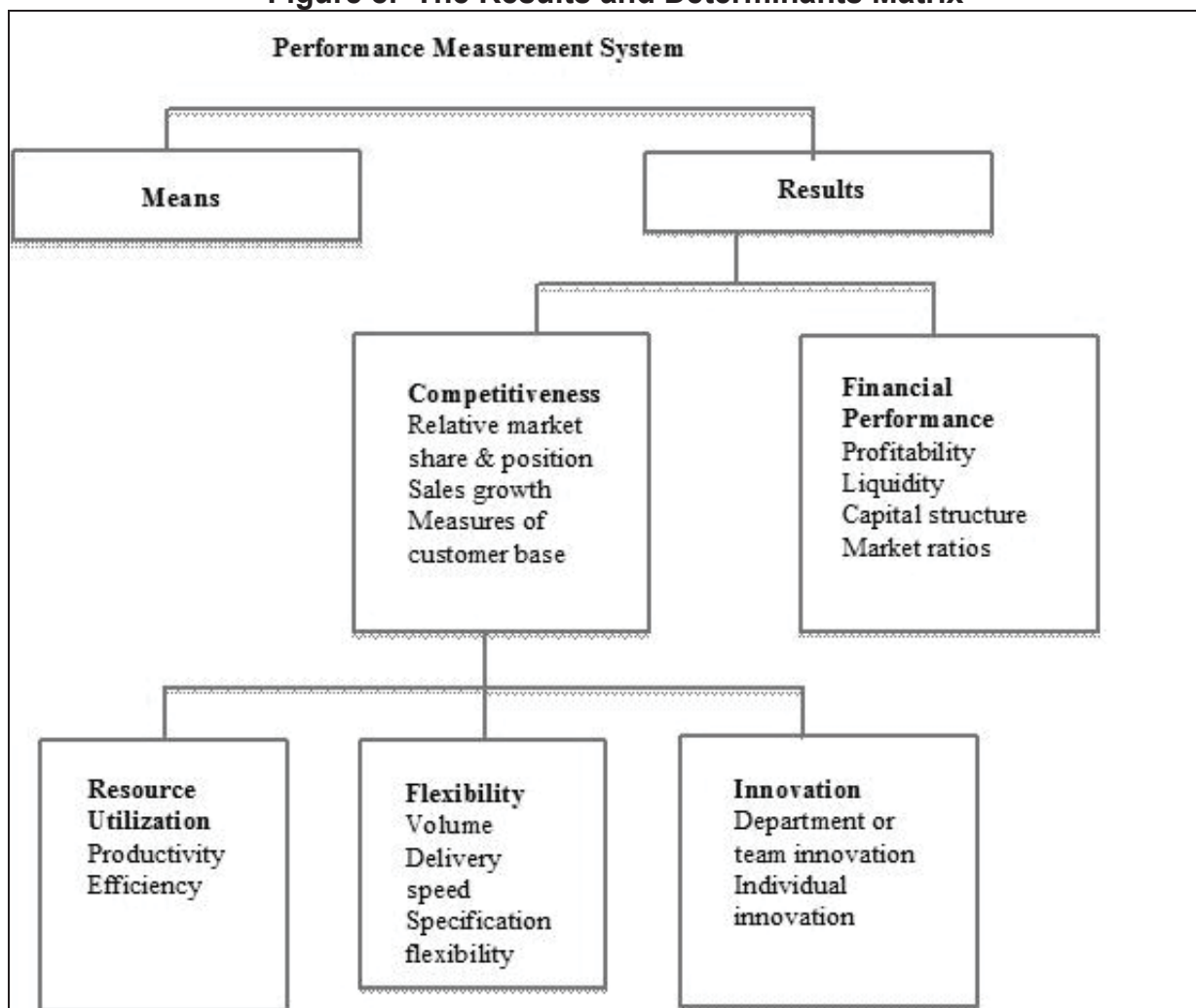
Results and Determinants Matrix

It has been suggested that the performance measures selected by any service-based business should be founded on the strategic intentions of the firm, which, in turn, are dependent on the competitive environment and the kind of service provided.²⁹ Like many other frameworks, the Results and Determinants Matrix encourages managers to utilize both financial and non-financial measures in order to obtain richer feedback for better control of the business.

The emphasis in the Matrix is on the 'soft'

measures such as, competitive performance, quality of service, flexibility, resource utilization and innovation, as well as the 'hard' measures of financial performance. These dimensions are the basis of a generic performance framework for measuring performance in service industries. Similar to the other models, the Matrix recognizes the two key dimensions of performance as the *determinants (or drivers)* and the *results*. The six generic performance dimensions are grouped into two categories of 'results' and 'determinants', as illustrated in Figure 8.

Figure 8. The Results and Determinants Matrix



The Matrix is presented as a generic performance measurement framework with the understanding that the mix of factors within the broad categories of *results* and *determinants* may vary from firm to firm. That is, the importance of the four

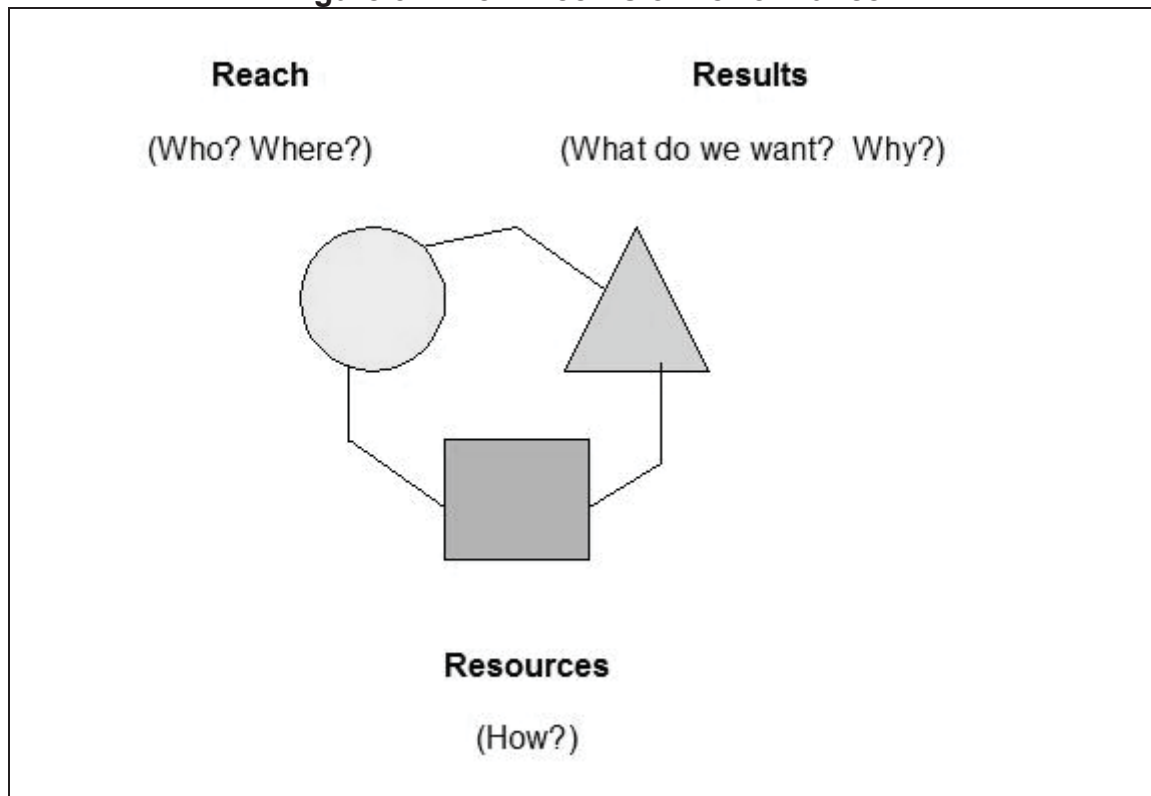
determinants (flexibility, resource utilization, innovation and quality of service) is contextually based. Also, in the management of a business, due to varying strategic approaches any measurement by managers against the range of

performance criteria varies and may require some type of trade-off. For example, a manager may need to make a trade off between short-term and long-term competitive position.

The 3Rs

Yet another framework is called the Three Rs of Performance.³⁰ This tool provides a balanced approach to performance management by providing a strategic and comprehensive context for decision-making as shown in Figure 9.

Figure 9. The Three Rs of Performance



Resources refer to both the amount of time, money and/or energy exerted as well as the type of resources used. Types of resources include capital and people, skill types and competencies required of staff, as well as the physical and spatial location of resources. It is important to understand the total resources committed to a service, program or the entire library system as well as the key characteristics of the resources. Tools such as return on investment or return on investment (ROI) and net present value (NPV) were developed in order to optimize resource utilization by maximizing the financial returns.

Reach refers to the breadth and depth of influence over which available resources are spread. Physical (spatial) reach is one dimension, as well as the type of customers the library wishes to reach. For many services and programs, reach

goals relate to the amount and extent of clients served. Michael Porter, the strategy guru, and others have emphasized that an organization needs to focus on market share. As competition becomes an increasing concern, then market share becomes an important indicator of success.

Results refer to the impact on the groups of customers reached by the resources used. Desired results usually indicate the attainment of a desired outcome for the individual or the larger community being served. Often an organization will focus on service quality as a means to achieve better results. Value has been added when the results are desirable from the customer's perspective. Customers may express themselves by indicating higher levels of satisfaction.

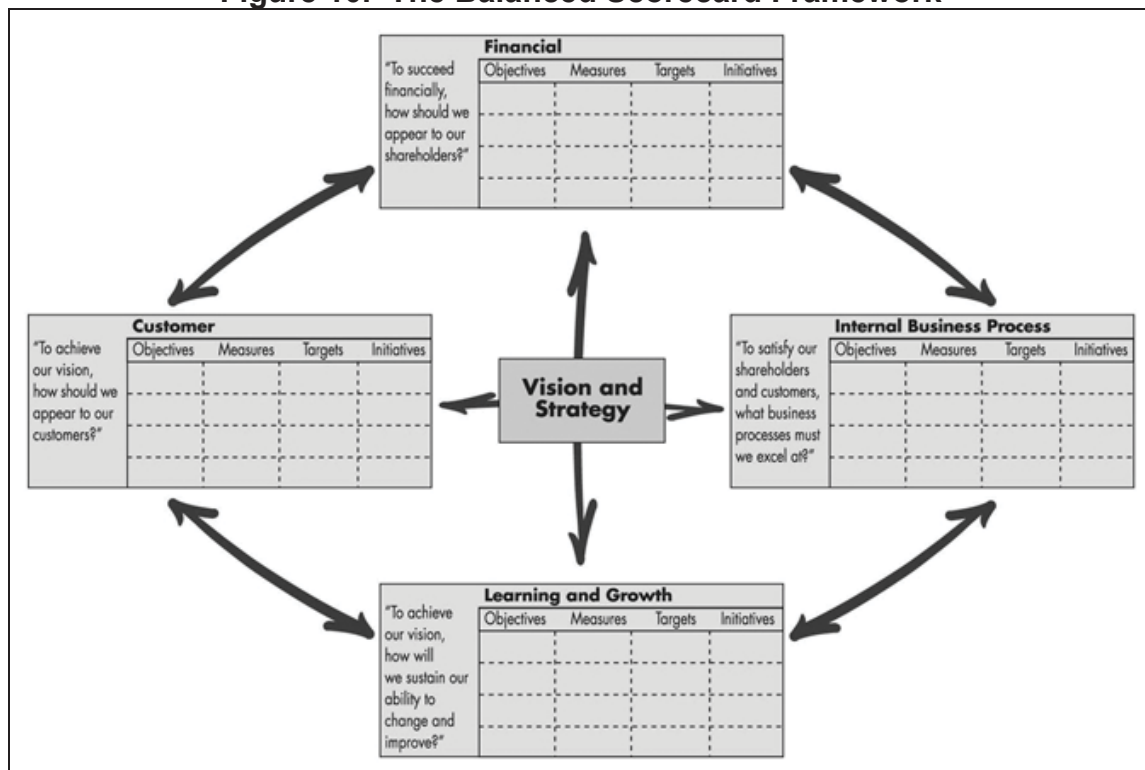
The Balanced Scorecard

The Balanced Scorecard, developed by Robert Kaplan and David Norton, is a comprehensive framework in which the mission and strategic directions of an organization can be interpreted via an array of performance measures.³¹ It was intended that the framework would give managers an all-inclusive view of the business yet allow them to focus on critical areas for improvement for strategic development purposes. As a result, it has been used mainly by businesses as a means of performance measurement and as a

performance driver.

The Balanced Scorecard framework contains a collection of financial and non-financial measures to assist a business in implementing its specific success factors as identified in their vision. In understanding the short-term focus of financial performance, Kaplan and Norton introduced three non-financial measurement concepts – customer satisfaction, internal business process, and learning and growth, as shown in Figure 10.

Figure 10. The Balanced Scorecard Framework



According to Kaplan and Norton, previous performance measurement systems used ad hoc methods of financial and non-financial measures with a checklist type approach to measurement. In their Balanced Scorecard approach they emphasize the linkage of measurement to strategy and the cause and effect connections. The scorecards developed by each firm are based on the framework and are meant to be specific to a particular organization. The organization-specific scorecards contain a set of measures to improve performance according to the firm's stakeholder needs and goals. In developing specific scorecards, managers start with the strategy and

use each of the four perspectives to organize objectives. It was intended in the design of this framework that the measures produced should be a balance, not only of external measures and internal measures but also between the result measures (outcomes) and the driver measures (measures for future improvement).

The research on the effectiveness and limitations of the Balanced Scorecard is mixed. Important issues raised in the research literature that will be briefly discussed include strategy, comprehensiveness, and complexity.

The strategy focus is its strength. A commonly accepted strength of the Balanced Scorecard is the linkage of performance measures with organizational strategy.³² The Balanced Scorecard is very successful as a tool for driving change within an organization in a way that is aligned with strategy. In essence it is a strategy implementation tool.³³ A management team can clarify and translate high-level strategy into business objectives by applying the Balanced Scorecard.³⁴ Others stress that the scorecard's focus on the implementation of strategy and not in determining strategy.³⁵ The Balanced Scorecard

has been implemented in for-profit, not-for-profit, governments at all levels, and academic institutions.³⁶

Although many other approaches to strategy implementation exist, the specific appeal of the Balanced Scorecard is its reliance on the mix of operations and financial measures, which are simply linked to the organization's strategy. Kaplan and Norton recommend that an organization develop a Strategy Map as a way to better understand the strategies being used – see Figure 11 for a sample Strategy Map.

Figure 11. Sample Strategy Map



Specific and comprehensive. The Balanced Scorecard is an organizing framework, rather than a 'constraining straightjacket', which can be adjusted and built upon according to the needs of the organization to better understand cause and effect relationships.³⁷ In considering lagging (financial) and leading (operational) indicators through its four perspectives, it addresses the concerns of using only obsolete financial accounting measures as a means of assessing and improving business operations. In taking into account all perspectives, a focus on the issues of divergent stakeholders is required. This approach allows for each individual firm to address the goals and needs of their own particular stakeholders.

The Balanced Scorecard approach is a tool for improving the business performance of individual firms. In using the scorecard approach, the key objectives of a firm are based on a firm's own specific strategy and not on any prescribed quality management approach.

A complex tool. The Balanced Scorecard design is necessarily complex 'as it has to describe and reflect the organization's own strategic goals.'³⁸ The scorecard framework is a basis for individual firms to work with to develop their own scorecards; the ease by which this can be achieved or understood by small and medium-size organizations is questionable.³⁹

Overall, the Balanced Scorecard has both strengths and weaknesses. Its key strength is its focus on the implementation of strategy. Additionally, individual firms can address the goals and needs of their own specific stakeholders when developing their scorecards. However, the approach to develop and utilize a scorecard is fairly complex. For this reason some libraries may not be able to effectively use the scorecard without outside expert advice and support.

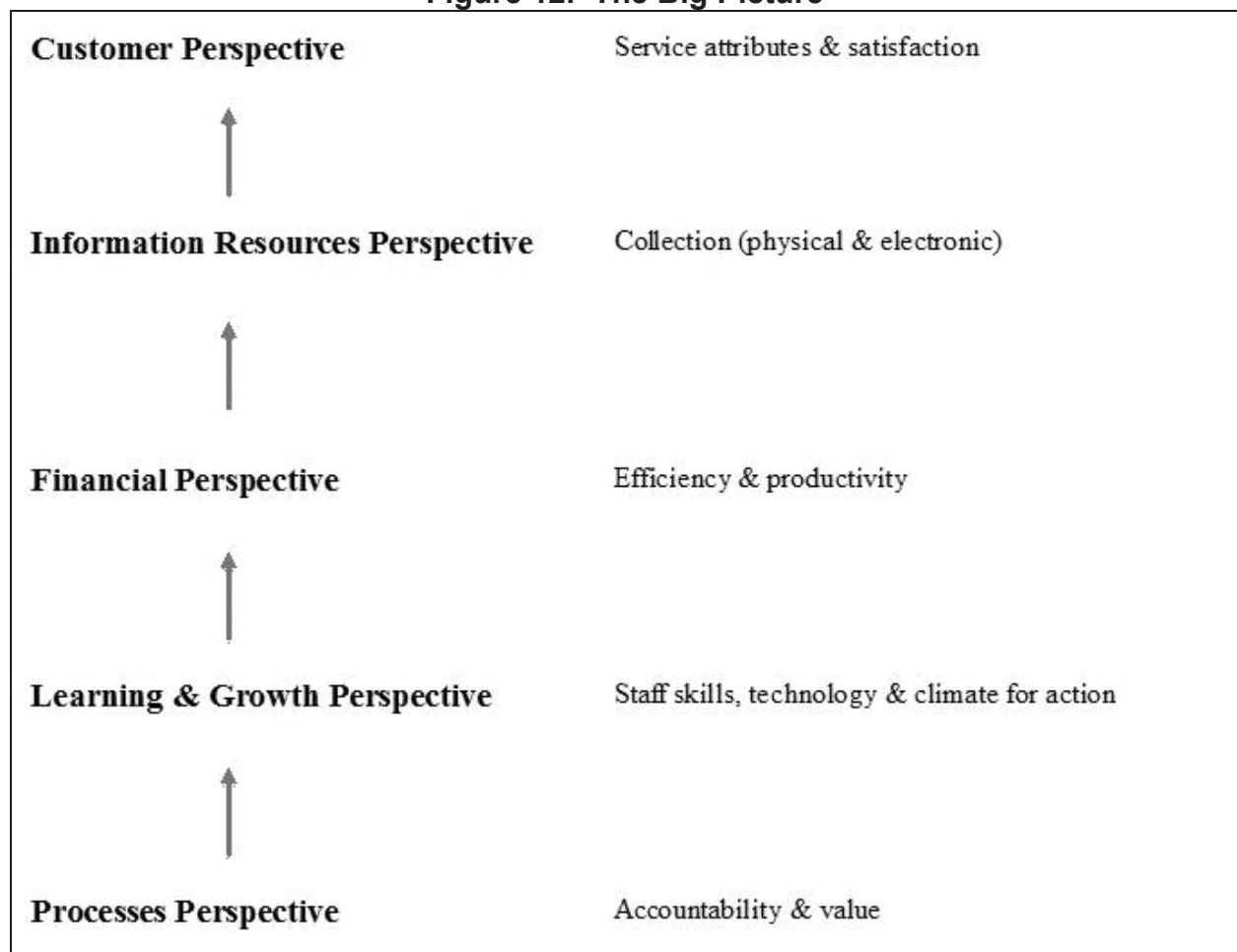
The Library Balanced Scorecard

Balanced Scorecards have been developed and used by academic libraries, most notably the University of Virginia, public libraries, and special

libraries – particularly when the larger organization is also using a Balanced Scorecard.

The Institute of Museum and Library Services (IMLS) funded a project that explored the feasibility of adapting the Balanced Scorecard to the public library environment. A workbook developed by the project was trial tested by fifty libraries and their comments and concerns were incorporated into a final project publication *“Scorecards for Results: A Guide for Developing a Library Balanced Scorecard”*.⁴⁰ One of the important outcomes of this project was a re-arranging of the perspectives in order to create a suggested Library Balanced Scorecard as shown in Figure 12.

Figure 12. The Big Picture



Suggested Process. A simplified process for developing a Library Balanced Scorecard involves the following steps:

- Develop a strategy map – work to understand the causal relationships between perspectives

- Consider many and select a few key performance measures (2-3 measures per perspective)
- Identify targets and possible initiatives (projects)
- Communicate the scorecard. Meg Scharf, of the University of Central Florida Libraries, examined 250 academic library Web sites to determine if assessment-related information was available. Only 5% of libraries received an "A" while 73% got an "F." Clearly academic libraries can and should do a better job in communicating the results of assessment efforts. It is time for more transparency.

Remember that the Balanced Scorecard is:

- A *framework* that describes and measures the strategy of the organization across the *five* perspectives: financial, learning and growth, internal process, information resources, and the customer.
- A *representation* of the library's shared vision and *clarifying* the strategies that will be used to reach the vision.
- A *communications system* that bridges the gap between the goals established by the library and staff members who are ultimately responsible for achieving these goals.
- A *means* for making strategy operational and *monitoring* the execution of the strategies.
- A *measurement system* that reports on past operating performance and the drivers of future performance.
- A *process* for implementing and managing organizational change. A way to *link* resources with strategy.
- A *tool* to identify targets for each performance measure and the progress the library is making in achieving those targets.

Assessing the Frameworks

The use of a framework allows the library to begin to investigate and better understand the complexity of the relationships between drivers and results. These frameworks allow library managers to better understand how their strategies, capabilities, service offerings, and facilities affect student learning outcomes, teaching capabilities and campus research activities.

Considering the use of a framework in your library raises several important issues:

- Which frameworks should be used for what purposes?
- What criteria should be used to select a framework?
- Should you consider using multiple frameworks?

Which Frameworks for What Purposes? Given all of these available frameworks, what would be best in your situation? The answer, not surprisingly, is that it depends. It depends on the local circumstances and the reasons for choosing a framework. If the purpose is to provide a framework for a collection of performance measures for internal use by the library then one of the Performance Measurement Frameworks will work. If the framework were to be shared with external decision makers, then one of the Integrated Management Frameworks would be a good selection.

What Criteria Should Be Used to Select a Framework? Among the most important criteria that can be used to select a framework are:

- **Focus** – Is the framework going to be used to track performance measures or organizational success?
- **Perspective** – Will library management use the framework as an internal tool or is it to be used to communicate to stakeholders outside the library?
- **Fait accompli** – Has the campus already selected an integrated management framework? Some colleges and universities may have already selected a particular integrated management framework for use on their campus and thus the library should almost always use the same framework.
- **Resonate** – Does the framework resonate with both on-campus and off-campus funding decision makers? The positive reaction by the stakeholders in your college or university to the library's decision to use an integrated management framework should be an important selection criterion for the library. The framework *must resonate* with campus stakeholders.

Should You Consider Using Multiple Frameworks?

The short answer is no! Selecting, developing, using and communicating a framework for the library is going to require considerable effort and adding one or more additional frameworks will only lead to confusion and complexity.

The use of an integrated management framework allows library managers to explore cause-and-effect relationships in order to be more responsive to their customers. And both the library and stakeholders must also recognize that use of a framework implies a long-term commitment – this is not a one-time project.

In addition, the library will need to identify what specific performance measures to include in the framework. None of the frameworks are prescriptive in terms of what particular measures should be used. Therefore, the library will need to “map” how existing assessment activities will be linked to the framework and what additional assessment projects may be needed in order to complete the framework.

Note also, that none of the frameworks determine what outcome measures should be used. And it is outcomes that result from using the library and its services, be they student learning outcomes, better teaching skills, improved research productivity and so forth that are becoming ever more important. This can be best accomplished if the library understands how it adds value for each type of use of the library and its services. Clearly, new measures of impact such as return on investment will need to be developed for academic libraries.

One of the real values of a framework is that it encourages the use of a few key measures from the plethora of available measures. As Herb Simon has observed “Information ... consumes the attention of its recipients. Hence, a wealth of information creates a poverty of attention and a need to allocate that attention efficiently among the overabundance of information sources that might consume it.”⁴¹

In conclusion, the use of a framework is but a tool in the library’s efforts to accomplish two objectives: 1) better manage its resources by tacking its progress in reaching its goals, and 2)

demonstrating the value of the library to its stakeholders! An integrated management framework is simply a means, and not the end, in an effort to improve communication with campus (and off-campus) stakeholders about the value of the library.

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Still Bound for Disappointment? Another Look at Faculty and Library Journal Collections

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Abstract

After the publication of “Bound for Disappointment: Faculty and Journals at Research Institutions” by Jim Self in 2008, academic libraries found new insights into one particularly frustrating piece of data. LibQUAL+® survey results have consistently shown that faculty at institutions with ARL libraries report negative perceptions of library service regarding journal collections. One key finding of Self’s study was the strong correlation between satisfaction with journal collections and overall satisfaction with library services for faculty. This study is a continuation of Self’s work, and applies the same methodology to recent LibQUAL+® data from ARL libraries and the faculty at Columbia University. Three years later, we hope to understand whether this trend of dissatisfaction has continued at ARL libraries, and particularly at Columbia. Why are faculty at Columbia dissatisfied with journal collections? Have other areas of library service become more important to faculty? As academic libraries continue to invest heavily in journals, particularly electronic journals, how can we continue to understand this issue, and meet faculty needs?

Introduction

In 2006, Jim Self, University of Virginia (U.Va.), published the results of an analysis of ARL Libraries LibQUAL+® data, focusing on faculty perceptions of journal collections.¹ The LibQUAL+® item in question was IC-8: “print and/or electronic journal collections I require for my work.” Findings included the observation of negative adequacy gaps for IC-8 across ARL institutions from 2006, regardless of expenditures on journals.² A correlation of 0.84 was determined

for the journal collection item and the overall satisfaction item, confirming the importance of journal collections on faculty’s overall satisfaction with library services. The study also reviewed IC-8 scores for faculty at ARL institutions from 2004, demonstrating the consistently negative adequacy gap. Follow-up phone interviews with faculty at U.Va. shed some light on the complex topic. Issues of access—both physical and electronic, missing backfiles, and coverage of foreign titles were disclosed by faculty.

Since the study in 2006, U.Va. has worked to improve search interfaces, most notably by introducing a new version of the online catalog in July 2010. There has also been an ongoing effort to inform and instruct teaching faculty. Individual libraries have made improvements in their journal holdings and facilities. The Fine Arts Library transferred monographic funds to serials and devoted more physical space to journal use. The Music Library conducted a comprehensive review of all subscriptions, analyzing use and accessibility and identifying gaps in holdings. The study has educated library staff as a whole; there is recognition of the profound importance of journals.

Columbia University Libraries, which was included in Self’s original 2006 analysis, participated in LibQUAL+® on a three-year basis since 2003, making 2009 the third instance of LibQUAL+® at Columbia. U.Va., however, has not participated in LibQUAL+® since 2006. Response to the survey at Columbia increased dramatically in 2009, with more than 3,800 completed surveys (a vast improvement over the

response level in 2006: around 250 completed surveys).

This paper follows up on Self's initial inquiry, "Given the substantial investment in journals at ARL libraries, why are faculty at these institutions consistently dissatisfied with their library's journal collections?" In 2009, the collections budget at Columbia saw electronic resources outpace print for the first time. More than 50% of the collections budget now funds electronic resources, including e-journals. Before 2010, the collections budget at Columbia continued to grow at a healthy pace, accounting for inflation and then some. Why, then, do faculty continue to report dissatisfaction with journal collections at Columbia? This paper addresses the following questions:

- **Are faculty at institutions with ARL libraries more or less satisfied with journal collections in 2009 than in 2006?**
- **Why are faculty at Columbia continually dissatisfied with journal collections, as observed from LibQUAL+® scores?**
- **Does IC-8 continue to be the area of greatest dissatisfaction for faculty at institutions with ARL libraries, according to LibQUAL+® data?**

The LibQUAL+® Survey

The LibQUAL+® Survey was developed by the Association of Research Libraries and Texas A&M University Library. The survey is administered online and collects demographic, library use, overall satisfaction, and perception feedback from library users. LibQUAL+®'s central measures are the twenty-two core questions that approach library services from three perspectives: Affect of Service ("AS"), Information Control ("IC"), and Library as Place ("LP"). Respondents are asked to rate each of the twenty-two items on a scale of 1-9 in three ways: their minimum level of service, their desired level of service, and their perceived level of service. These scores together provide a rich view of user perceptions of library services. One of the key benefits to this rating scale is the analysis of the adequacy gap, i.e., the difference between the minimum ratings and the perceived ratings. This adequacy gap allows libraries to gauge whether or not they are meeting their users' expectations in each of the twenty-two

areas of library service. An open-ended comment box, in which respondents are invited to share any additional feedback with the library, follows the twenty-two core items. These free-text comments provide context to the twenty-two survey items.

Methodology

The methodology for this study was based directly on that used at U.Va. in 2006. Analysis includes data from ARL libraries participating in the LibQUAL+® surveys from 2006 through 2009. Notebooks for each ARL library were accessed and reviewed for the Information Control and overall satisfaction scores.³ Unlike the 2006 U.Va. study, only faculty scores were analyzed in this study; graduate students were not included. ARL institutions with fewer than 50 faculty survey participants were excluded from analysis. At Columbia, the 2009 LibQUAL+® results were used to identify departments with negative adequacy gaps for IC-8. These departments were targeted with follow-up phone interviews using the identical interview protocol developed at U.Va. in 2006. Interview participants were asked about their minimum expectation for journal collections, their desired expectations for journal collections, and preferences for print or electronic journals. A series of themes were identified as significant. This paper includes a preliminary analysis based on the Grounded Theory methodology.⁴ In total, 24 faculty members were interviewed over the phone.

Results at Columbia

2009 faculty scores for IC-8 were no surprise at Columbia. As seen in Figure 1, the perceived score is well below the minimum, with an adequacy gap of -0.34.⁵ Figure 1 displays the faculty scores for the twenty-two LibQUAL+® items, including Affect of Service ("AS"), Library as Place ("LP"), and Information Control ("IC"). The top of each bar illustrates the mean desired score, the bottom of the bar illustrates the mean minimum score, and the black dot illustrates the mean perceived score for each survey item. While the Affect of Service items show a relatively comfortable adequacy gap (other than AS-9, which has consistently garnered low scores at Columbia), nearly all of the IC items show perceived scores falling below the minimum.

Library as Place items show a level of satisfaction, with lower desired scores. It is clear that from the high desired scores that faculty place the highest priority on Information Control items and report

that the Libraries are not meeting minimum expectations in these areas. This is consistent with Columbia's scores from 2003 and 2006.

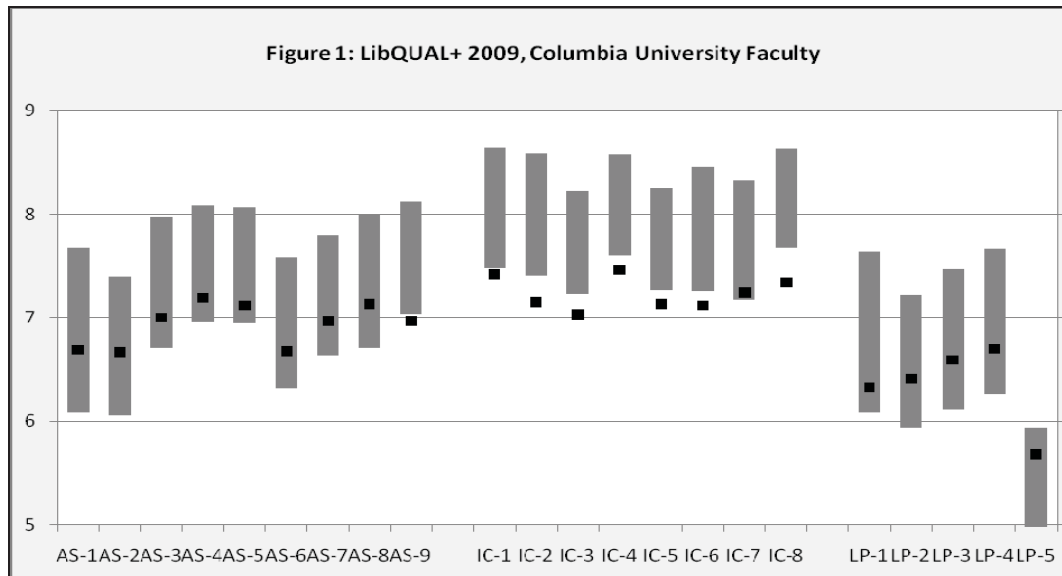
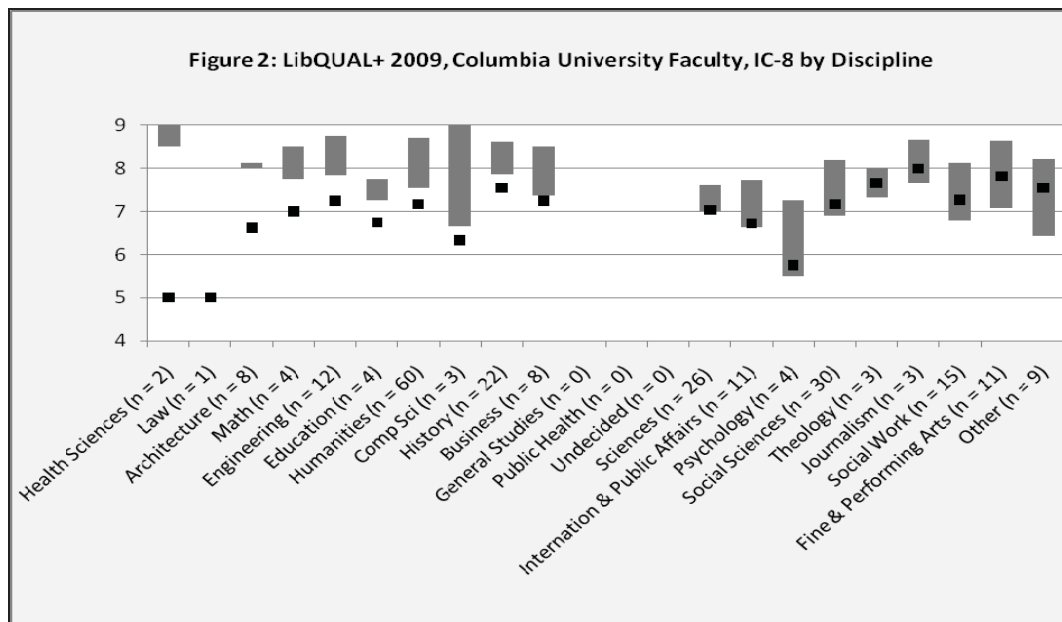


Figure 2 displays the scores for IC-8 by faculty discipline, illustrating that Health Sciences, Law, Architecture, Math, Engineering, Education, Humanities, Computer Science, History, and Business faculty reported a negative adequacy gap for IC-8 in 2009 at Columbia. These departments were targeted for follow-up interviews with faculty, excluding the Health

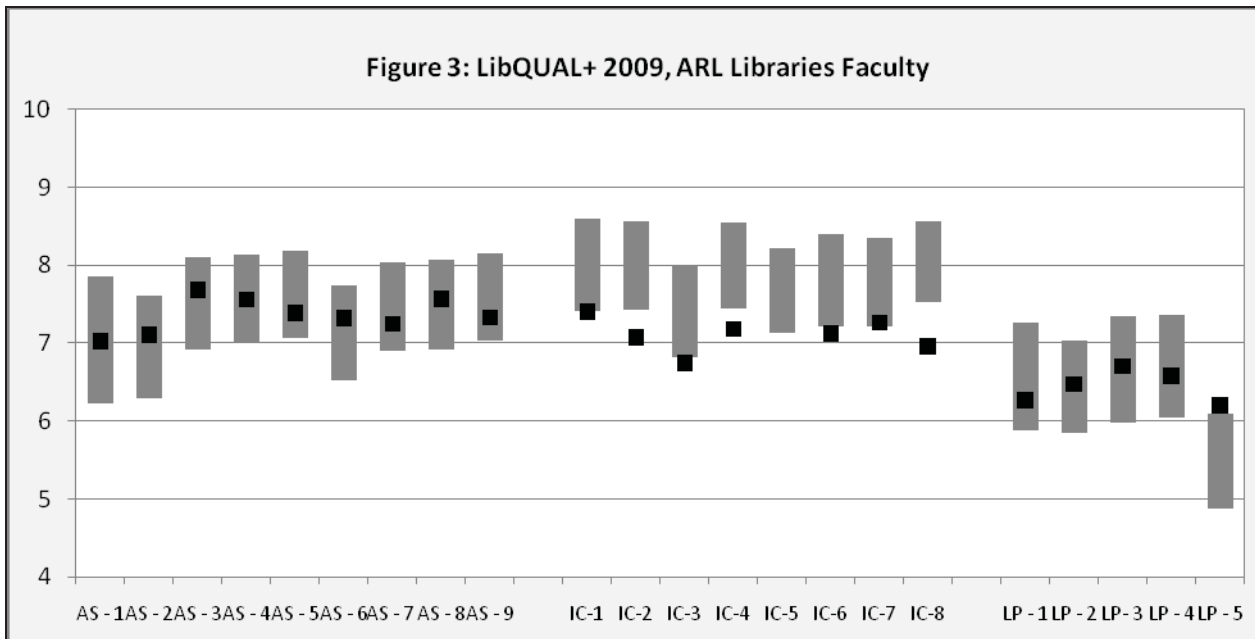
Sciences, Law, and Education departments, as these populations were not included in the initial survey sample. Many of the response counts for individual departments were low. However, it was felt that this was a sufficient way to identify which departments were relatively less satisfied than others, and all were included for the sake of consistency.



Results at ARL Institutions

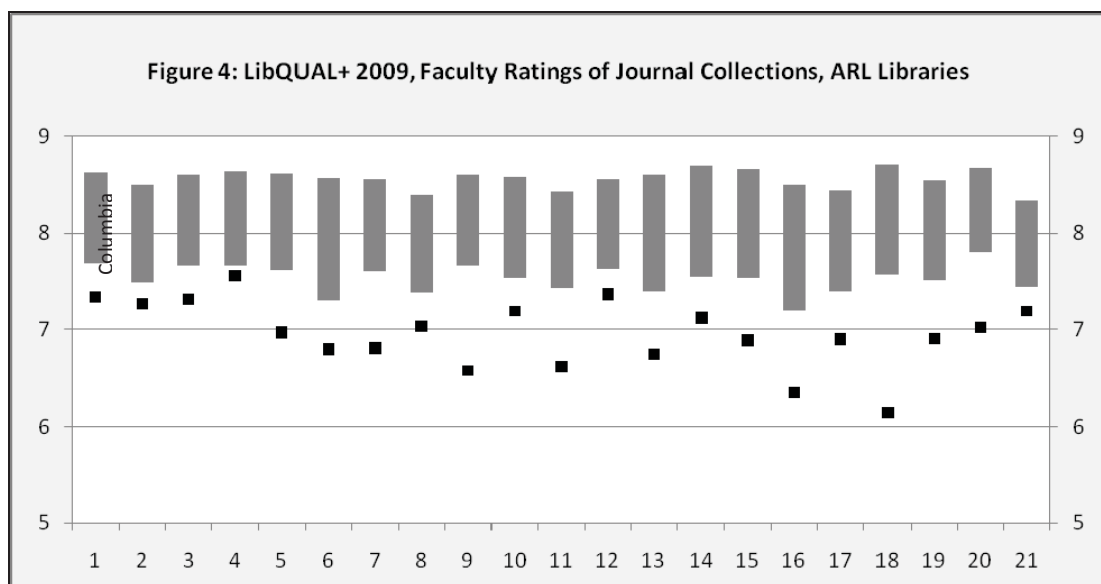
Figure 3 displays the composite faculty scores from the twenty-one ARL libraries participating in LibQUAL+® 2009, included in this study. In

2006, Self concluded that there was no correlation between expenditures and faculty desired scores for journal collections ($r = -0.14$).⁶ This analysis was not revisited in the current study.



Looking at the 2009 scores for journal collections across ARL Libraries, it is clear that faculty across ARL libraries remain dissatisfied with journal collections. Figure 4 displays the scores for each of the twenty-one ARL libraries included in this analysis. Libraries are arranged from largest library (on the left) to smallest (on the right), based on total library expenditures as reported by

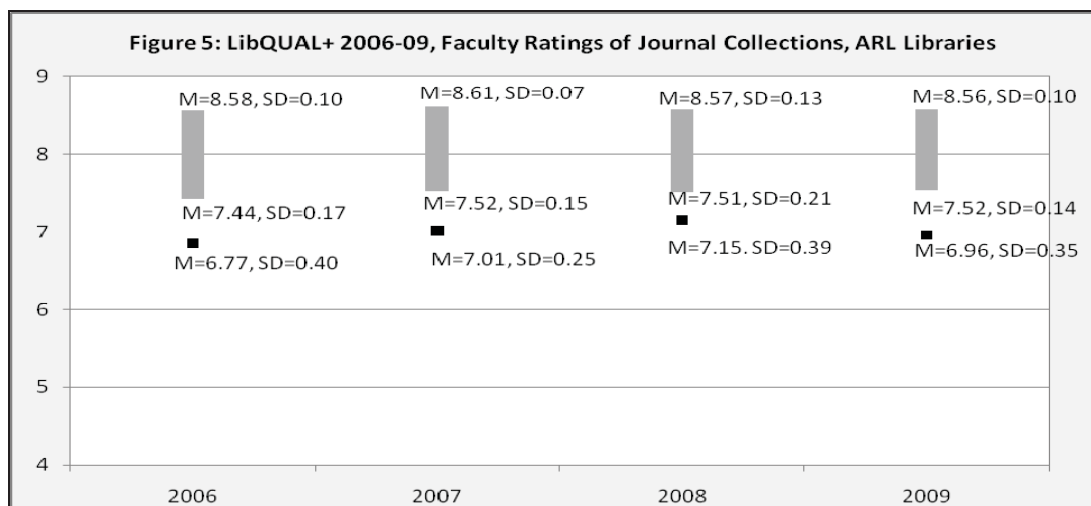
ARL.⁷ Columbia is the first from the left in Figure 4. None of these twenty-one libraries achieved a positive adequacy gap in 2009. It can be observed that the desired scores appear relatively consistent between institutions (generally around 8.5) and not remarkably higher than the same desired scores for ARL libraries in 2006.⁸



Comparisons Over Time

In his original study, Self illustrated that 2006 was not a unique year for negative adequacy gaps on IC-8, showing similar scores for ARL institutions from 2004 through 2006. Figure 5 displays IC-8

scores for ARL faculty from 2006 through 2009, further demonstrating the trend. The chart is labeled with the mean and standard deviation for each data point.



Taking this analysis further, another question was asked: Has there been a statistically significant change in IC-8 scores—indicating a change in faculty satisfaction—since 2006? After conducting an ANOVA (analysis of variance) using the mean adequacy gaps from each ARL institution for IC-8 from 2006 through 2009, the significance was calculated to be 0.119, which is not deemed statistically significant.⁹ In other words, there has been no significant change in the adequacy gap

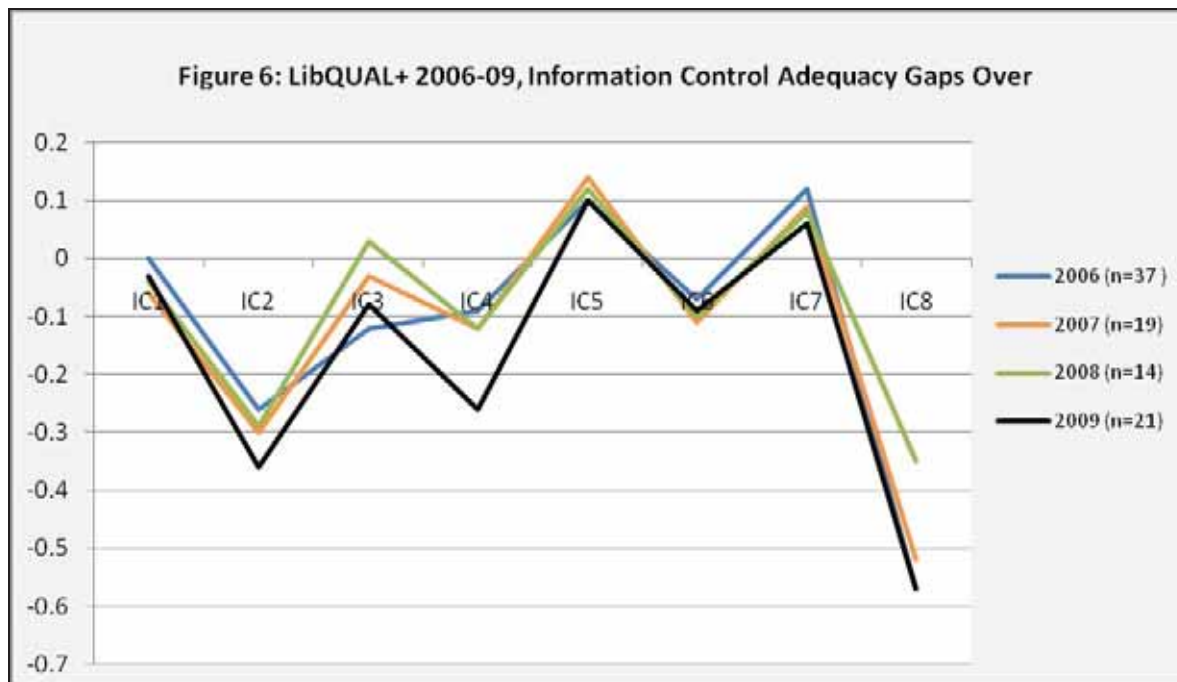
for IC-8 since 2006, and satisfaction relative to expectations remains consistent, showing neither improvement nor decline. Faculty are just as dissatisfied with journal collections today as in 2006. A more meaningful evaluation of change over time might involve the use of the individual respondent scores from each institution rather than means; unfortunately, this data is not available. ANOVA analysis was not conducted on the item scores (minimum, desired, perceived),

and would be recommended to explore the topic further. Looking at the data in Figure 5, it can be observed that the desired scores have remained relatively stable, while the minimum scores and perceived scores have increased slightly. Is the zone of tolerance shrinking?

Information Control

Information Control items have consistently shown the highest desired scores (indicating high-priority) among faculty, as well as the largest negative adequacy gaps. How does IC-8 compare to the other IC items in LibQUAL+®? Charting the adequacy gaps over time illustrates the change in the size of the gaps, and whether the gaps are positive or negative. Figure 6 shows that the adequacy gaps for IC-1, IC-5, IC-6, and IC-7 have remained relatively stable. Items IC-2, IC-3, IC-4, and IC-8, show greater change over time. The observed change in these scores (aside from IC-8) has not been evaluated for statistical significance.

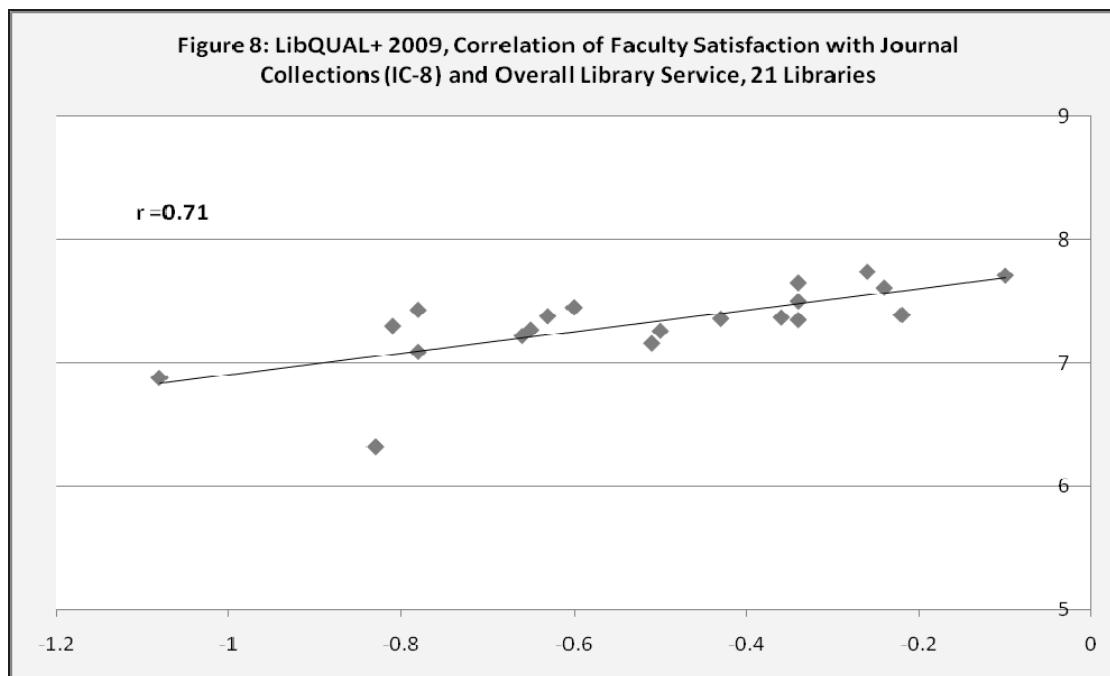
IC-4, addressing electronic resources, has had a consistently negative adequacy gap, indicating faculty dissatisfaction with service in this area. Looking at the IC-2 scores from ARL libraries since 2006, a similar trend to IC-8 can be observed. Faculty perceptions are consistently negative: libraries are not meeting faculty's minimum expectations for "a library Web site enabling me to locate information on my own." Due to the increasingly digital nature of journal collections as well as faculty dependence on the library website to access them, future analysis should explore the correlation between IC-2, IC-4 and IC-8. At the very least, it appears that IC-2 may be "the next IC-8," in terms of consistently negative adequacy gaps. Further, the website may play a critical role in improving journal collection and e-resource scores over time.



Journal Ratings and Overall Satisfaction

Following up on Self's correlation analysis of IC-8 and overall satisfaction ("How would you rate the overall quality of the service provided by the library?"), additional correlations were run as

part of this study. In 2006, Self found a strong correlation of 0.84 between journal collections and overall satisfaction. In 2009, a correlation of 0.71 was found (Figure 8).



When reviewing the correlation between each item and overall satisfaction with library services over time, IC-8 does show the highest mean correlation (0.67) with the smallest standard deviation between years (0.11). Looking at the correlations by year, 2008 shows the strongest correlations between IC items and overall satisfaction, with a mean of 0.78 and a standard deviation of 0.10. These correlation calculations would be stronger, and perhaps more accurate, were they computed using the individual scores for each faculty respondent from each institution,

rather than the mean scores of all faculty respondents at each institution.

In Figure 9, there appear to be two clusters in the correlations. IC-2, IC-3, IC-4, and IC-7 show correlations in the high 50s across time. IC-1, IC-5, and IC-6 show correlations in the high 40s and low 50s. This may indicate that the collections, both print and electronic, and the ability to access them easily, are of greater importance to faculty's overall satisfaction with library services.

Figure 9: LibQUAL+® 2006-09, Correlation Coefficient of IC-8 Adequacy Gap and Overall Library Service Score

	0.44	0.61	0.44	0.55	0.08	0.51
IC-2	0.71	0.55	0.61	0.42	0.12	0.57
IC-3	0.86	0.42	0.31	0.73	0.26	0.58
IC-4	0.71	0.67	0.4	0.61	0.14	0.60
IC-5	0.72	0.49	0.27	0.45	0.19	0.48
IC-6	0.73	0.58	0.42	0.12	0.26	0.46
	0.81	0.46	0.40	0.67	0.19	0.59
	0.80	0.60	0.55	0.71	0.11	0.67
	0.13	0.08	0.11	0.20		
	0.72	0.55	0.43	0.53		

Following Up at Columbia

Twenty-four follow-up phone interviews were conducted with faculty from departments identified via LibQUAL+® scores as being dissatisfied with library journal collections (Figure 10). History faculty were not included in

recruitment for this phase of the study. Faculty at Columbia were asked identical questions to those used at U.Va. in 2006. Faculty were asked about whether journal collections were meeting their minimum and desired service levels, as well as their preferences for print or electronic journals.

Figure 10: LibQUAL+® 2009, Columbia Disciplines with Negative Adequacy Gaps

Columbia Discipline	Phone Interviews Conducted	N for LibQUAL+® 2009	2009 IC-8 Departmental Mean Adequacy Gap
Architecture	5	8	-1.375
Business	6	8	-0.125
Computer Science	4	3	-0.333
Engineering	4	12	-0.583
History	0	22	-0.318
Humanities	5	60	-0.379
Math	1	4	-0.750

Overall, participants responded positively regarding the Libraries' journal collections, stating that, yes, the collections meet the minimum expectations. However, 15 of the 24 participants stated that, no, the library is not meeting their desired level of service for journal collections. Further probing uncovered some key issues: support, work-arounds, search and online access, collection gaps, coverage, quick list, and resources. (See *Appendix A* for additional quotes from each category.)

Support: Service provided by library staff and systems regarding journal acquisition, use or problems. These statements generally focused on the quality of automated responses from library systems, or lack thereof. Service issues could indicate a correlation between certain Affect of Service items and satisfaction with journal collections. As the online collections continue to become more complex to navigate, expert support from library staff will become more important.

“What would be great for faculty would be if when things are not available, there was one source in the library, extraordinarily skilled at tracking down items. [. . .] This happens about once a week for me that I need this service. [. . .] These people would be specialists in working the electronic and journal capabilities.”

Work-Arounds: Faculty's alternate methods for accessing the journals they need. There was some discussion about barriers to access when using library resources. Expectedly, faculty will find their own ways to access the articles they need, and are generally comfortable with their work-arounds. These work-arounds seemed rather common, and often complex or expensive. Librarians rarely played a role in this process, as reported in the interviews. While a primary concern is that faculty find access to materials, through the library or otherwise, there are some clear disadvantages to the work-arounds.

“I just buy them individually from my research funds, so it's coming out of my research money. I can afford to buy only individual subscriptions, so I can't share with my students.”

One professor reported an elaborate process of seeking out articles for a course (after using CUL's search tools without success) and working with a colleague at another institution to get copies of the articles. *“It was kind of unwieldy, but I got her on the phone and I needed six articles from the journal from different years. We got on the phone and I would tell her the citation, and she would go to her collections, download the PDF, and sent it to me.”* This anecdote is striking for two reasons. One: it has since been confirmed that

CUL *had* subscribed to the journal in question. Two: this professor *did* reach out to a librarian for assistance, but remembers receiving no response.

Search and Online Access: Use of online tools to identify and access needed information.

Libraries typically present users with a series of search tools developed by various vendors, based on widely differing search processes. It's no wonder that search and interface design are key issues for faculty. The comments on this topic reflect concerns about the Libraries' catalog (CLIO), the journal search interface, and specific e-journal interfaces. There was also some discussion of the quality of indexing for journals—both print and electronic, and the ability to easily and efficiently use the Libraries' website to find them.

"I think just having free text search, like Google book search, would be something that would be very, very useful to have. I still feel like we are living 20 years behind where the rest of the world is in terms of being able to search these databases and large collections of books that we have."

Collection Gaps: Instances where the Libraries do not subscribe to a particular title, or type of journal. Foreign language journals were mentioned regularly. When participants were asked if they request titles that the Libraries does not currently subscribe to, most said no. The general sentiment was that the process for requesting could be streamlined.

"There are things published around the world we don't have. Things that are between journals and edited books [. . .]. University publications or things like that. Foreign journals."

Interlibrary Loan also plays an important role in managing collection gaps. A few interview participants noted that they wouldn't be satisfied with the collections if ILL couldn't get items from other libraries. *"I don't recall not being able to get something at Columbia. And, when I needed it and they didn't have it, it was there through ILL."* The consequences of these collection gaps are uncertain. One participant stated *"Fifty percent of the time [that I can't locate an item] I go*

without. Fifty percent of the time I will email the authors or I will go to the author's website."

Coverage: Within a journal title, there are gaps in the back-file coverage. Complete coverage of a held title is consistently desired.

"Even if they've stopped issues for a year or two, I think it'd be good if they could at least get the back issues."

There are also issues of coverage currentness, particularly with e-journals. *"One obvious problem is that the [electronic] journals are always behind. We're sending students to the library to read more recent issues."*

Quick List: Desire for a discipline-specific "quick list" that would provide easy access to the most important online journals. These comments spoke directly to a relationship between the online search interfaces (perhaps indicated in IC-2) and the collections.

"If I was to give a suggestion, maybe to have discipline-specific pointers that could help each discipline find things. [. . .] We need help remembering how to use the interface. It's more of an interface issue than a collections issue."

PDFs were mentioned frequently and have clearly become the preferred format for accessing electronic content. Given that the Libraries' website provides links to multiple vendors for a particular title (each with its own access caveats) there is a desire to know which one is "best."

"Best" would be, according to interviews, the one vendor that provides complete coverage of a title and PDFs for download.

Resources: The Libraries' allocation of resources. Startlingly, two participants implied that they would prefer to have library funds diverted from acquiring additional materials for the collection, to making the collection more easily accessible.

"The size of the collection is not as important as getting the current collection working as smooth as possible. Before, when we used to go to the library, we got service."

Print vs. Electronic: Regarding the preference for print or electronic, two of twenty-four participants stated a clear preference for print. A small number of participants responded that they would prefer to have both print and electronic available (as is often the case, currently) or that print is preferable for historic or archival materials only. Overwhelmingly, the flexibility and access to electronic journals was highly desired and praised, particularly when PDFs are available.

Some faculty stated that because some journals are currently available in print, they expect to keep accessing them in this manner. This may change over time, as more materials are digitized at higher quality and made available online. One participant stated their preference for electronic materials, noting *“A few years ago, I wouldn’t have said that. But, I guess things have changed.”*

Remote Access: There were far fewer complaints about connecting to online resources from off-campus than expected. The topic came up a handful of times but wasn’t at a “crisis” level for the majority of participants. In general, this did not seem to be a barrier for using journal collections for the majority of study participants.

Moving Forward at Columbia

As of the writing of this paper, the Collections & Services directors, along with the Collection Development unit, are reviewing the results of this study. It is expected that the interview information, along with formal usability studies, will be useful in the upcoming redesign of the Libraries’ website, as well as in the implementation of future search tools. Columbia will continue to engage faculty in discussions about journal collections. Their active involvement will be crucial in improving this area of library service. LibQUAL+® scores and comments will continue to play a role in tracking this issue at Columbia.

Summary

Returning to our initial motivation for this study— “Given the substantial investment in journals at ARL libraries, why are faculty at these institutions consistently dissatisfied with their

library’s journal collections?” —what have we learned? Without question, faculty at ARL libraries continue to show dissatisfaction with journal collections, despite the continuing evolution of access tools, delivery services, and growing collections which ARL libraries provide. Given the economic downturn of 2010, LibQUAL+® scores may show a noticeable decrease in satisfaction with journal collections, depending on the impact of budget cuts throughout ARL libraries. Faculty at Columbia are satisfied with many aspects of the journal collections at CUL. Of course, they also want easier access to online journals, reliable PDF downloads, and better support from library systems and staff. Providing faculty with discipline-specific “quick lists” may be one way to bridge the gap in satisfaction with journal collections.

What, if anything, has changed since 2006? Relative satisfaction with journal collections at ARL libraries has not changed significantly since 2006. Faculty continue to show dissatisfaction with journals collections across ARL libraries. While it may be observed that desired scores for journal collections remain consistent and minimum scores are on the rise, the gap between the minimum and “reality” remains the same. And, it is a complex reality to navigate.

Information Control issues, as measured by LibQUAL+®, continue to be top priority for faculty at ARL libraries, as well as a consistent area of dissatisfaction. As seen from the LibQUAL+® scores, print and electronic collections, including journals, and the ability of a library website to provide easy access to materials, are critically important to overall satisfaction with library services. As noted in the interviews, access and use of journal collections is dramatically more complex when dealing with electronic resources. Libraries will need to continue to address these needs by re-allocating resources and staff to this growing area of service.

Finally, are there other Information Control items that libraries should be watching? Yes: the library website—typically the sole tool for accessing and using journal collections—is becoming an area of consistent dissatisfaction among faculty. Journal collections, however, continue to be the area of

least satisfaction for faculty at institutions with ARL libraries. It is expected that the relationship between the website and collections will only strengthen over time, for better or worse. Clearly, the issue of satisfaction with journal collections is complex, ever-more technical, and faculty have little tolerance for faulty systems, as seen in LibQUAL+® scores since 2004. The evolution of the electronic journal collections and the inherent access challenges will continue to play a critical role in faculty satisfaction as libraries strive to provide ever-better service.

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Notes

1. James Self, "Bound for Disappointment: Faculty and Journals at Research Institutions," *ARL: A Bimonthly Report* 257 (2008): 7-11, <http://www.arl.org/bm~doc/arl-br-257-bound.pdf>.
2. Adequacy gaps, when dealing with LibQUAL+®, measure the difference between the minimum score and the perceived score of a given survey item. A negative adequacy gap, such as -0.5, tells us that perceived service ratings were lower than the minimum service ratings, i.e., that respondents are dissatisfied with the level of service.
3. Colleen Cook, et al., *LibQUAL+® 2009 Survey Notebook* (Washington, DC: Association of Research Libraries, 2009), http://libqual.org/documents/LibQual/notebooks/57_6.pdf._Notebook_2009.pdf. LibQUAL+® notebooks are available only to survey participants within a given year, through the LibQUAL+® website. This article complies with the LibQUAL+® Policy on Disseminating Results "Institutions may use other libraries' data in a confidential manner without disclosing the institutional identity of other libraries."
4. Anselm L. Strauss, *Qualitative analysis for social scientists* (Cambridge, England: Cambridge University Press, 1987).
5. Special thanks to Rebecca Chovnick for her work as a Research Assistant for this project.
6. Self, "Bound for Disappointment," 9.
7. *ARL Statistics* (Washington, DC: Association of Research Libraries, 2008), <http://www.arl.org/bm~doc/arlstat08.pdf>, 86.
8. Colleen Cook, et al., *LibQUAL+® 2006 Survey Notebook* (Washington, DC: Association of Research Libraries, 2006), http://old.libqual.org/Manage/Results/Results_2006/index.cfm.
9. Special thanks to Shanna Jaggars for her assistance and advice with analysis.

Appendix A

Collection Gaps

"I tried to actually put in a request for this, but I couldn't find the web form."

"I don't know how easy it is to recommend a journal you don't have. [...] Maybe that could be a little easier."

"[...] We're global, so for us not to have various European or Asian journals, particularly older ones, is problematic."

"I've started to tailor my searches to the journals I know the library has."

"Especially in foreign languages. Some of them are quite new, you know, no one has probably ever requested them before."

"Send out a list every year; we could submit a list of what the library should [have]."

Interlibrary Loan

"There are so many other means of access, whether it's via JSTOR or Borrow Direct or some other resource. I always manage to get the article I'm looking for."

"I will say, it's rare – ILL is wonderful; it's rare that they [ILL] can't find a copy of an article somewhere or a journal somewhere. But, it can take a very long time and sometimes on rare occasions, they can't."

Quick List

"[...] One thing that we used to have a long time ago that's no longer there is a list of the most commonly used journals, or the top journals in economics and finance. So a page on the website that would then be a collection of links to maybe the top thirty or so journals in economics and finance, and just go there. It saves a few steps. It would be good to reinstate that, and maybe have different lists for different departments."

"On my web page I have my favorite journals, and it worked fine until you changed it. [...] So, originally, my idea of a home page was one stop. Everything's here. You don't have to do anything else."

"It would be nice if there was just a quick list and easy guide to the most popular titles."

"To create real interface pages for particular disciplines and fields that are annotated connections to journals online and databases."

"If there's an opportunity to improve the web interfaces, and add discipline-specific hints for navigating to the online collections. I don't do it often enough to always remember how to do it."

"You know, top ten lists of highly recommended books or articles that someone has really benefitted from. And, I suppose if the library had some way of selecting things that would be specifically of interest and very targeted, that might make a difference."

Resources

"Don't touch the collection, and put the money into figuring out how to be able to use it off campus or on, so it's transparent."

"The collection is a pain. It's throwing away money until I can use it."

"That would be something I would have the field of librarianship work on. How to use the technology to make it more user-friendly, rather than spend resources trying to collect print."

Search and Online Access

"In CLIO, if I want to do a search, it's not always accurate as to what journals are available and what we don't have. So, you have to go through multiples resources to know for sure."

"There might be a way to streamline ways of downloading articles. Sometimes you go to the web site and see five different sources for the same journal. One's cleaner, some are better formatted, some are the same, and it's not always easy to tell which ones are best. [...] If there's five sources someone could go through them and see which ones are best."

"I counted once how many times I had to click to get to what I wanted, finally in PDF form, and it was something like ten clicks."

"I had the impression that, depending on how I searched [in the catalog], I would get completely different results."

"I'll be browsing nature.com and then I'd like to read an article and there's no easy way for me to suddenly be at that same page but logged in with my CU credentials. Instead I have to open a new browser and go through Columbia's interface to get back to the same page [...] That's certainly consistent with the minimum required."

"Sometimes it's a bit difficult. Sometimes I just go and talk to a reference librarian because I'm not very good at navigating the system."

Support

"I want a response that someone got my request. And if nothing happens, someone to call."

"I need training."

"I do always feel that if I have any questions that I always get a sense of helpfulness in all the libraries."

Work-Arounds

"I've never had any problems getting what I wanted, but that's also because I have a research assistant."

"If it's directly in my work, I'll just buy it myself."

"When I can't find something through ILL, I ask colleagues in the field if they know of a place to get it, and then to resources of their university. Can they make a copy of the given article or something like that."

"I personally subscribe to several journals which are the ones that I most read. Which are the ones that I would most read if they were in the library, but I have them myself as part of, in some cases, society memberships."

Value of Libraries: Relationships between Provision, Usage, and Research Outcomes

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Abstract

In the UK as in many other countries, expenditure on university libraries rose strongly in real terms in the decade from 1998 onwards, but fell as a proportion of total university expenditure. Now university managers are looking to cut budgets, and it is important to look rigorously at issues of value and impact, as well as the efficiency of library services. This paper reports on a study that is exploring the relationships in the UK between library expenditure, levels of usage, and research outcomes, with a focus on the provision and use of e-journals. Expenditure on e-journals has risen rapidly over the past decade, and so has the number of titles available in UK universities. But as provision has risen, usage has risen even faster, so the simple measure of cost-per-download has seen a dramatic fall. Moreover, there seems to be a strong correlation—even allowing for institutional size—between levels of expenditure and volumes of downloads; the amount spent seems to be closely related to usage.

There are, however, significant differences in patterns of usage—in intensity of use per researcher; in their use of gateways; in their session length; and in other variables—not only between users in different disciplines, but between those in the same discipline in different institutions. The reasons for such variations are not always clear. Our approach to value and impact has been to investigate correlations, at the whole institution level, between expenditure and usage on the one hand, and a range of measures of institutional research performance—including PhDs awarded, research grants and contracts, papers published, and citation impact—on the other. Our analysis shows that there is a strong positive feedback loop between usage and

research performance; and that high levels of use are a strong predictor of subsequent research success.

Introduction

Expenditure in university and college libraries in the UK amounted in 2008 to £630m,¹ a figure that had grown by 30% in real terms over the previous ten years. Growth in expenditure was even faster—at nearly 48%—for the libraries of the research-intensive universities represented by Research Libraries UK (RLUK). Numbers of staff and students also grew, however, and income and expenditure on research grew even faster. Hence the proportion of total university expenditure that went to support libraries fell: from 3.4% to 2.8% across all UK universities; and from 3.2% to 2.6% across the RLUK libraries. So libraries represent a declining share of university budgets, and they will have to fight hard to avoid further falls in that share as universities face significant cuts in the income they receive from public funds.

In that context, it is particularly important that libraries should be able to show not only that they are operating efficiently, but that they provide services with demonstrable links to success in achieving institutional goals. Return on investment is thus an increasingly important issue. In order to address these issues, libraries need to do more to understand user behaviour and workflows; and rigorously to analyse and demonstrate the value of what they do in terms of improving students' experience, and supporting teaching, learning and research.

There has been a tendency, in the UK at least, for performance indicators to focus on inputs and

outputs that are relatively straightforward to measure, as distinct from the much harder issues relating to impact and value. In current circumstances, however, it is important that more is done to analyse the relationships between library activities on the one hand, and learning and research outcomes on the other.

Work of this kind is in its relatively early stages, and it is fraught with difficulties. Gathering and analysing evidence of value is notoriously difficult; a number of different approaches have been adopted, and there is no single answer. A key question is 'value for whom?' In relation to libraries, approaches to gathering evidence of value for students or academic staff may well differ from approaches to value for funders or for universities. Similarly, approaches to the value of existing services may not be appropriate in gathering evidence of possible changes (positive or negative) either to the nature or to the level of those services. And there are notorious difficulties in assessing changes in value over time.

This paper focuses on one element in that set of issues: the provision of information content, particularly e-journals, that libraries make from within their budgets, and the use that is made of that content. It reports in particular on the findings of a study commissioned and overseen by the Research Information Network (RIN), and undertaken by the Centre for Information Behaviour and the Evaluation of Research (CIBER) at University College London.

Project design and methodology

The study started with the aim of providing a detailed portrait of the information-seeking behaviour of UK researchers, of how they make use of e-journals and of the benefits that flow from that use. More detailed objectives were to

- investigate researchers' behaviour, in terms of levels and patterns of usage, content viewed, navigational preferences, and routes used to access e-journal content
- ascertain how researchers' behaviours vary by subjects and disciplines, and in relation to the

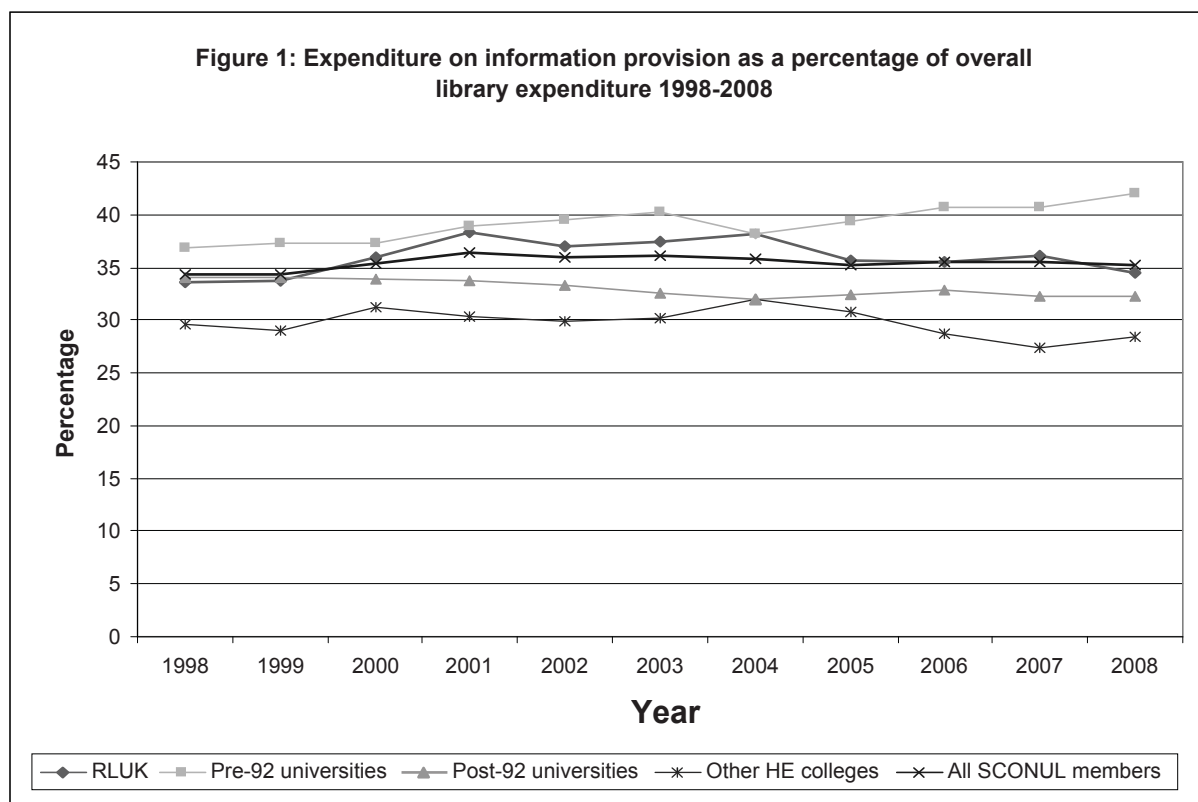
universities and other institutions in which they work

- gather and analyse any evidence of relationships between researchers' behaviours and usage, and institutional expenditure on e-journals, and
- gather and analyse any evidence of relationships between researchers' behaviours on the one hand and research productivity, outputs and outcomes on the other, including such measures as numbers of publications produced, citations attracted, and the results of research evaluations.

The project used a mixture of top-down and bottom-up approaches. It thus involved a close study of the behaviours of researchers in eight universities and two research institutes across a range of six subject areas; and a parallel gathering and analysis of data for all UK universities and colleges, covering various library indicators together with data on article downloads and a range of measures of research performance. The work was undertaken in two stages. The first stage involved detailed mining of the publishers' logs from Elsevier's Science Direct and from Oxford Journals to generate fine-grained insights into the information-seeking behaviour of scholars from the case study institutions, together with an initial analysis of the UK-wide data.² The second stage involved a survey and interviews with a wide range of researchers as well as librarians from the case study institutions, together with further analysis of the UK-wide data.

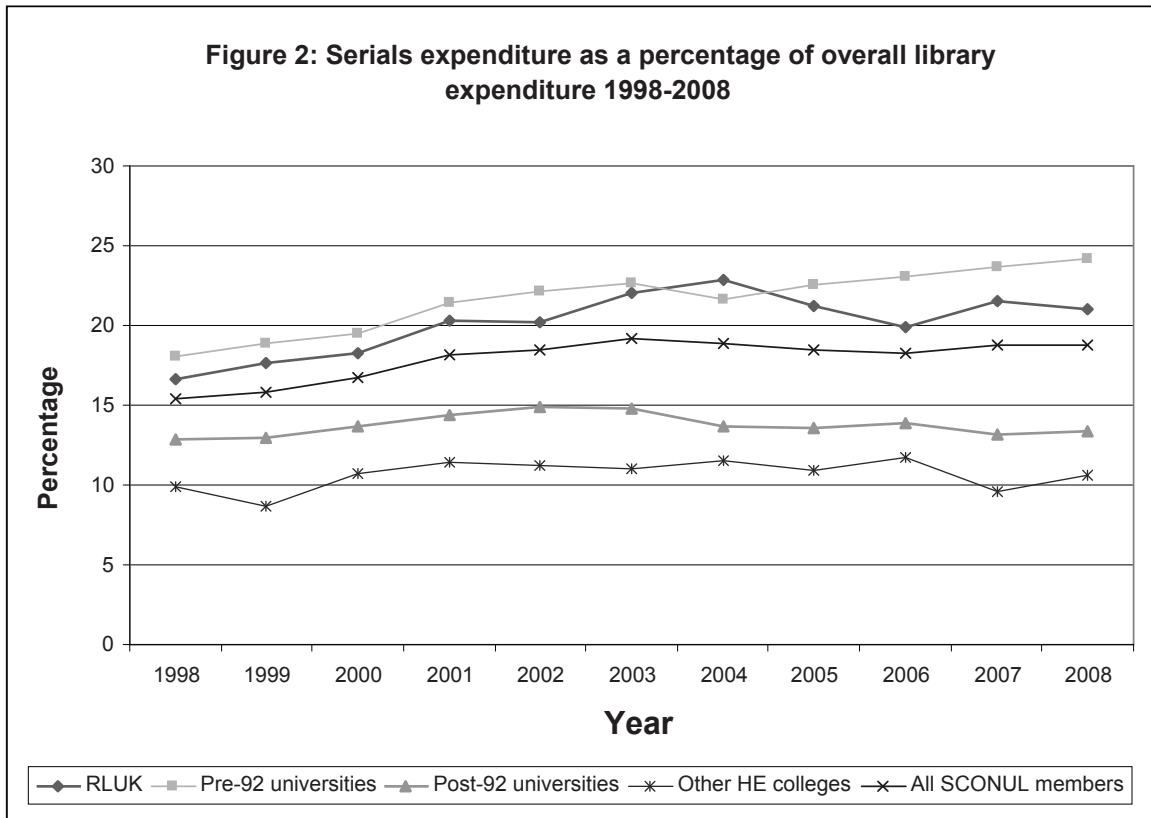
Expenditure and usage of e-journals

Expenditure on information content of all kinds represents about 35% of all library expenditure across the UK university library sector, and that proportion has been relatively stable over the past decade. But there are significant differences between individual libraries—proportions vary between under 30% and over 40%—and groups of libraries. The proportion tends to be lowest in small colleges and specialist institutions, and highest in the older universities.



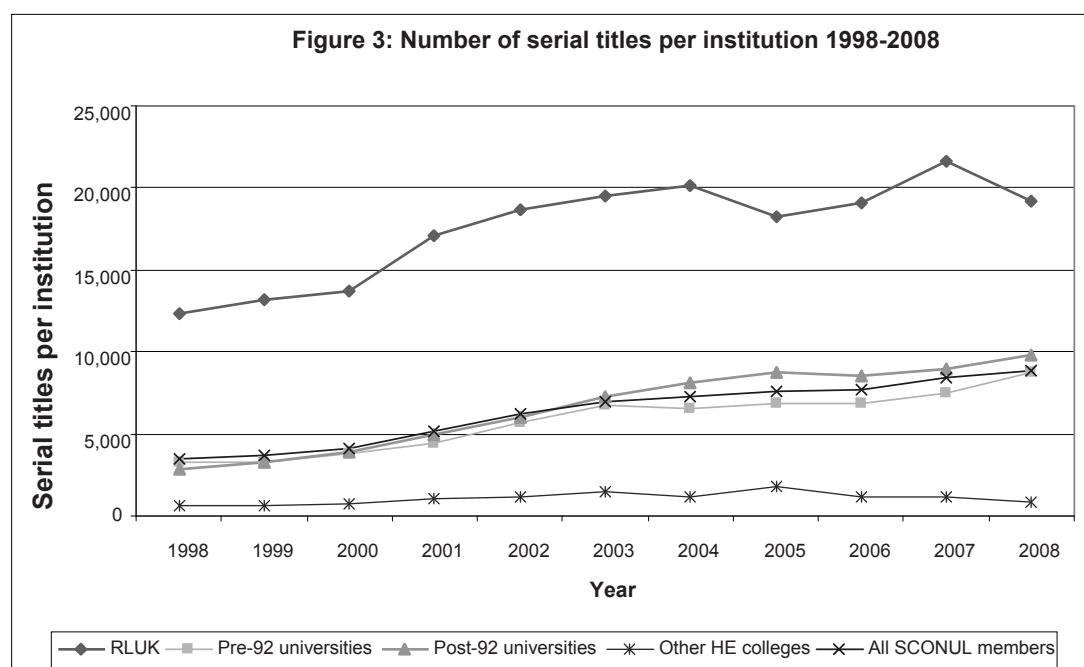
The relatively stable proportion of expenditure on content implies, of course, increases in actual expenditure in real terms. But here experiences differ across the sector. In the research-intensive universities expenditure rose by 52%; but in the newer universities, after rising by 5% in the years up to 2002, expenditure on content has actually declined in real terms since then, and in 2008 was actually 2% lower than it was in 1998.

The lion's share of that expenditure goes on serials, which now account for nearly 20% of total library expenditure across the UK higher education (HE) sector. That marks a significant change over the past ten years. In 1998 books accounted for just over 12% of library expenditure, and serials just over 15%; but by 2008 the percentages had diverged rapidly, to 9% and 19% respectively. In several older universities, serials account for over a quarter of the total library budget.



Growth in expenditure on serials has of course been accompanied, as a result of the adoption of big deals, by a huge increase in the number of titles available. Overall, the number of titles has increased by over 153% across all UK university libraries between 1998 and 2008. Within this, there is considerable variation, both in the rate of change and in the overall number of titles

available. RLUK members, while showing one of the smaller overall increases at 56%, has a consistently larger number of titles available than any other group. Other HE colleges, also showing a lower rate of change at 39%, has noticeably fewer titles available than pre- and post-92 universities. Nonetheless, the overall story is one of rapid and significant change.



And the increase in provision has been accompanied by huge increases in usage. Our estimates of the number of downloads of e-journal articles as reported by libraries in accordance with the COUNTER protocols are shown in Table 1.

They show an increase of over two and a half times across the sector as a whole between 2004 and 2008, with even higher rates of growth among the research-intensive Russell Group of universities.

Table 1: Annual COUNTER downloads (CIBER estimates based on SCONUL)

Mean for sector (Huber's M-estimator)					
Year	2004	2005	2006	2007	2008
Russell Group	783,870	1,377,603	1,846,121	2,211,245	2,795,825
Pre-1992 Institutions	439,813	632,144	655,926	819,335	1,001,521
Post-1992 Institutions	283,760	332,251	443,027	521,350	592,253
Total	432,693	632,758	772,600	930,415	1,134,165
Index 2004=100					
Year	2004	2005	2006	2007	2008
Russell Group	100	175.7	235.5	282.1	356.7
Pre-1992 Institutions	100	143.7	151.4	186.3	227.7
Post-1992 Institutions	100	117.1	156.1	183.7	208.7
Total	100	146.2	178.6	215.0	262.1

One simple approach to value is to ascertain the unit cost per download and its variation between different institutions or over time. As shown in Table 2, since the rise in usage has been faster than the rise in expenditure on serials, the cost per

download fell sharply between 2004 and 2008: from £1.19 to £0.70 (thus by 41%) across the sector as a whole, with an even sharper fall of 62% among the research-intensive Russell Group universities.

Table 2: Direct cost per download at constant prices (SCONUL/COUNTER/CIBER estimates)

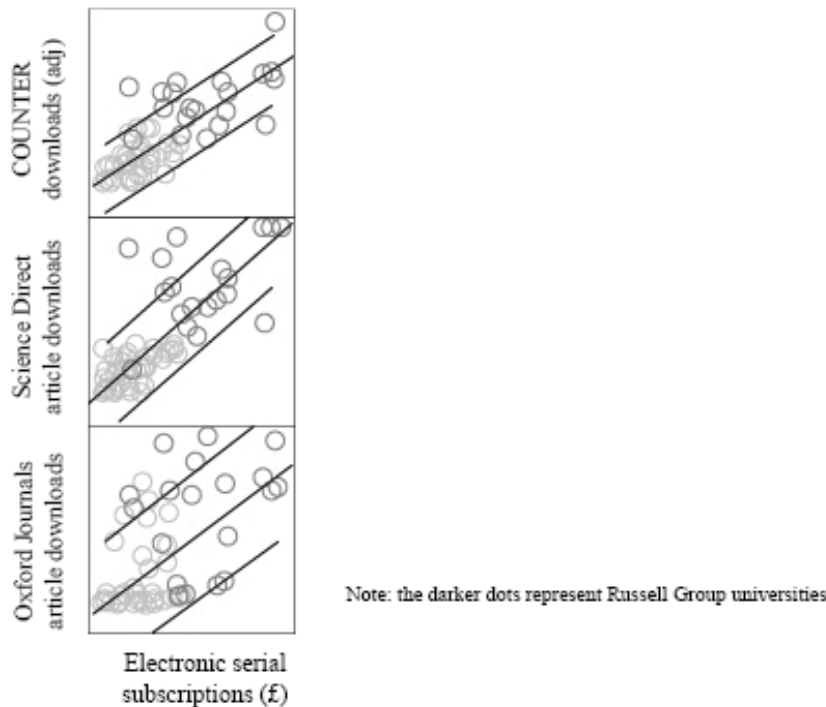
Year	Mean for sector (Huber's M-estimator)					Index 2004=100				
	2004	2005	2006	2007	2008	2004	2005	2006	2007	2008
Russell Group	£1.73	£0.99	£0.82	£0.74	£0.66	100	57.2	47.4	42.8	38.2
Pre-1992 Institutions	£1.20	£0.96	£0.98	£0.91	£0.81	100	80.0	81.7	75.8	67.5
Post-1992 Institutions	£1.01	£0.85	£0.73	£0.68	£0.65	100	84.2	72.3	67.3	64.4
Total	£1.19	£0.91	£0.83	£0.77	£0.70	100	76.5	69.7	64.7	58.8

When levels of usage are put alongside expenditure on e-journals in individual universities across the UK, again the results are intriguing. They show a very strong correlation between volumes of downloads and expenditure, with only a few outliers, as shown in Figure 4. Only the plots for Oxford Journals show a wide

scatter, reflecting the relatively small number of journal titles involved, and their concentration in a relatively small range of subject areas. Overall, however, our findings seem to indicate that universities as a whole are spending their money wisely.

Figure 4: UK Higher Education Libraries Expenditure and Usage of E-journals

Matrix scatterplot based on downloads for all downloads (COUNTER (adjusted), Elsevier ScienceDirect, and Oxford Journals (fitted linear regression trendlines with 95% confidence intervals)



Variations between subjects and institutions

It is well known that there are significant variations between the behaviours of researchers in different disciplines, as well as in the provision of information resources and services directed towards them. This is borne out by the detailed analysis of the usage logs for Science Direct and Oxford Journals in our case study subjects and institutions. Table 3 shows that economists differ from both life scientists and physical scientists in the degree of concentration on a small number of titles, in the numbers of pages viewed per session, in their use of abstracts, and in their use of external gateways such as Google or Google Scholar to get to content.

But there are significant variations also between different areas of the sciences. In physics and chemistry, for example, there are big differences

in the degree of concentration on specific journal titles. The total number of titles viewed in was broadly similar in the two disciplines; but the most popular 5% of titles accounted for 39.5% of use in chemistry, as compared with 26.6% in physics.

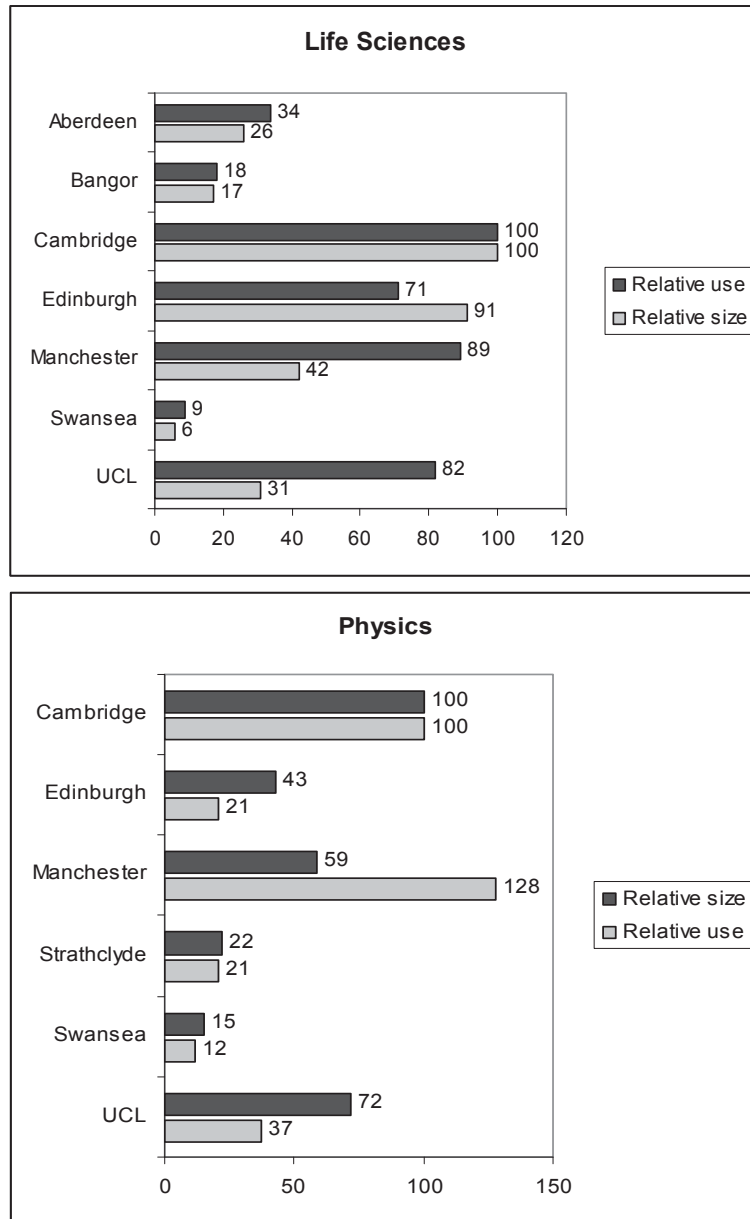
There are similar variations as to the average number of page views per session. It is not obvious, for example, why environmental scientists should view nearly twice as many pages during a session as life scientists do, though it may be related to the latter's much higher usage of external gateways, including services such as PubMed. There is more consistency with regard to the use of abstracts: only economists stand out as using them much more than scientists do.

Table 3: Information-seeking behaviour - Readers in different subjects behave differently

	Journal titles viewed	Most popular 5% of journals accounted for % use	Page views (average per session)	Abstract views (% sessions)	Gateways (% page views arriving via gateways)
Chemistry	196	39.5	3.2	23.3	49.2
Environmental Sciences	248	29.6	3.6	22.7	41.4
Economics	132	46.9	3.8	30.4	19
Life sciences	531	38.1	2.0	19.5	65.9
Physics	204	26.6	2.5	20.1	57.8

Perhaps more intriguing are the variations between users in the same discipline at different institutions. Our analysis shows, for example, significant variations in intensity of usage at our case study institutions. The following two charts compare usage (in this case numbers of page views in the subject area concerned as shown in the Science Direct logs) with the size of the institution in two subject areas. The measure of size is the number of staff submitted to the 2008 Research Assessment Exercise (RAE). This

provides only a rough indication of size, since it does not take account of numbers of research students or of staff (such as research assistants) who were ineligible for entry into the RAE or who were not chosen for submission by their institution. Nevertheless, it provides a reasonable indication of the weight of research effort in each institution. In each of the graphs, the data are indexed to the institution with the largest number of research-active staff in the subject area.

Figure 5: Usage comparison – size of institution in two subject areas

What is intriguing here is that intensity of use does not appear to be closely correlated with size or with the quality of the research undertaken at the universities concerned. In physics, for example, the ratings achieved in the 2008 RAE by Cambridge, Edinburgh, Manchester and University College London were fairly similar. The striking variation—by a factor of four—in the ratios between levels of use and of size at Edinburgh and UCL on the one hand, and Manchester on the other, are not explained simply by the volume or the quality of the research being produced at those institutions. There are similar

variations, by as much as a factor of six, in the age of the articles that are viewed in different subjects and institutions; and again these do not seem to be related to levels or quality of research performance at individual institutions.

Variations in the titles viewed at different institutions seem to show, however, a more understandable pattern. Table 4 shows the average impact factor of the journals viewed at the case study institutions. Since impact factors vary considerably between disciplines, we have sought to normalise for the range of disciplines at

each institution, by calculating a 'relative impact' factor, which matches each journal viewed against the average for that discipline. Thus a value of 1 means that the journals viewed at that institution are typical—in terms of their citation impact—of the journals for that range of disciplines as a whole, worldwide. A value greater than 1 means that users at that institution are viewing articles in journals with an impact factor higher than the average in that range of disciplines. What is

notable here is that users at the most research-intensive universities (Cambridge, Edinburgh, Manchester and UCL) are using journals that are more heavily cited than the global average in their disciplines. Users at other institutions, including the two Government-funded research institutes (the Centre for Ecology and Hydrology and the Rothamsted agricultural research institute) tend to use journals where the impact factor clusters around the average.

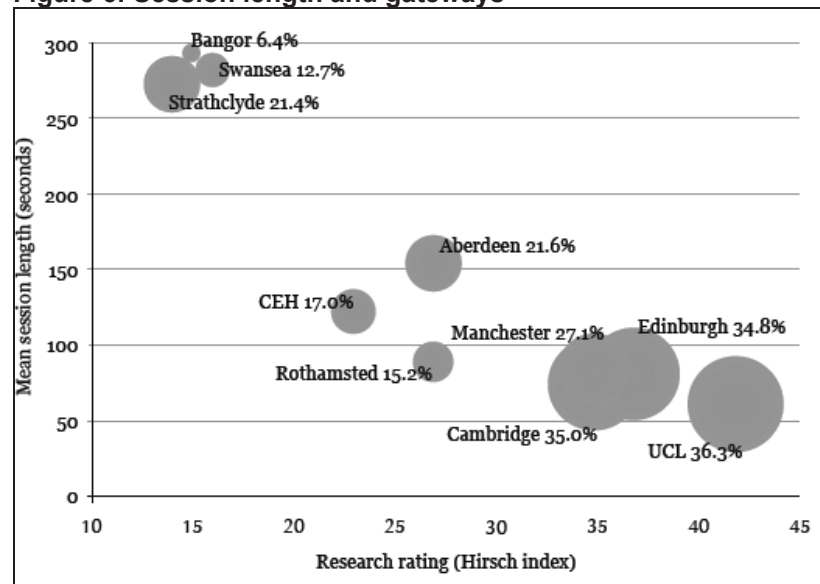
Table 4: Average impact factor of the journals viewed at the case study institutions

Case study	Average impact factor of journals viewed	Relative impact
Aberdeen	3.0	1.2
Bangor	2.3	0.9
Cambridge	5.0	2.0
Centre for Ecology and Hydrology	2.6	1.0
Edinburgh	3.7	1.5
Manchester	3.9	1.6
Rothamsted	2.6	1.0
Strathclyde	2.7	1.1
Swansea	2.5	1.0
UCL	4.1	1.7

Such variations may well be related to differences in how users in different institutions get to content. Users at the more research-intensive universities tend to make more use of gateways such as Google Scholar and PubMed, and then to spend less time on a journal site than their colleagues in other institutions. Figure 6 shows the average session length in Science Direct for

users at each of our case study institutions in the life sciences, mapped against the research rating of the authors at each institution as measured by the Hirsch index. The percentages indicate how many Science Direct sessions originated from an external gateway service, and the diameter of the circles is scaled to that value.

Figure 6: Session length and gateways



We can also derive similar patterns when we look at usage of navigation facilities within the Science Direct platform, with users at the less-research-intensive institutions making much more use of menus and search facilities, especially citation search. They also make more use of value-added services such as alerts, and articles in press.

The conclusions from this part of our work are that there are strong variations between users not only in different disciplines but also in different institutions, and that some—but not all—of the variations seem to be related to the size and research-intensity of the institution. Such variations also raise questions, of course, about the utility and value of some of the services provided by libraries and publishers, particularly when services such as advanced search are used only infrequently. One conclusion from our findings is thus the familiar one that one size does not fit all. It is already well understood that researchers in different disciplines behave differently and have different needs. What has perhaps been less well covered in the literature has been the differences in behaviours, and presumably needs, between users in different institutions.

Relationships between usage and value

We have already noted that there are close relationships between expenditure on and usage of e-journals; and those relationships remain strong even when we control statistically for institutional size. Trying to assess the impact or value of usage is more difficult. For the linkages between use of information resources provided by libraries on the one hand, and research or learning outcomes on the other are difficult to pin down, and chains of reasoning may raise as many questions as they seek to answer. One approach is to try to calculate the return on investment (ROI) for individual libraries. Recent studies led by Carol Tenopir³ suggest that the ROI varies from between 15.5: 1 to under 0.64:1 (i.e., a negative return), depending on such factors as the balance between teaching and research, and the subject mix, in each university.

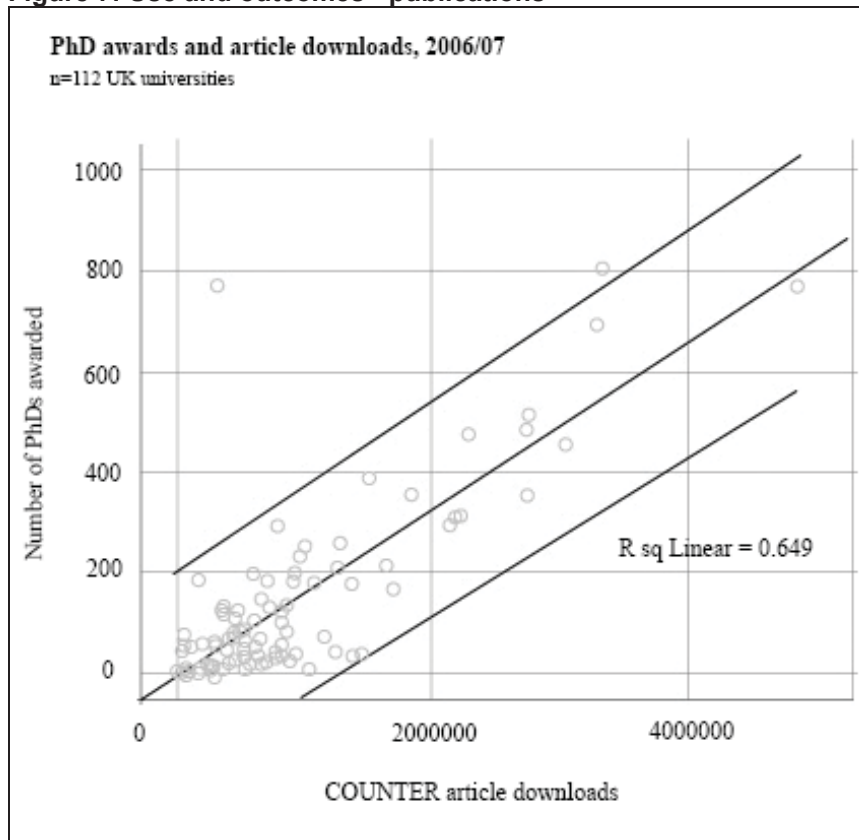
We have taken a rather different approach, seeking to investigate the relationships between levels of usage on the one hand, and a range of measures of research activity on the other. We first of all identified from our analysis of the data across the UK sector three groups of universities in terms of the volume of downloads: moderate, high and super users. In Table 5, we match these groups with various measures of research activity as well as a calculation of cost per download.

Table 5: Usage groups and research outcome measures

	Moderate users (n=80)	High users (n=25)	Super users (n=10)
Research papers per academic	0.4	0.8	1.0
Research grants and contracts per academic (£000's)	12.7	29.0	39.7
PhD awards per 100 academics	9.1	17.5	17.4
Cost per download	£0.89	£0.74	£0.60

These figures suggest that there might be a relationship between e-journal usage and research performance: the differences in performance between the groups are statistically significant, although differences in cost per download are much less so.

We then moved to a more detailed mapping of article downloads in individual universities plotted against similar measures of research performance, as shown, for example, in Figure 7.

Figure 7: Use and outcomes - publications

It is clear that the fit is very close, with only a few outliers. Nevertheless, correlations do not necessarily imply causal relationships; and still less do they provide a clear indication of the direction in which cause and effect might run. We have therefore adapted a technique used by Peter Meso and his colleagues,⁴ using partial least squares regression and path modelling, a predictive technique that is particularly useful when predictor variables are highly correlated. We have thus built a model that seeks to predict levels of three variables—expenditure, usage and research outcomes—on the basis of the other two; and to quantify how good they are as predictors of each other. Expenditure is represented by the total spending on journals; usage by downloads as reported in accordance with the COUNTER protocols; and research outcomes by numbers of PhD awards, income from research grants and contracts, numbers of articles published and field-normalised citation impact. We used data from 113 UK universities for the two years 2004 and 2007, so that the models could include a two-year time-lag, and we could test whether 2004 independent variables predict 2007 dependents.

We used the model to test six hypotheses:

1. levels of library expenditure influence subsequent levels of use of e-journals
2. levels of e-journal use influence subsequent levels of library expenditure
3. levels of library expenditure influence subsequent research performance
4. successful research performance influences subsequent levels of library expenditure
5. levels of e-journal use influence subsequent research performance
6. successful research performance influences subsequent levels of use of e-journals

The criteria used for determining whether or not a hypothesis is supported were a path co-efficient equal to or greater than 0.3, and a t-statistic equal to or greater than 2.02 (the threshold for significance at the 5% level).

The analysis shows that the first hypothesis is supported: expenditure drives use; indeed it is a precondition for it. The reverse hypothesis, that use drives subsequent expenditure, is not supported, probably because the relationship is

complicated by the big deals, and journals are not priced according to usage.

The modelling does not show strong direct linkages in either direction between library expenditure and research performance. The two variables here are of course conceptually distant from each other. Any relationships between them may therefore tend to be indirect rather than direct; and any direct relationship may involve a time-lag longer than two years.

The modelling does, however, show a strong positive feedback loop between the use of e-journals and research performance. Indeed, the model shows that use is a powerful predictor of subsequent research success, and this linkage is by far the strongest in the model.

These findings focus on e-journals, and they are suggestive rather than conclusive. There is a need both to broaden the focus beyond e-journals and for more detailed work to test hypotheses and understand the dynamics of the relationships between different variables over time. It is important that such work should be continued so that we help libraries to show not only how effectively (or not) they are operating, but the extent to which they are providing services with demonstrable links to success in achieving institutional goals. In difficult economic times, we need a deeper understanding of user behaviour and workflows; and rigorous analyses of the value of library and information services and activities in improving students' experience and in supporting teaching, learning and research. There is a need to go beyond performance indicators that focus on inputs and outputs, and to address the much harder issues relating to

impact and value. That implies detailed investigations of the relationships between library activities on the one hand, and learning and research outcomes on the other. In current circumstances, senior managers in many universities will be seeking such evidence if they are asked to sustain current levels of expenditure to support library and information services.

Notes

1. All figures relating to budgets and expenditure in UK libraries are calculated from SCOUNL statistics. See <http://vamp.diglib.shrivenham.cranfield.ac.uk/statistics/sconul-annual-library-statistics>. Real terms figures are calculated in accordance with the GDP deflator.
2. An initial report, *E-Journals, Their Use, Value and Impact*, was published in 2009, together with underlying working papers. It is available at <http://www.rin.ac.uk/our-work/communicating-and-disseminating-research/e-journals-their-use-value-and-impact>. A further report will be published in the autumn of 2010.
3. Carol Tenopir et al., *University Investment in the Library, Phase II: An International Study of the Library's Value to the Grants Process* (Elsevier Connect White Paper, 2010).
4. Peter Meso et al., "Information Infrastructure, Governance and Socio-Economic Development in Developing Countries," *European Journal of Information Systems* 18, 1 (2009): 52-65.

The Link Among Purposes for Which Faculty Read Scholarly Journals, Their Information Seeking Patterns, Aspects of Use, Value or Outcomes from Reading and the Return-on-Investment of Academic Library Journal Collections

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Abstract

This paper is based on information from an Institute of Museum and Library Services (IMLS) sponsored study "MAXDATA" involving surveys of university faculty concerning their use of academic library scholarly journal collections. The emphasis of this paper is to demonstrate the relationship of how purposes of reading scholarly journals (e.g., research, teaching, current awareness, etc.) lead to the information seeking patterns used by them (e.g., how they identify read articles, where they obtain them, etc.), which dictates certain aspects of use (e.g., how much is read, age of articles read, format of the articles, etc.), which is related to the positive outcomes or value of reading (e.g., increased productivity, improved research or teaching, saving readers' time and/or money, etc.), which serves as return components of the Return-on-Investment of academic library journal collections. The paper gives an example of how the method of observing a critical incident of the last reading can be used to determine the above relationships. Estimates are made for the number of readings made for research; of these the number identified from searching; of these the number obtained from library collections; the age of these readings and whether from print or electronic versions of the articles; the amount of time spent obtaining and reading these articles (as an indicator of what readers "pay" for the content read), ways in which the reading affected research, whether the article read is eventually cited, and "contingent value" of the articles read from the library collection. Contingent value is an economic method used to assess the benefits of non-priced goods and services, by examining the implications

of not having that product or service. In the example presented here, an estimate is made of how much more it would cost readers to obtain the article if there were no library collection. This value is compared to the relative cost of the library collection and cost to the reader to estimate the Return-on-Investment. Of course, this is only one way to do so. The University of Tennessee and other participants are currently conducting another IMLS study (LIBVALUE) to develop additional measures of "value" and "ROI" of all academic library services, in addition to those provided by their journal collections.

Introduction

Over the years there have been hundreds of studies which provide estimates of the value of all types of libraries and more recently on the Return-on-Investment in libraries. The University of Tennessee, School of Information Sciences and University College London, CIBER was funded by the Institute of Museum and Library Services (IMLS) to examine how to maximize library investments in digital collections through better data gathering and analysis. The study focused on alternative means of collecting journal and article usage metrics including readership surveys, local server hits and downloads, data provided by various vendors, and deep log analysis of electronic journal usage data of OhioLINK collected by CIBER. The findings were intended to enable librarians to learn what conclusions can be drawn from each metric, the strengths and weaknesses of each one, how they complement one another, and what conclusions can be drawn if only one source of data is available.

This paper addresses the survey of faculty at five US universities that participated in the study concerning their information-seeking and reading patterns involving scholarly journals.¹ The surveys relied on a “critical incident” method of asking questions concerning the last journal article reading. This method allows analysis of the direct relationship of faculty purposes of reading articles, ways in which they first learned about the articles, where they obtained them, aspects of their use, and the value or impact of the information read. This information is used to establish the role academic libraries play in achieving value of their collections and, ultimately, a value contribution to the return component of journal collection Return-on-Investment (ROI).

Examples of value include “purchase” value in terms of how much readers pay for the information in their time and money to obtain and read articles and the “use” value in the consequences of reading the information such as saving readers ‘time in doing their work, improving their productivity, inspiring new thinking or ideas, improving their work, resulting in collaborations, and so on. One indicator of the value of journal collections is how much more it would cost readers to obtain the same information, if the journal collections were not available to them. The investment component of ROI is based on the relevant library cost and the cost to faculty in their time and money for browsing, searching, printing and photocopying.² A current IMLS sponsored study is developing additional measures of “value” and “ROI” of all academic library services (including library commons) to all who benefit from these services in a variety of ways.

Context is given for the role academic library journal collections play in achieving value. It is emphasized that it is information content that achieves value from reading and not the journals or articles and that academic library services facilitate access to the information content in various ways. One aspect of the context is that faculty use many information sources to do their work and journal articles are collectively only one such source. A second context is that readers can obtain articles they read from many article sources such as personal subscriptions, article reprints, colleagues, authors, free web journals,

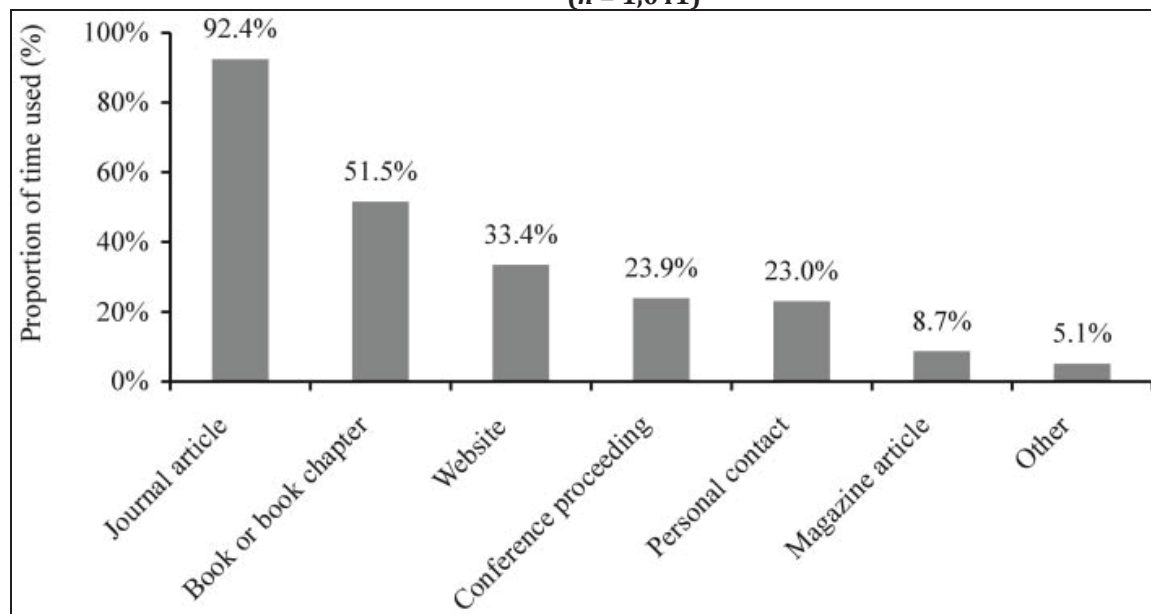
and so on and, library collections serve as only one of these article sources. A third context is that article information is often known (or partially known) before an article is read and since the surveys focus on the last article read, it is possible that the reading is only the most recent of many past readings of the article by a faculty member. These contexts are discussed in the following section.

A section is devoted to the purposes for which information is read by faculty including research, teaching, writing, keeping up with new information, continuing education, and so on. Information-seeking patterns are closely related to those purposes and form the focus of the next section. Such patterns include ways in which readers learn about the articles they read (e.g., browsing, searching, being told, etc.) and the article sources used (e.g., personal subscriptions, library collections, etc.). An example is given in which articles primarily read for research are identified through searching and these articles are then obtained from library collections. The next section discusses various aspects of the read articles such as age and format of the articles. These aspects are given for those articles read for research, found by searching and obtained from library collections. The following section deals with the outcomes or value of information that is read. An example is given for value of information read for research, identified by searching, obtained from library collections and age of the articles. Finally, the collection ROI achieved for universities is estimated for these articles and compared with other reasons for reading, information-seeking methods and use aspects.

The Context for Assessing Academic Scholarly Journal Collections

One can think of information being a resource that faculty use to perform their work and, for that matter, the principal output for their work.³ Faculty can choose from many information sources such as journal articles, books, personal contact, and so on. The surveys asked a question about sources used by faculty which provides an indicator of the relative importance of such sources.⁴ The question asked: “What sources did you use for the last substantive piece of information you used for work?” Results are shown in Figure 1.⁵

Figure 1. Sources used by faculty for their last substantive piece of information for work (n = 1,041)

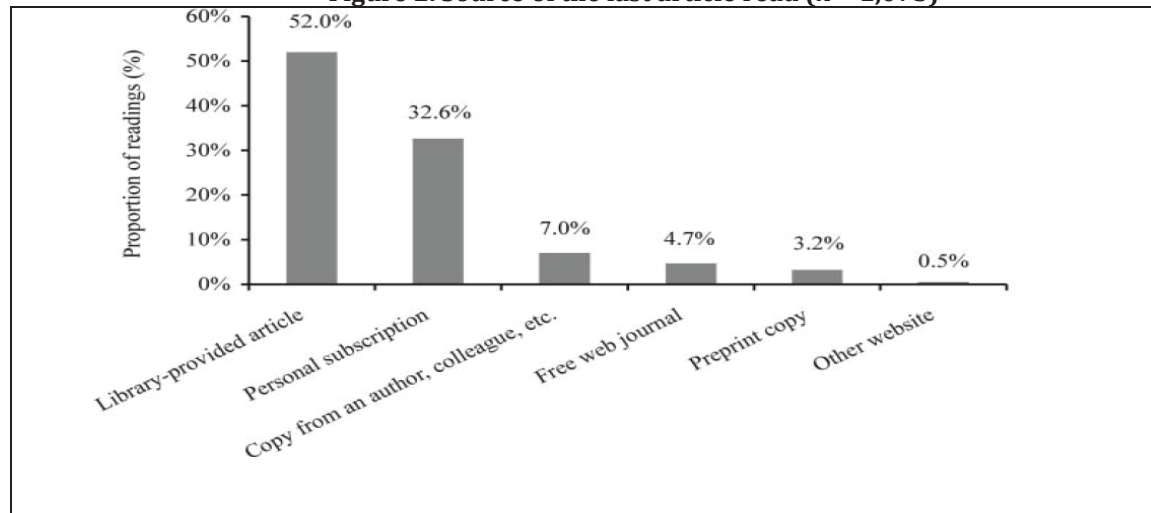


The results demonstrate the relative importance of information in articles compared with other sources of information and supports a reason for examining journal articles further.

There are a number of sources of articles that are read, including personal subscriptions, library collections (e.g., central and department library subscriptions/databases and from interlibrary loan or document delivery services), preprint or reprint copies; copies from colleagues, authors,

etc.; repositories, and so on. It is useful to know the relative use of library collections in order to assess the importance of them and to examine why one source is chosen over others. As shown later, one aspect is purpose of reading and another aspect being the way articles are identified. Figure 2 gives the sources used to obtain the last article read by faculty. Library-provided articles are found to be the prevalent source.⁶

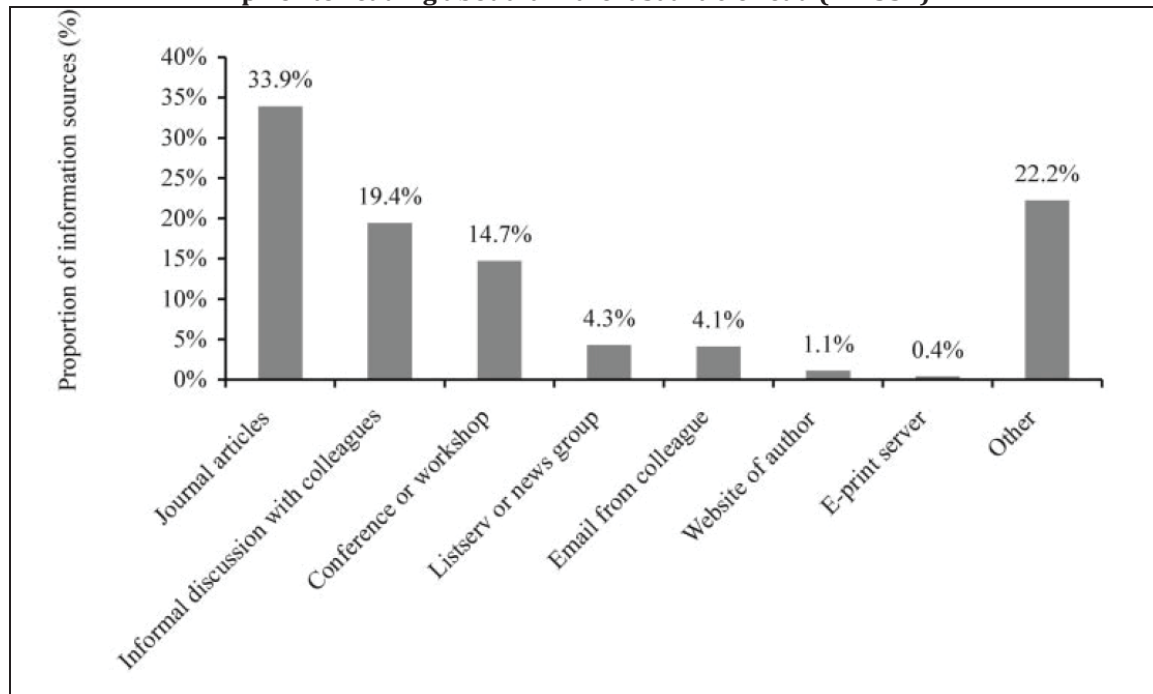
Figure 2. Source of the last article read (n = 1,075)



Another context addresses the fact that faculty often knows about the information in an article prior to reading it the first time. The surveys revealed that nearly half of the articles last read

contained at least some information previously reported. The initial source of this information is shown in Figure 3.⁷

Figure 3. How faculty became aware of information, prior to reading about it in the last article read ($n = 537$)



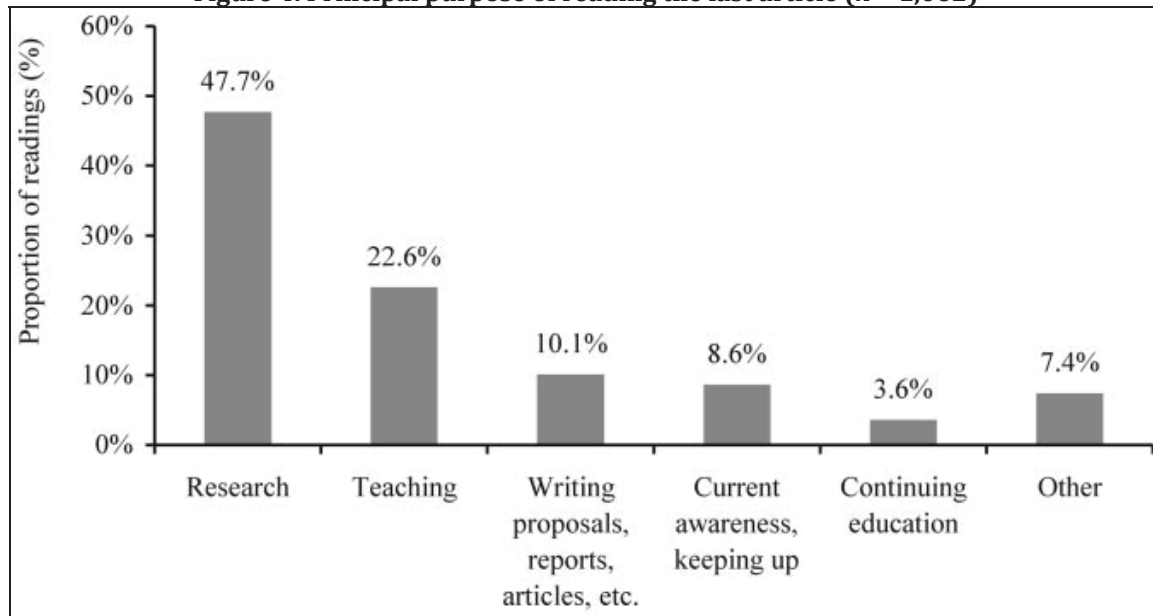
There are many possible reasons that an article is read even though some of the information is known. For example, the reader might have heard about it at a conference and then waited for it to be edited and sent by a publisher to be refereed. The article might have been cited in another article in which case only some information found in the current reading is revealed.

It is abundantly clear that information found in articles is important to faculty work, libraries are used most often as a source of articles, and information cited in journal articles frequently

lead to the entire information in articles being read. The importance of journal articles is well established.

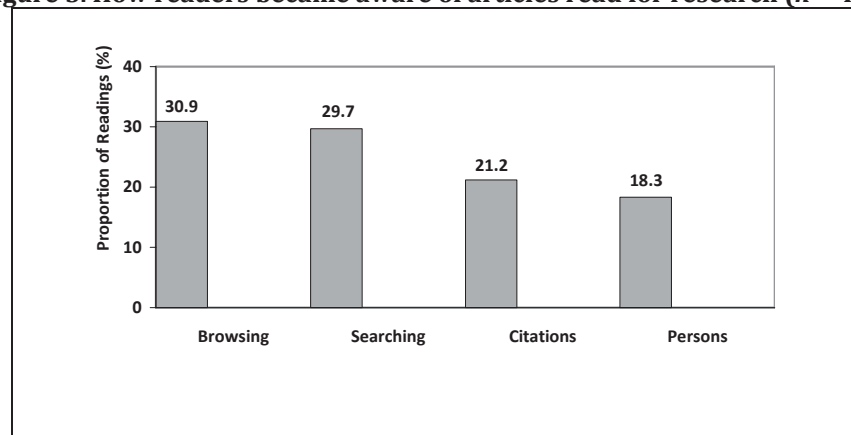
Purposes for Reading Journal Articles

Information in journal articles is read for many purposes. Survey respondents were asked: "For what principal purpose did you use, or plan to use, the information obtained from the last article you read? (Choose only the one best answer)." The results are shown in Figure 4.⁸

Figure 4. Principal purpose of reading the last article (n = 1,062)

Research is the purpose most often given by faculty. Faculty average 240 readings annually so that about 114 readings a year are addressed to research in their work. Below the information-seeking patterns used to obtain those 114 readings are described, as well as, how these patterns compare with other purposes for reading.

It is shown that the purposes for reading determine to a large degree how readers become aware of the articles and where they obtain them. A detailed example is given for articles that are read for research, identified from searching and obtained from libraries to show how the critical incident of the last reading can be applied. Figure 5 below shows how faculty became aware of the article information read for research.

Figure 5. How readers became aware of articles read for research (n = 482)

About an equal proportion of readings are found by browsing or searching and less from citations or another person.

The question was worded as follows: How did you become aware of this last article you read? Found while I (or someone on my behalf) was searching (i.e., by subject or author's name).

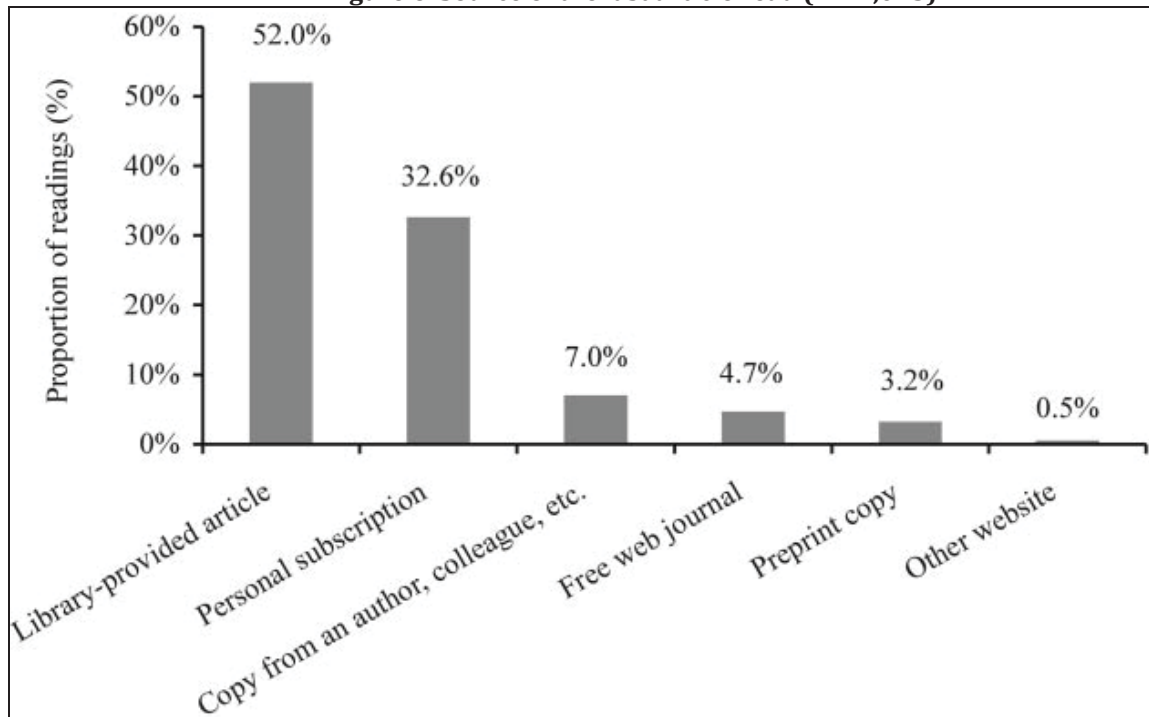
Options included web search engine; electronic indexing/abstracting service, print index or abstract, online journal collection, current awareness service, preprint/e-print service, etc. The estimated number of readings done for research and found by searching is about 34 of the total 240 readings. Browsing is used much more for teaching (44.1% vs. 30.9% of readings for research) and current awareness (64.7%). Articles found through citations are used much less for teaching (12.2% vs. 21.2% of readings for research) and current awareness (only 2.5% of these readings).

About 42.3% of readings for research and found by searching involves information discussed in the article that is previously known. This compares with 56.9% of readings done for other

purposes. Thus even when information is known it is necessary to search at some level for many articles read for research, but less than readings for other purposes (56.9% of these readings). Faculty were asked if they had previously read the article (i.e., is this a re-reading)? Answers did not vary much by purpose of reading and method of identifying the article. That is, about 17.0% of readings for research and found by search were re-readings compared with 19.6% of all other readings.

Across all readings (i.e., 240 annual readings per faculty), the faculty tend to obtain articles most frequently from library-provided articles (52.0% of readings) or personal subscriptions (32.6%) as shown in Figure 6 below.⁹

Figure 6. Source of the last article read (n = 1,075)

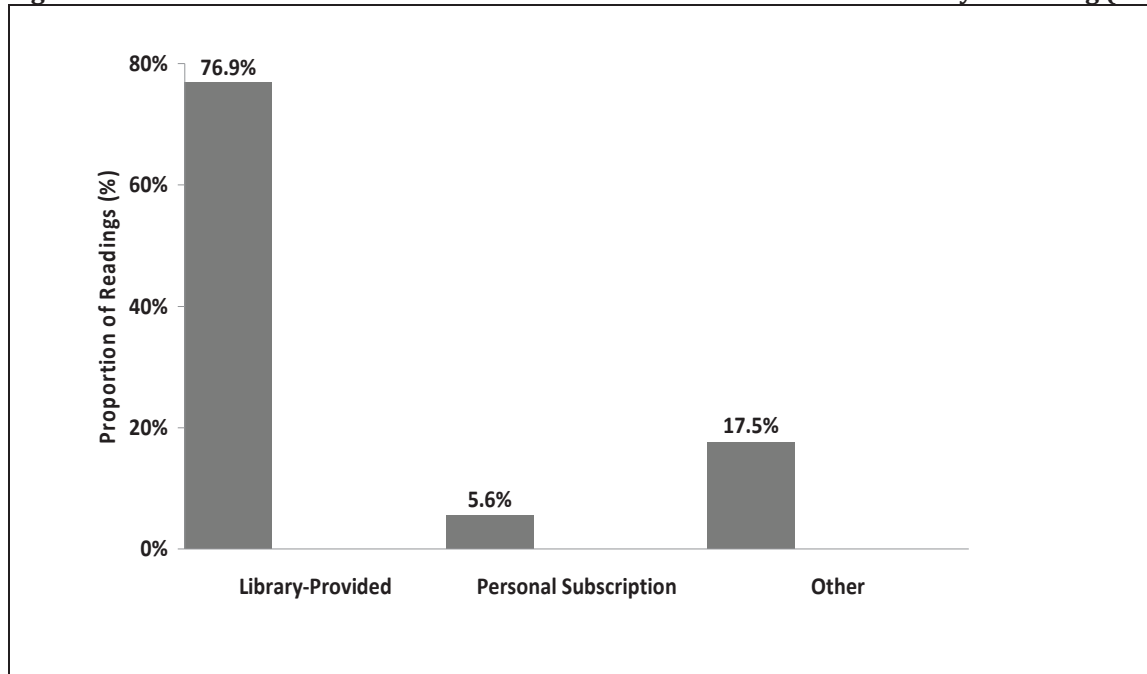


These article sources depend a great deal on the purpose of reading and how the articles were initially identified.

Nearly two-thirds of articles read for research are obtained from libraries (compared with 52.0% for all readings). The 114 readings done for research is often found by browsing (30.9% of these readings). However, they are also often identified through searching (26.7% of these readings),

citations (15.8%) and occasionally being told by another person (less than 17.6% since that person may do this by providing a copy of the article). In these instances and, sometimes when found by browsing, the readers must look for a place to obtain the articles.

Most of the 34 readings for research and found by search were obtained from a library-provided article source as shown below.¹⁰

Figure 7. Where readers obtain articles that are read for research and found by searching ($n = 143$)

About 26 of the 240 average readings per faculty are for research, identified by search and obtained from libraries.

These articles tend to be older and, therefore, are more difficult to obtain which is why libraries play an important role. In the next section, we show that article use aspects such as age and format are dependent on information-seeking patterns, particularly how identified and where obtained. Later it is shown that value of information read is also dependent on the purpose of reading, information-seeking patterns and aspects of use.

Aspects of the Use of Article Information

The average age of articles read is 4.1 years old with the distribution of age being highly skewed, much like a nuclear decay curve. About half of article readings are made in the first year following publication or posting, but 2.8% of the readings are over 25 years old and two readings observed in the surveys were published in 1943 and 1947. The age of articles read depends a great deal on how the articles were identified and where they were obtained. For example, the average age of the articles found by browsing is 1.8 years, but much higher for those found by searching (4.7 years), from citations (8.0 years) and those mentioned by another person (3.5

years). Citations appear to identify particularly old articles which includes 25.6% of readings from citations over ten years old.

Browsing is done from all article sources: that is, 51.7 of browsed articles are from personal subscriptions, 37.6% from library-provided articles, and 10.7% from other articles sources. The average age of readings from personal subscriptions is 1.9 years, which suggests that the age of browsed articles from other article sources must also be low since the overall average age from browsing is 1.8 years. On the other hand, articles identified by searching and from citations largely come from library-provided articles which have an average age of 4.8 years. The average age of articles identified by searching is 4.7 years and three-fourths of these are provided by libraries (only 7.8% from personal subscriptions and 17.2% from other article sources). Similarly, 61.9% of cited articles are obtained from libraries and average 4.1 years old. It seems clear that here is a strong age of reading relationship between the way read articles are identified and the article sources used to obtain them.

About 24 of the 240 average readings are for research purposes, identified by search and obtained from libraries. The age of these articles become even older at 6.2 years (compared with 4.0

years for the rest of the readings). The information from them is shown later to have greater value to the readers.

Another aspect of use of articles is the format of the articles when read, which is also somewhat dependent on information-seeking patterns. For example, across all readings about 54.4% are from electronic format with 62.5% of readings for research are from electronic journals. Only 12.6% of articles obtained from personal subscriptions are in electronic format while 71.2% of library-provided articles are electronic and 68.5% from other article sources are as well. It is clear that libraries are a major source of electronic journals and provide a substantial number of readings in this format (i.e., 82 of 240 average readings by faculty). Very few of the library-provided readings take place in the library (5.4% of readings) and most of these are from print versions (84.2%), largely from browsed journals in periodical rooms. Average age of print journals is 4.4 years and electronic journals 3.9 years, where most of the difference is in articles over ten years. About three-fourths of articles read for research, identified by search and obtained from libraries are electronic compared with 51.5% for all other readings.

The purpose of readings, information-seeking patterns, and aspects of use all have a bearing on the value of information read in articles. In turn, the value is the return component of Return-on-Investment of academic library journal collections.

The Value of Information Provided by Journal Articles

For this paper we differentiate value as:¹¹

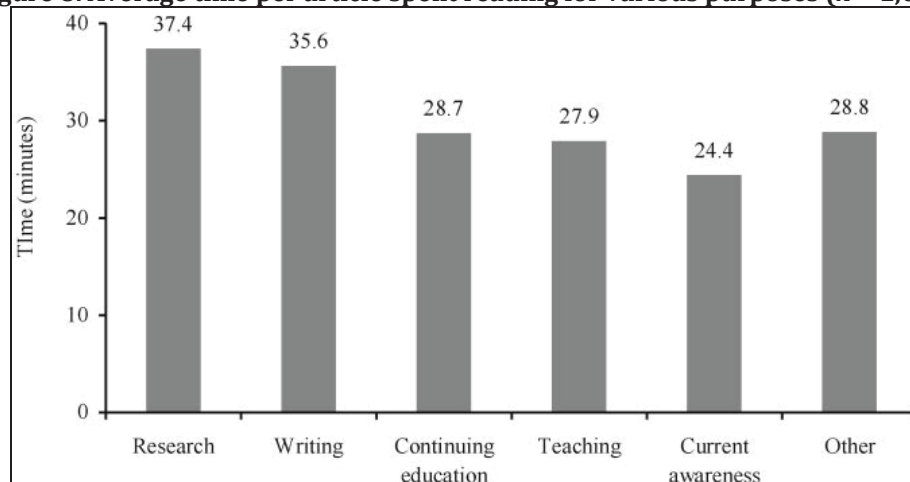
- **Purchase or exchange value:** What one is willing to pay in time and/or money for information found in journal articles.
- **Use value:** The favorable consequences derived from reading and using the information.

A paradox is that gems have high purchase value but low use value. On the other hand, air has low purchase value but high use value. The use value of information in articles generally is much higher than the purchase value.

The purchase value of journal information

Faculty pays for journal information through their time (and effort) in information-seeking and reading journal articles and the price paid for personal subscriptions. Faculty average spending about 150 hours per year in information-seeking and reading or an average of 37.5 minutes per reading (based on 240 readings per year). This sub-divides into 33.1 minutes reading and 4.4 minutes in information-seeking.

The reading time is a good indication of the value of articles since readers would not chose to use this valuable time if the information was not of equal or greater value to them. The reading time is related to purpose of reading, source of articles read, age of articles and format of articles as discussed below. For example, the average time spent reading for various purposes is shown in Figure 8 below.¹²

Figure 8. Average time per article spent reading for various purposes (n = 1,059)

The information used for research and writing has greater purchase value than that used for other purposes such as teaching and current awareness.

Considering source of articles, library-provided articles average 35.4 minutes per reading compared with personal subscriptions (27.9 minutes) and other sources (34.0 minutes) suggesting that library-provided articles have greater purchase value. Older articles tend to have greater purchase value (e.g., 30.1 minutes for articles one year old and 41.1 minutes for those over five years). Print and electronic versions of articles have about the same value (32.9 and 33.4 minutes respectively). Both personal subscriptions and library-provided articles gain value the older they are. That is, personal subscriptions go from 26.8 minutes for one year old articles to 38.5 minutes for those over five years and library-provided articles increase from 31.8 to 42.8 minutes. The time spent reading articles for research, found by searching and obtained from libraries is 39.1 minutes which suggests these articles have greater value.

Interestingly, the average time spent browsing per article read is greater than that spent searching (i.e., 6.9 vs. 5.3 minutes respectively). Generally, browsing from electronic sources takes less time than browsing from print versions (6.7 vs. 7.1 minutes respectively). This is affected by the fact that browsing electronic personal subscriptions takes more time than from print copies (7.6 vs. 6.8 minutes) and, on the other hand, browsing electronic library subscriptions is somewhat less (6.4 vs. 8.0 minutes).

Use value of information found in articles

In a sense the purposes of reading are an indication of the value of information in articles, but a better set of indicators is the outcome or consequences of reading the information. Survey respondents were asked: "In what ways did the reading of the article affect the principal purpose? (choose all that apply)" Examples of such outcomes are shown below for research articles identified by searching and obtained from libraries compared with other readings by the proportion of readings that achieved these outcomes.

Outcome	Purpose of Reading	
	Research Searching Library	Other Readings
Information inspired new thinking/ideas	59.3%	54.7%
Information improved the result of the purpose of reading	46.1%	40.0%
Information narrowed/broadened/change the focus of the purpose	38.9%	25.3%
Information saved time or other resources	12.0%	10.9%
Information resulted in faster completion	13.0%	6.8%
Information resulted in collaboration/joint research	9.3%	5.0%

It appears that the research, etc. articles yield greater value than the other readings in terms of outcomes. The faculty was also asked: "How important is the information contained in this article to achieving your principal purpose."¹³ Coded responses are that the information is not at all important, somewhat important and absolutely essential. Across all readings, 37.6% were said to be absolutely essential compared with 45.8% of the research, etc. readings found be absolutely essential, presenting further evidence of the value of the information obtained from these readings. Additional evidence is that information from more readings were said to be cited in a paper or report. When asked about citing the information from research, etc. readings 1.9% said no to citing, 25.2% said maybe, 21.5% said they already did, and 51.4% said they will in the future. About 50% of other readings were said not to involve citing.

In the past two years, faculty averaged being an author or co-author on 3.41 articles in refereed scholarly journals; 1.21 non-refereed articles; 1.07 chapters in books, proceedings, etc.; and 0.11 books. Only 14.3% of faculty had not authored any publication. Most faculty (74.4%) had authored at least one article. Other indicators of value of article information include productivity of readers given by authorship. It is observed that those who read more are more likely to publish. For example, those who published a refereed article in the past two years read an average of 28.2 articles in the past month compared with 22.7 readings for those who did not publish.

Contingent valuation is an economic method used to assess the benefits of non-priced goods and services by examining the implications of not having that product or service. An indicator of the value of the library journal collection is to estimate what it would cost readers in time and/or money to obtain the information read from the collection if those were no collection. This is found by asking the following set of questions:

"Thinking back to the source of the [last read] article, where would you obtain the information if that source were not available?"

Here the analysis was performed only on readings from library-provided articles.

"(a) I would not bother getting the information.

(b) I would obtain the information from another source. If (b) is checked:

In order to obtain the same information, if this source were not available, I would expect to spend _____ minutes of time and/or \$ _____. (If the answer is zero, answer "0" instead of leaving blank)"

Results are given below from a survey conducted at the University of Pittsburgh where there was an average of 125 readings from library-provided articles.¹⁴ The faculty indicated they would look for alternative sources of information for 99 of these readings. They average 3.0 hours per year searching, 3.4 hours browsing and 6.4 hours in obtaining useful citations, and articles from elsewhere, as well as, photocopying, downloading and printing articles. That is, about 12.8 hours are taken to search, browse and identify articles from citations, other persons, etc. At about an average \$55 per hour in salaries, benefits, etc. the current cost to faculty is \$704. In addition it costs the library and other facilities about \$65 per faculty in photocopying and downloading and printing for a total of \$769 per faculty member.

The cost of obtaining alternative sources of the information is 59 hours in time (\$3,245) and \$990 for subscriptions, travel, communications, etc. Therefore, the additional cost to readers is 46.2 hours of time (i.e., 59-12.8 hours) or \$2,541 and \$925 in other costs (i.e., \$990-\$65) or a total of \$3,466 per faculty member.

A similar analysis is done on readings done for research, found by searching and obtained through the library collection. Here there are about 26 readings in which faculty seek alternative sources and spend 2.3 hours searching about 1.5 hours downloading and printing and/or photocopying at \$60. The time spent going to alternative sources is 14.8 hours and \$538 in other costs. The net cost of the alternatives is 11.0 hours (i.e., 14.8-3.8 hours) at \$605 and \$478 in other costs (\$538-\$60) or a total of \$1,083 per faculty.

Therefore, one indicator of the value of the library collection is that it saves faculty an average about \$3,466 annually. When reading is done for research, found by searching and obtained from the library collection the savings is about \$1,083. These values can be considered a return dollar component of the return-on-investment in the library collection along with other “value” components mentioned earlier.

Return-on-Investment in Academic Library Journal Collections

The university investment in the library journal collection includes the library cost (allocated to an appropriate amount of reading) and the cost to readers in their salaries, benefits, etc. and other costs. For readings obtained from the library collection the cost is about \$283 per faculty member and the cost attributed to readers is \$769 or \$1,052 total investment by the university in that portion of the library collection. Therefore the return-on-investment is $\$3,466 \div \$1,052$ or 3.3 to one.

The library cost to serve reading done for research and found by searching is \$75 per faculty member. This added to the cost to users of \$228 results in an investment of \$303. Therefore, the return-on-investment is $\$1,083 \div \$303 = 3.6$ to one.

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Serving Multiple Stakeholders: Crafting a “Blended” Scorecard at the University of Minnesota Health Sciences Libraries

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Abstract

Purpose

Since its introduction in the early 1990s, the Balanced Scorecard has been widely used in the corporate world as a means of assessing overall organizational health. In recent years, the Balanced Scorecard has been successfully adopted by non-profits, including large academic and public library systems. Health sciences and other special libraries also stand to benefit from the use of a Balanced Scorecard. However, they often work under complex organizational structures that involve administrative-level reporting to multiple and diverse stakeholders. As such, the standard four perspectives of the Balanced Scorecard may not serve to adequately tell the library’s story. The Health Sciences Libraries (HSL) at the University of Minnesota has been working to develop and implement a “blended” scorecard that will provide meaningful measures of success for its multiple stakeholders.

Design/Methodology/Approach

In 2006, the HSL formed a Metrics that Matter team that was charged to develop new ways of measuring library activities to express outcomes and impacts in ways meaningful to its funders and constituents. The team’s final report recommended that the HSL use a modified form of the Balanced Scorecard based on Cogdill, et. al.’s *The Value of Library and Information Services in Hospitals and Academic Health Sciences Centers* report to the Medical Library Association. In 2009, the HSL developed a blended scorecard that customized the standard four balanced scorecard perspectives by incorporating language from the strategic goals of the University Libraries and the Academic Health Center, its two major stakeholders.

Findings

The HSL is in the early adoption phase of using their blended scorecard approach to measuring

overall organizational health. In January 2009, the language of the blended scorecard was developed, approved by HSL managers, and presented to library personnel. Additional work was done to incorporate annual goals and strategic planning into the matrix and identify relevant measures and targets for each perspective. Pilot testing of the blended scorecard will be continued with the HSL 2010-2011 goal setting. The authors will present the lessons learned through this experience by outlining the steps taken to 1) develop a blended scorecard, 2) seek staff buy-in and organizational support, 3) implement pilot testing, and 4) adjust the blended scorecard based on findings.

Practical Implications/Value

The HSL plans to use the blended scorecard to discover the extent to which its organizational goals have been met. Results will be used internally to set future goals and initiatives and externally to communicate successes and areas for improvement to its primary stakeholders. When used annually, the HSL hopes to have a set of comparison metrics that can be analyzed to determine success over time.

Introduction

The concept of a Balanced Scorecard (BSC) was first introduced in a 1992 Harvard Business Review article by Kaplan and Norton.¹ In this article, the authors noted that managers typically rely on financial and operational measures to assess organizational performance. They also noted that managers often struggle with information overload when trying to decide which measures are critical to organizational success. In response, they crafted the BSC to serve as an evaluation tool that would provide a quick and balanced overview of an organization based on four perspectives: customer, internal, innovation and learning, and financial. For each of

these perspectives, a handful of goals and related measures are identified and tracked over time. The result is a simple dashboard representing the overall health of an organization. This information can be used to direct strategic planning initiatives and communicate with stakeholders.

Since its introduction, the BSC has been used widely by for-profit and not-for-profit organizations. It has also seen success within academic and public library systems.² The direct application of the BSC has not yet been tested within health sciences libraries. This may be due to the fact that the BSC, as proposed by Kaplan and Norton, does not account for the complex reporting structures often found within this library environment, nor does it speak the language of the libraries' personnel and primary stakeholders.³ However, the value of having a small set of carefully selected measures that provide a quick, but comprehensive picture of organizational performance holds true within academic health sciences libraries. This presents the challenge of developing and implementing a "blended" scorecard that provides meaningful measures to support organizational improvement while resonating with key individuals in order to tell the library's story.

Background

The Health Sciences Libraries (HSL) at the University of Minnesota serves the six health-related colleges and schools that form the Academic Health Center (AHC). These are the Medical School, the Schools of Nursing, Public Health, and Dentistry, the Colleges of Pharmacy, and Veterinary Medicine and the various research centers associated with these schools. The HSL consists of the Bio-Medical Library, the Veterinary Medical Library and the Wangensteen Historical Library of Biology and Medicine. The HSL director reports to the University Librarian, but also has a faculty appointment and position funding from within the AHC. The patrons that the HSL serves consist largely of graduate level healthcare students, medical residents and fellows, researchers, and the clinical/teaching faculty.

Health sciences libraries have long struggled with devising measures that would prove their value to their parent organizations.⁴ Methods that

demonstrate how health sciences libraries affect healthcare outcomes and the organization's bottom line became particularly crucial when the Health Care Financing Administration (HCFA) eliminated the requirement for a hospital-based library in order for health-care institutions to receive Medicare/Medicaid reimbursement in 1986. The Joint Commission on the Accreditation of Health Care Organizations (JCAHO) soon followed by lessening their access to knowledge-based information requirements in the 1994 edition of the JCAHO accreditation manual.

The Medical Library Association, a long-time champion of library value, embarked on two assessment initiatives in 2002 to help member libraries demonstrate their value to their parent organizations. Health sciences libraries benefited from these studies through the creation of the Health Statistics and Benchmarking Survey for hospital libraries (data collected from hospital libraries 2002-2007, available to participating members) and the study by Keith Cogdill, Eileen Abels and Lisl Zach entitled "The Value of Library and Information Services in Hospitals and Academic Health Sciences Centers."⁵ More recently, cost benefit, return on investment (ROI), and value calculators have been developed or adapted for health sciences libraries to provide administrators with measures such as how the library contributes to the bottom line or how the parent organization benefits for every dollar budgeted for the library (<http://nnlm.gov/mcr/evaluation/calculator.html> and <http://nnlm.gov/mcr/evaluation/roi.html>).

For decades, the HSL has collected library input/output statistics, such as reference transactions and gate counts, to meet the reporting requirements of the Association of Research Libraries (ARL) and the Association of Academic Health Sciences Libraries (AAHSL). The data reporting requirements of the ARL and AAHSL combined with the unique information needs of the HSL, demand time and resources. In any given year, HSL staff members collect information on 222 data points to meet reporting requirements. Of these, 56 data points (25%) must be collected manually and 49 (22%) must be collected on a monthly basis. While some of these measures do give an indication of the overall health of the organization, only 129 (58%) are used for internal management decisions. The

remaining 93 (42%) do not impact decision-making within the library. Additionally, the data collected for reporting purposes are developed for use by the library community and do not necessarily translate in a meaningful way to non-library stakeholders such as the AHC. As a result, the HSL must contribute a high level of investment for an arguably small return.

In 2003, the HSL participated in the LibQUAL+® survey for the first time with funding received as an AAHSL member library. LibQUAL+® provided the first analysis of the library that went beyond the basic input/output data that was historically collected by the HSL, and the results were eye-opening. The survey's findings related to user perception of library services were particularly revealing and led to enhancements in resource availability and physical space. Another direct outcome of the HSL's LibQUAL+® participation was the development of a new goal—to collect, analyze, and present “metrics that matter.” The anticipated outcome of this goal was to be able to tell the library's story in a way that is meaningful to the AHC, the HSL's major non-library stakeholder.

The HSL's metrics that matter goal became more urgent due to a series of transforming events within the state and the University. In August 2005, the Minnesota Office of Higher Education provided initial funding for the development of a statewide accountability program for higher education, whose goal was “. . . to recommend state goals and corresponding indicators for a statewide performance accountability system for Minnesota's higher education sector.”⁶ During the same time frame, in June 2005, the University of Minnesota Board of Regents approved the strategic positioning plan, *Advancing the Public Good: A Plan for Ensuring the University of Minnesota's Leadership in Education, Research and Public Service in the 21st Century* (informally referred to as *Transforming the U*).⁷ This plan had the stated goal for the University to become “one of the top three public research universities in the world.” Thirty-four task forces were formed to develop strategies for meeting and implementing the strategic plan. The Metrics and Measurements Task Force was charged with identifying the metrics, measurements, and monitoring processes to assess the progress of the strategic positioning effort as well as appropriate metrics for

recommendations of the other task forces. Task force members also participated in the crafting of the statewide accountability program as the University's representatives. In the proposed University-wide performance measures recommended in the Task Force's final report, library quality was listed as an action strategy as part of University resources and infrastructure.⁸

With this increased emphasis on metrics and measures, the University changed its budget model for fiscal year 2006/2007. Previously, libraries were funded as part of the University's common good. In the new budget model, libraries were no longer considered a common good, but were instead considered part of a cost allocation pool for which each college was assessed based on a complicated set of weighted student and faculty head-counts. This new budget model raised the following question for the colleges: What are they getting for their academic dollars and how are the libraries proving their value or worth, especially during economic turn-downs and budgetary scarcity? The AHC is notably vulnerable to this type of budget model, as it contains the highest number of faculty/researchers and graduate level students, who are weighed heavier than undergraduates. As a result, it was even more important for the HSL to tell its story in a compelling way in order to prove its value to the AHC as a primary stakeholder. This led to the 2006 formation of the HSL's Metrics that Matter Team that was charged with finding ways to measure activities that express outcomes and impacts in that are meaningful to its funders and constituents.

Methodology

To address its charge, the Metrics That Matter Team conducted a preliminary literature review, as well as a survey of the HSL staff to determine the breadth and scope of currently collected data points. The team also brainstormed about what was needed to know about each of the data points, such as the type of data, where it was reported, and how the data was used. A keyword glossary was developed to organize the survey responses and facilitate data manipulation and analysis.

The concept of the BSC was identified and considered at this time. The team looked at the University of Virginia Library's use of the BSC,

but concern arose that the typical perspectives and measures of the BSC would not be valuable in telling HSL's story. Measures such as staff retention and expenditures are useful within the University Libraries, but do not resonate within the AHC environment. This led to a team goal of identifying the types of measure or metrics would effectively communicate how the HSL enhances, strengthens, augments, or affects the outcomes that are of most concern to the AHC.

A second, more focused literature review was conducted in late fall 2006. This included an in-depth analysis of AHC Task Force reports related to Clinical Sciences Enterprise (clinical care delivery, education and research),⁹ Knowledge Management Technology (use of electronic technology in education and health service delivery),¹⁰ and Health Professional Workforce (health care and health professional education),¹¹ along with the *Advancing the Public Good: Transforming the U* final report.¹² These reports were mined for any recommendations of measures and metrics that could be tied to HSL services and resources. A preliminary Metrics That Matter report was submitted to the HSL director in March 2007, with a final report submitted in June of that year. The final report contained four major recommendations, of which the first read:

Recommend that the HSL use a modified form of the Balance Scorecard, as outlined by Cogdill, Abels and Zach in the MLA 2002 report *The Value of Library and Information Services in Hospitals and Academic Health Sciences Centers* for the development of the various metrics/measures to promote the value/contributions of the HSL to the Academic Health Center.

The Cogdill study specifically addressed two questions: (1) What is the value of using library

and information services to the hospital or academic health sciences center? and (2) What do institutional administrators consider to be valid measures of the contributions of library and information services? The report outlined a process that would help meld together the goals of the AHC with the contributions of the HSL. The result would be a modified BSC that would incorporate relevant measures to promote the value of the HSL to the AHC. At the center of the report is the development of taxonomy or a "poly-hierarchical classification" that converts the perspectives of the standard BSC into the following five organizational mission concepts for the health sciences: clinical care, management of operations, education, research and innovation, and service.

Using the suggested taxonomy as a framework, the HSL's management team began implementing the recommendation of the Metrics that Matter Team by drafting a BSC that blended the language of the AHC with the measurable work conducted by the HSL. The management team found that the taxonomy presented in the Cogdill study closely matched the specific language used within the HSL and the AHC. To increase the alignment with the AHC, it was decided that the AHC priorities of education, research, clinical care, and service would be used to develop relevant BSC perspectives. These priorities were merged with the standard BSC perspectives to develop the four perspectives of the HSL's "blended" BSC. These include 1) education and learning, 2) research and clinical care, 3) service and outreach, and 4) internal businesses process, learning and growth (Figure 1). This blended BSC framework was formally presented by the HSL director to both the AHC leadership and HSL staff in order to establish their initial support and buy-in. Feedback by way of comments and suggestions was welcomed at this time.

Figure 1: Four perspectives of the HSL's Blended BSC



With the perspectives in place, the seven-step approach outlined in the Abels'et. al.¹³ follow-up to the Cogdill study was initiated in order to create a BSC that reflected the HSL environment. The seven steps include:

1. Select appropriate organizational goals.
2. Link library and information services (LIS) contributions to organizational goals.
3. Obtain data on the correspondence between LIS contributions and LIS services.
4. Select measures for services.
5. Collect and analyze data for selected measures.
6. Plan and sustain communication with administrators.
7. Evaluate findings and revise selected goals, contributions, and services as necessary.

Using this methodology, the HSL organizational goals that were developed through the annual goals setting process were distributed into the four blended BSC perspectives, accounting for steps 1-3 above. While the Abels article suggests selecting a small number of high-level goals during this process, the HSL attempted to

distribute all of its annual goals within the blended BSC framework. Once completed, the HSL's management team began the process of selecting a small set of measures for each of the perspectives. To begin this process, the list of existing HSL data collection points created by the Metrics that Matter Team was reviewed. This was done in order to leverage time and other resources by using metrics that were already collected as part of the HSL's existing data collection processes. This work resulted in a list of potential objectives and related measures for each of the blended BSC perspectives. The list was intended to serve as a reference to assist in the selection of a smaller set of relevant measures for final inclusion in the blended BSC.

As the list of possible objectives and measures was being created, an example blended BSC perspective was also developed to serve as a model for use by the HSL's management team. An early draft of the model can be seen in Figure 2, below. Figure 2 shows a mock-up of a hypothetical HSL Financial perspective which was later changed to the Internal Business Processes, Learning and Growth perspective to match the blended BSC framework. This example perspective was organized in table format. It

included the primary perspective along with related objectives. Additional columns were added to the table to hold content related to linkages to HSL, AHC and University Library (UL) goals, as well as associated activities, measures, targets, and outcomes for each objective. The result was one cohesive, though admittedly unwieldy, document.

The development of the blended BSC perspectives and the identification of potential measures continued until late 2009. At this point, the HSL's BSC-related work began to overlap with the goal setting activities for 2010. As a result, no final measures were selected and the development of the HSL's blended BSC was placed on hold until the 2010 goals were complete.

Figure 2: Example BSC Perspective

Financial Perspective How well are the library's finances managed to achieve our mission? To succeed financially, how should we appear to our stakeholders?				
Objectives	Linkages	Activities	Measures	Outcomes
Increase Internal and External Library Funding	HSL 4 UL 7 AHC 2	F (1a): Develop and implement an external funding plan: a. Develop a framework that supports grantmanship b. Develop a plan that supports fund-raising	Percentage of external funding as portion of total HSL budget T 1: External funding represents 3% of HSL budget T 2: External funding represents 1% of annual budget	2
			Percentage of monetary donations/endowments as portion of total HSL budget T 1: Monetary donations and endowments account for 3% of HSL budget T 2: Monetary donations and endowments account for 1% of HSL budgets	1
		F (1b): Enhance existing internal funding sources (Corporate Services (InfoNow)) a. Develop a marketing plan to engage new and returning customers	Annual increase of development receipts that are unrestricted or minimally restricted T 1: Unrestricted or minimally restricted receipts increase by 10% annually T 2: Unrestricted or minimally restricted receipts increase by 5% annually	1
			Percent annual increase in InfoNOW revenue T 1: InfoNOW achieves a 4% annual increase in revenue T 2: InfoNOW achieves a 2% increase in revenue	2
Provide resources and services that have a high value to cost ratio	HSL 4 UL 7 AHC 7	F (2a): Adjust collection policies to highlight high use items F (2b): Identify process improvements to maintain or decrease cost of Interlibrary loan	Percent annual increase in new and returning InfoNOW customers T 1: New and returning customers will increase by 5% annually T 2: New and returning customers will increase by 3% annually	X
			Unit cost of electronic serials T 1: No annual increase in cost/use T 2: Less than 5% increase in cost/use	1
Maintain sufficient levels of investment to remain a top-flight academic health sciences library	HSL 4 UL 7 AHC 2	F (3a): Prepare annual budget requests to align with requirements for maintaining national rankings a. Identify key metrics that influence AAHSL rankings	Unit cost of Interlibrary Loan transactions T 1: Annual percent change in unit cost will be equal to or less than the annual percent change in overall library operating expenditures T 2: Annual percent change in unit cost will be within 5% of the annual percent change in overall library operating expenditures	2
			Library expenditures as a portion of UL expenditures. T 1: HSL budget will account for at least 5% of UL's expenditures T 2: HSL budget will account for at least 3% of UL's expenditures	1
			AAHSL Rankings T 1: HSL will rank in the top 5 libraries included in the AAHSL index T 2: HSL will rank in the top 10 libraries included in the AAHSL index	2

Findings

The final recommendations of the Metrics that Matter team has helped the HSL better tell its story to its primary stakeholders. The work to implement the blended BSC as part of the recommended actions is slow, but constant. The HSL leadership supports the blended BSC in concept and its implementation continues to be represented in the HSL annual goals. After the initial presentation and subsequent approval of the blended BSC framework by HSL staff and stakeholders in 2009, no measures or targets were identified for the four perspectives of the blended BSC. As a result, the value of having a small set of carefully selected measures that provide a quick, but comprehensive picture of organizational performance was lost, as was the benefit of directing strategic planning initiatives and supporting communication with stakeholders. This finding suggests that 1) the blended BSC framework as initially presented was overly complex (Figure 2) and 2) selecting the "right" data points that are both meaningful and measurable is difficult and takes time.

With this in mind, a scaled-down version of the blended BSC has been recommended for piloting in fiscal year 2010/2011. This model breaks the blended BSC from the HSL's annual goal development, which has proven to be too granular for application to the blended BSC framework. This greatly simplifies the process by allowing for the selection of a small set of high-level measures and targets. These measures and targets will not have to align perfectly with annual goals, but will still serve to tell the HSL's story. This simplified framework also allows for the creation of a more static document as the measures will not have to change from year to year with changing goals. In addition, this approach provides continuity of measures over time to capture both baseline and comparison data. As a result, the HSL's strengths and areas for improvement will be clearer and easier to communicate as part of the libraries' story.

Conclusion

The development of a meaningful and systematic approach to measuring organizational success is difficult in any context. This is particularly true within Health Sciences Libraries and other libraries that must be accountable to multiple stakeholders. For the HSL, there is a new urgency

to articulate value in response to the University's cost allocation approach to funding the library's budget. The blended BSC shows promise in meeting this need, though it is still in the early stages of development and implementation. There have been some challenges and many lessons learned through this process, but it is still believed that the anticipated result from this effort is worth the initial investment. The HSL will continue working to develop a blended BSC framework that is both useful and usable. It is anticipated that once a framework is in place, the HSL will be able to use the blended BSC to determine the extent to which the selected high-level objectives have been met. The results will be used internally to set future goals, and externally to communicate successes and areas for improvement. When used annually, baseline and comparison statistics can be collected to see the HSL's success over time.

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Building Scorecards in Academic Research Libraries: Organizational Issues and Measuring Performance

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*A strategy without measures is just a wish and measures
that are not aligned with strategy are a waste of time¹*

Abstract

The Balanced Scorecard is a widely accepted organizational performance model that ties strategy to performance in four critical areas: finance, learning and growth, customers, and internal processes. While originally designed for the for-profit sector, the Scorecard has been adopted by non-profit and government organizations, including some libraries. This paper focuses on the experiences of four prominent North American research libraries (Johns Hopkins University, McMaster University, the University of Virginia and the University of Washington) as they developed and implemented scorecards as part of a one-year initiative facilitated by the Association of Research Libraries (ARL).

The paper is divided into four major sections: an introduction to the Balanced Scorecard and its key components; an overview of the ARL initiative and the process used to develop scorecards at each library; an exploration of the concept of a standardized suite of measures for ARL libraries based on a commonality of key objectives; and a review of organizational challenges faced by the pilot sites during their implementations.

Introduction

The Balanced Scorecard is a widely accepted organizational performance model that ties strategy to performance in four critical areas: finance, learning and growth, customers, and internal processes. While originally designed for the for-profit sector, the Scorecard has been adopted by non-profit and government organizations, including some libraries. This paper focuses on the experiences of four prominent North American research libraries (Johns Hopkins University, McMaster University, the University of Virginia and the University of Washington) as they developed and implemented scorecards as part of a one-year initiative facilitated by the Association of Research Libraries (ARL).

The paper is divided into four major sections: an introduction to the Balanced Scorecard and its key components; an overview of the ARL initiative and the process used to develop scorecards at each library; an exploration of the concept of a standardized suite of measures for ARL libraries based on a commonality of key objectives; and a review of organizational challenges faced by the pilot sites during their implementations. The authors hope that the lessons learned and

strategies employed at their institutions will assist other academic libraries choosing to implement the Balanced Scorecard.

Part 1: What Is The Balanced Scorecard?

The Balanced Scorecard was developed by Harvard Business School professors Robert S. Kaplan and David P. Norton in the early 1990's as a reaction to the industrial age emphasis on financial measures as the sole indicator of success. In their groundbreaking book, *The Balanced Scorecard: Translating Strategy into Action*, Kaplan and Norton argue that the economic realities of the information age require a more well-rounded set of measures to evaluate and drive an organization's performance:

"The Balanced Scorecard is a new framework for integrating measures derived from strategy. While retaining financial measures of past performance, the Balanced Scorecard introduces the drivers of future financial performance. The drivers, encompassing customer, internal business process, and learning and growth perspectives, are derived from an explicit and rigorous translation of the organization's strategy into tangible objectives and measures."²

The Balanced Scorecard model is premised on strong and very direct linkages between key planning elements. Each measure is directly aligned to one or more strategic objectives. Success in meeting targets is a clear indication that the organization is moving its mission forward. Linkages between measures (both within and across the four perspectives) help ensure that the organization maintains a truly "balanced" approach. In the same way, strategic initiatives are directly linked to the measures: only projects that improve an organization's success in meeting its targets are eligible for linkage to the scorecard.

Who uses the Balanced Scorecard?

While originally designed for the commercial sector, non-profit organizations have also been attracted to the model. Kaplan and Norton note that, "while the initial focus and application of the Balanced Scorecard has been in the for-profit (private) sector, the opportunity for the scorecard to improve the management of governmental and not-for-profit enterprises is, if anything, even greater."³ The Balanced Scorecard was first

recommended for adoption by US federal government procurement agencies during the Clinton administration.⁴ The City of Charlotte, North Carolina and the United Way of Southeastern New England were also early adopters.⁵

As the concept has matured, the pool of non-profit organizations exploring the use of the Balanced Scorecard has grown along with specialized expertise in the use of the model in specific settings. Ascendant Strategy Management Group, the consulting firm used for the pilot, has helped government and non-profit organizations like the US Federal Bureau of Investigation, the US Securities and Exchange Commission, the Atlanta Public Schools and the Catholic Charities Archdiocese of Boston apply the Scoreboard to achieve change. Many of these organizations have had to quickly adapt to game-changing events such as September 11 or the recent mortgage meltdown, and have turned to the Balanced Scorecard to promote successful organizational change.

Although the total number of libraries adopting the Balanced Scorecard is unknown, it is likely still only a few handfuls worldwide. In *Scorecards for Results: A Guide For Developing a Library Balanced Scorecard*,⁶ examples of libraries with experience using the Balanced Scorecard include the Singapore Public Library and the University of Virginia (UVA) Library. Aside from UVA, which developed their scorecard in 2001,⁷ only a small number of academic libraries are known to have adopted this approach.

Libraries, Measures, and the Balanced Scorecard

While relatively few libraries have adopted the Balanced Scorecard, libraries have a long tradition of collecting statistical and other measures related to library performance. For the most part, libraries collect *input measures*, the amounts of resources invested or put into the development and delivery of collections and services. Input measures traditionally deal with such categories as collections, facilities, staffing, budget and, more recently, technology. They count things such as the number of volumes, user seats, librarians, dollars, or computers. They form the basis of many of the regional or national statistical surveys where comparisons between libraries can

be made. For example, the Association of Research Libraries Membership Index tracked the variables of number of volumes held, the number of volumes added during the year, number of current serials received, total operating expenditures, and total number of professional and support staff.

While input measures track the investment in library collections and services over time, they do not indicate if these resources and services are actually being used or how effective they were in meeting user needs. The use factor can be handled with *output measures* that count uses or transactions associated with library activities. These might include number of items loaned, number of reference transactions, instruction sessions, gate counts, computer log-ins, and Web site visits. Output measures are often used as surrogates for library effectiveness—i.e., an effective library is one that is heavily used. While these metrics do incorporate the user, they do not actually measure the impact of that specific service or resources had on that user. They also are not necessarily tied to any strategy or set of objectives.

Process measures, also used extensively in libraries, measure the activities related to turning inputs into outputs. Sometimes they are called efficiency measures as they calculate the amount of time per activity or the cost of that activity. For example, the average length of time to catalog a book or the cost of staffing a service point. Process measures can also have a customer component such as the average time it takes to order a book or answer a question.

Finally, *outcome measures* represent the effect or impact of a particular service or resource on the customer or what that service or resource enables the customer to do. Successful outcome measures are usually linked to objectives and goals, which may not be solely library ones. For example, if there is a learning objective for students to cite information correctly in their term papers, an outcome measure might be that 95% of citations are accurate. Dugan et al. note that another goal of performance measurement is, “How well does the library serve the institutional mission and serve as an effective partner or collaborator?”

Brophy considers measuring library performance

to have two basic goals: “How good is this library? How much good does this library do?”⁸ That said, performance measures in themselves are not sufficient to achieve these goals if they are not tied directly to overall organizational strategy and objectives. While an increasing number of libraries are developing and using measures that tie directly to achievement of strategic objectives, they are usually applied to specific areas and neither balanced nor integrated. The Balanced Scorecard provides an opportunity, not only to integrate these library performance measures within a more structured planning process, but one that also connects to synergistic organizational performance.

At the international level, the potential impact of the Balanced Scorecard as an organizational performance model for libraries can be seen in Poll’s and Boekhorst’s second revised edition of *Measuring Quality: Performance Measurement in Libraries*.⁹ The authors’ selection of forty indicators is based on four criteria, one of which is: “To cover the different aspects of the service quality as described in the Balanced Scorecard, including indicators for the aspect of development and potentials.”¹⁰ Poll and Boekhorst use the term “indicators” rather than performance measures and, citing ISO 11620, note that good indicators are informative, reliable, valid, appropriate, practical, and comparable.

Part 2: The ARL Initiative

The Association of Research Libraries (ARL) advances the interests of 124 of the largest, most prominent research libraries in the United States and Canada. The association has established a strong and multifaceted assessment program to enhance understanding of current and future trends in academic libraries and to assist member institutions in meeting their strategic objectives. The Association places a strong focus on evidence-based decision making, and creating a culture of assessment. The Association has facilitated the introduction and use of many tools for building this capacity, including LibQUAL+® and MINES for Libraries®.

With the difficult economic climate and increased requirements for accountability throughout the higher education sector, the need to enhance member libraries’ capacity for driving change has become even more crucial. ARL decided to

explore the Balanced Scorecard as a key tool for measuring performance and leading change within member institutions. ARL intended to accomplish two tasks: “to assist, train and facilitate the use of the Scorecard in a small number of ARL libraries; and to test the value of a collaborative model for learning about and implementing the new tool.”¹¹

In late 2008, ARL put out a call to its members for expressions of interest in participating in a one-year exploration of the Balanced Scorecard. The initiative was described as “an investment in helping libraries make a stronger case for the value they deliver by developing metrics that are tied to strategy.”¹²

The initial November 2008 meeting ultimately produced four universities keen to participate: Johns Hopkins University, McMaster University, the University of Virginia and the University of Washington. The four institutions brought a wide spectrum of experiences to the table. The University of Virginia Library had used the Balanced Scorecard for a number of years, but was interested in refreshing their implementation and providing assistance to the new sites. The University of Washington had a strong assessment program, but no experience with the Scorecard. Johns Hopkins and McMaster had developing assessment programs and no past experience with the Scorecard.

Each university sent a small group of librarians to develop their Scorecard initiatives, and identified a lead member. The four teams met with the consultant and ARL lead twice for face-to-face training in using Scorecard. Participants came together during monthly phone calls to review progress and discuss next steps. Additional face-to-face meetings were held throughout the year in conjunction with major library conferences.

Overview of the Balanced Scorecard Process

As with many other prominent performance management models, the Balanced Scorecard process appears relatively straightforward. Participants are directed to:

1. Identify the organization’s strategic objectives. Categorize these objectives into four perspectives (financial, customer, internal process, learning and growth);

2. Render these objectives to a “strategy map,” a one-page representation of the organization’s strategic objectives;
3. Construct metric(s) to measure progress on each objective;
4. Set ambitious but reachable targets for each metric;
5. Identify strategic initiatives to improve the chance of meeting targets;
6. Communicate scorecard results regularly – both to staff and stakeholders;
7. Review and adjust the full complement of objectives, measures, targets and initiatives on a regular basis.

Easily stated but, as each library discovered, the Balanced Scorecard is not a simple or quick undertaking. The process demands a significant investment of time and intellectual labor. To be successful, the model also requires strong commitment from executive leadership and mid-level managers to champion the process to staff, customers and other stakeholders. And the impact on the organization can be equally significant. The Scorecard forces an organization to have new, sometimes challenging, conversations and to analyze aspects of its current and future state that may have otherwise gone unexamined.

Ultimately, the Scorecard may substantially shift an organization’s strategic direction or dramatically change how its human capital and other resources are allocated. The Scorecard is, by its very nature, a change driver. And the change is relentless. The model commits the organization to continuous and regular reflection and to communicate the results of those reflections with a new level of discipline and precision.

Getting Started—Defining a Purpose Statement

Once committed to the process, the four libraries began immersing their teams in the language and key concepts associated with the Balanced Scorecard. ARL brought the participants together and facilitated the conversations. The consultant provided the training, homework, and content for learning the process.

The planning teams began by creating “purpose statements.” A purpose statement defines the extent of an organization’s business in one single statement. It articulates why an organization exists, the scope of its work, and the advantage it

brings. The statement differentiates one organization from its comparators and helps to put a fence around the more lofty and grander vision and mission statements. These purpose statements were not created for public consumption but, for some sites, proved to be useful internal tools when working on strategy.

Identifying Strategic Objectives

Prior to entering the Pilot, all four libraries had strategic plans with defined mission, vision and value statements. All four sites had concerns about the value of these plans to drive their organizations forward. All sites were maintaining formal lists of goals or objectives, but recognized that the links between these goals and their overall mission were sometimes fairly tenuous. Each site engaged in ambitious slates of projects, but the alignment between these projects and the organization's overall mission, goals and objectives was often weak. In addition, the teams discovered that their current slates of objectives were focused more on what happened last year than on what they needed to do in the coming years to achieve their missions.

The Scorecard forced the four teams to re-examine their current slates of objectives in light of a new "balanced" four-perspective framework. Did their objectives adequately address the four perspectives or did they put too much emphasis on one or two? Did the objectives drive change or just describe and justify the current landscape? Did the objectives sync with the priorities of the larger University? What story did the current strategies tell and what story did they want them to express? How can an organization tell if it is achieving its mission when the concepts are so intangible?

Unlike for-profit organizations, the teams discovered that their current slates of objectives tended to focus primarily on the customer (the users) and internal processes (administrative efficiencies)—with relatively little attention being paid to the staff learning and growth and financial health perspectives. Interestingly, the changes that were happening in the overall economy in 2008 and 2009, forced a new and sharper focus on financial issues.

In some cases, existing objectives were mapped into the framework, while in other cases, new

directions were required. The groups were encouraged to aim for a maximum of 15 objectives (preferably two or three per perspective), each framed using an active verb. The consultants strongly discouraged the teams from mistaking "projects" for objectives. Given that libraries do not like to stop doing anything and consistently strive to be all things to all people, narrowing down the past goals and initiatives into this smaller, more defined subset caused some angst at all sites.

Creating a "Strategy Map"

Participants were encouraged to render their slates of objectives to a "strategy map." The map is a one-page visual representation of an organization's strategic objectives. The maps were expected to very clearly show the balance and interrelationship between the four perspectives. If done well, a staff member should be able to recognize their organization's map because it accurately reflects what that organization is all about. Leaders are known to carry their strategy maps with them at all times—to help tell their organization's story to others.

Some organizations with well-developed Scorecards and access to graphic artists have devised very clever renditions of their strategy maps. (A search of Google for "strategy maps" turns up very interesting results.) Even very basic strategy maps can be extremely powerful if they effectively capture an organization's strategic future.

With the assistance of the consultants, the four ARL sites crafted very simple strategy maps early in the process—and then returned to rework them many times during the implementation period. In some cases, discussions with stakeholders revealed the need for fairly significant overhauls. In other cases, the changes were more minute, e.g., reworking the wording to improve clarity.

On occasion, the limitations of the initial strategy maps were not revealed until later stages—when organizations were trying to identify specific measures and targets. The teams soon discovered that the choice of words was pivotal: If the word appears in an objective statement, it should be measured. For example if an objective is framed to "hire, retain, train, and develop highly motivate, productive, technologically fluent, diverse staff"

then, ultimately, that organization will need to measure its hiring, retaining, training, developing, processes. In addition the organization may need to measure the motivation, productivity, tech fluency, and diversity of its staff. 8 measures could be required to fully evaluate a single overly-wordy objective. This is one of the clear focusing mechanisms of the Balanced Scorecard: It forces an organization to reconsider their lovely, lofty, lyric objectives in favor of more precise statements.

Commonalities between Strategy Maps

Many commonalities are evident in the four

libraries' slates of strategic objectives. While the exact wording on the strategy maps may be slightly different, the intentions are strikingly similar. Overlap is evident in each perspective, but is most noticeable in the Customer and Financial perspectives.

The following analysis of objectives and measures, as depicted in Table 1, is a snapshot of what each library recorded at the time this paper was written. Because this is a change process, objectives, measures and even the look of the strategy maps changed fairly frequently.

Table 1: Number of Strategic Objectives by Library and Perspective

Organization	Customer	Financial	Learning & Growth	Internal Processes	Total # of Objectives
Johns Hopkins	4	3	2	2	11
McMaster	4	1	3	2	10
U. of Virginia*	3	3	3	9	13
U. of Washington	3	3	3	5	13
TOTAL - ALL LIBRARIES	14	10	11	18	53

NOTE: University of Virginia numbers based on 2007/9 scorecard

Common Objectives across the Perspectives

The **Financial Perspective** provided the strongest commonalities in objectives. Of the 10 objectives, JHU, Virginia, and Washington had 3 each, and McMaster had 1. The themes in this perspective were clear—secure funding for operational needs (4 libraries), align resources strategically (2 libraries), and measuring and improving the impact of resources and services (2 libraries).

In the **Customer Perspective** there were a total of 14 objectives across the four libraries, 4 each from McMaster and JHU and 3 each from Virginia and Washington. Commonalities included the following:

- Providing productive and user centered spaces, both virtual and physical (4 libraries)
- Discovery, access, and preservation of collections for current and future scholars (3 libraries)
- Providing access to library tools and services (3 libraries)
- Becoming a world class teaching, research, and learning library (3 libraries)
- Integrating into the University's teaching and research mission (3 libraries)

The **Learning and Growth Perspective** also displayed many commonalities. Certain words appeared frequently to describe staff including "collaborative," "innovative," "dynamic," "diverse" and "healthy." Of the 11 objectives logged, JHU accounted for 2 while McMaster, Virginia, and Washington each had 3. Common themes are as follows:

- Developing workforces that are productive, motivated, and engaged (4 libraries)
- Developing workforces that are based on alignment with their strategic plan (2 libraries)
- Supporting diversity (2 libraries)

The unique objectives under this perspective are indicative of the local environment and organizational culture. From embedding flexibility into everyone's job description to providing clear paths and processes to carry innovation into production, clearly libraries are reexamining the type of staffing they will need in the upcoming years.

The **Internal Processes** perspective displayed the most divergence in content. There were a total of

18 objectives—9 at Virginia, 5 at Washington, and 2 each at JHU and McMaster. The wide variation in sheer number of objectives is attributable to local preference: Some locations chose to position traditional internal process objectives within the customer service perspective given the focus on users.

Common objectives included the following:

- Promoting the libraries resources, services, and value (3 libraries)
- Advocating for scholarly communications (2 libraries)
- Optimizing performance through efficiencies and effectiveness of programs (this is similar to objectives in the financial perspective from 2 of the libraries) (2 libraries)
- Integration of resources into user environments, increasing access to content, and improving search and discovery (2 libraries)

The unique objectives under this perspective include:

- Identifying unique, rare, and valuable collections
- Developing a world class preservation program
- Building collection management strategies for materials needed by scholars
- Retooling and expanding collection storage space.

Identifying Measures

Once the slates of strategic objectives were set, the four teams moved on to develop measures. As noted earlier, all four sites had been collecting vast amounts of data for many years. Two of the libraries had more robust assessment programs in place and so were more quickly able to map the measures they had to their respective objectives.

For those libraries with less advanced assessment programs, the consultant provided an exercise to facilitate measurement development. Given that the objectives themselves are often large and intangible, groups were advised to ask a very simple question—*if we want to achieve that then what do we have to do well?* Once an organization understands what it needs to do

well, developing a measure is somewhat easier.

Selecting Appropriate Measures

While there are a number of considerations in choosing measures for the Scorecard, five critical ones became readily apparent to the four teams:

1. Does the metric directly measure performance to achieve the objective?
2. What data is needed for the measure?
3. How often should the data be collected and used?
4. How many measures are needed for each objective?
5. How should the measurement be presented?

Does the metric directly measure performance in achieving the objective?

Most metrics operate as surrogates or indicators of performance measurement for objectives. If the objective is narrowly written and framed using quantitative data, then it should be possible to find direct measures for it. For example, an objective to “increase the amount of gift and endowment revenue” could be linked to a measure of current revenue against a baseline. Objectives at a broader level, such as “create world-class teaching and learning spaces,” would most likely use performance indicators such as user satisfaction with space or number of instructional spaces. Essentially, metrics should be able to measure or indicate an organization’s progress in achieving its objectives.

What data is needed for the measure?

As noted earlier, all four libraries were already collecting vast amounts of data for purposes of campus and professional association accountability. Data that is already being collected should be reviewed first for use as measures. However, Matthews adds a cautionary note: “There is a tendency among libraries to consider only the measures that are currently being collected or that would be easy to collect.”¹³ Yet, the time and costs involved in beginning new data collection processes can be substantial and should not be underestimated. The primary focus of time and effort should be on achieving the objective rather than coming up with the best method of measuring it. Above all, the data should be practical—obtainable with a reasonable amount of effort and easy to use and understand.

How often should the data be collected and used?

The issue of data frequency was a regular point of discussion. Much of the Balanced Scorecard literature calls for frequent reporting of results from measures, many on a quarterly basis. The frequency may depend on how readily available the data is. Data can be extracted from automated systems on demand, but survey data or other assessments may have a longer reporting cycle. Academic libraries also need to consider the academic calendar: monthly or quarterly tracking will be less useful than term-to-term or year-to-year comparisons of the same academic term periods.

How many measures are needed for each objective?

The four groups struggled to determine the correct number of measures for each objective. The preferred number depends on the objective and the data. Narrowly defined objectives generally require fewer measures than broadly defined ones. For example, an organization with an objective around enhancing teaching and learning activities might consider tracking the number of instructional sessions and participants, session evaluations, number of academic programs reached, evidence in student work, survey responses, and faculty evaluations of usefulness. Data availability and frequency may also have an impact on the number of measures. Some data, such as satisfaction surveys, may be available only once every 2-3 years while other data is collected on an ongoing basis. Matthews notes that, "It is better to have fewer measures than too many."¹⁴ The number of measures per perspective should also be limited. Finally, the measures should be looked at holistically within the entire Scorecard to ensure that they provide a

balanced measure of overall performance and are not reliant on the same data sources.

How should the results be presented?

Choosing the best way to present the data was also a significant consideration. The four teams spent much time visualizing how specific measures would be displayed so as to capture what was most meaningful. Understanding what each particular chart type can provide can clarify what you want to show even more.

- Bar charts compare the performance of different projects at points in time
- Pie charts show the composition of a metric and are helpful for showing ratios
- stacked bars show the accumulation of a measure over time
- Line charts show the performance of a metric over time

Part 3: Developing a Standardized Slate of Measures for ARL Libraries

Commonalities between Pilot slates

While each library is in the initial phase of measure and target development, some general observations can be made about the areas of overlap. This issue becomes key in the exploring the concept of developing standard measures for key library areas and in trying to answer the question "Can ARL create a buffet of measures member institutions could choose from?"

Table 2 identifies the measures per objective for the four pilot sites. The table indicates fairly wide variation in the number of measures—from a low of 26 measures logged by McMaster and Washington to a high of 48 measures logged by Johns Hopkins. The average number of measures per objective also varies significantly, from 2 to 4.3 measures.

Table 2: Average number of measures per objective, by library

Organization	# of Objectives	# of Measures	Average # Measure/Objective
Johns Hopkins	11	48	4.3
McMaster	10	26	2.6
University of Virginia	13	36	2.7
University of Washington	13	26	2

Table 3: Number of measures per perspective and library

Perspective	Institution	Number of Measures
Customer 47 total measures	JHU	19
	McMaster	11
	University of Virginia	9
	University of Washington	8
Financial 24 total measures	JHU	13
	McMaster	3
	University of Virginia	5
	University of Washington	3
Learning and Growth 27 total measures	JHU	7
	McMaster	6
	University of Virginia	5
	University of Washington	9
Internal 38 total measures	JHU	9
	McMaster	6
	University of Virginia	10
	University of Washington	13

As depicted in Table 3, an analysis of common measures across the four perspectives renders many trends. It is important to note that the libraries may have the same measure but align it with a different perspective.

In the **Customer Perspective** there were a total of 47 individual measures identified by the four libraries. Common measures include the following:

- Providing productive user-centered space (4 libraries)
- Customer satisfaction survey either home grown or LibQUAL (4 libraries)
- Instruction (3 libraries)
- Turnaround time of ILL or other delivery methods (3 libraries)
- Collection, preservation, and discovery of collections, tools and services both currently and in the future (3 libraries)

- Integrate the library into the university's teaching and research (3 libraries)
- Growth and use of the Institutional Repository (2 libraries)

In the **Financial Perspective** the following were common measures:

- Generation of funds from either development activities or other sources of revenue generation (4 libraries)
- Cost and/or unit cost of e-resources (2 libraries)
- Ranking in the ARL Investment index (2 libraries)
- Library allocation as a percentage of the overall university budget (2 libraries)

Unique financial measures include amount of grant funding, unit cost of specific functions such as ILL, and measures surrounding how the library contributes to faculty research or how many

journals the library holds based on citations by faculty authors.

In the **Learning and Growth** perspective the following were common measures:

- Employee satisfaction (3 libraries, 2 specifically mention use of ClimateQUAL®)
- Diversity (2 libraries)
- Completion or creation of training and development plans (2 libraries)
- Retention rates (2 libraries)
- Alignment with their strategic plans (2 libraries)

Finally, common measures in the **Internal Processes** perspective include the following:

- Promoting the library and communicating its value (3 libraries)
- Assessment of specific services (3 libraries)
- Effectiveness of their liaison services (2 libraries)
- Scholarly Communications issues (2 libraries)
- Resolution of IT related problems (2 libraries)
- Circulation of new monographs in the past two years as a measure (2 libraries)

The unique measures in the internal perspective often deal with process improvements unique to each library.

Creating a Standardized Slate

The high level of commonality between measures being proposed at the four pilot sites suggests that a standardized slate is viable. Participants benefited greatly from sharing lists of measures. Reviewing a peer's slate sometimes suggested new areas for exploration. Discussions around measures often saved considerable time: partners benefitted from the successes and the failures at the other institutions.

The concept of reviewing the ARL statistics in light of common measurements also appears worthwhile. Such a strategy would standardize the definitions being used across member institutions and allow benchmarking between peers.

But more work needs to be done. The four pilot sites have established their preliminary set of measures and have, in some cases, started to collect data. Early experience suggests that

libraries need to go through a full cycle of collecting and analyzing the data, then actually attempting to use it for discussion and decision making, before determining if the framing is right. In some cases, a measure might seem to be useful until the first set of numbers appear. It isn't until the collector tries to render the first set of charts or the analyst first puts it under the microscope that the true nature of the measure emerges. And sometimes the true picture isn't really known until the data comes before the library's leadership group for the first time. Even the simplest measures turn out to be more complex than originally expected.

Targets

Once the measures were identified, the pilot sites began the very challenging task of setting targets. Ultimately, measures have little context without clear expectations or targets. Targets articulate the level of success needed in achieving the objective. Targets are quantitative and should be attainable. They can be based on overall mission, benchmarked practices, historical performance and baseline data. For many measures, some form of baseline data will already be available that can be used to set targets. In other cases, a best "guesstimate" will be needed at the beginning. Targets should not be set so low that they are easily achieved without much effort. A higher target should be reachable with effort in a reasonable amount of time. Setting targets too high may lead to staff frustration and a perception by those outside the organization that the libraries are not succeeding in meeting their mission and objectives. Targets can be revised, especially if the initial one was set without sufficient data.

The University of Virginia was in a unique position, having used a Balanced Scorecard approach for almost a decade. Virginia had long used a "two target" approach (high target = full success, low target = partial success, no target = no success). Low targets were usually set at a point slightly better than current performance, while high targets were set to encourage substantially improved performance. When possible, the value for current performance was based on historical data, but occasionally targets were based on the educated guesses of responsible staff as to current performance on a certain measure. UVa has analyzed their measures

annually, noting their level of success for each measure.¹⁵

Part 4: Organizational Issues

The participating libraries faced a host of organizational issues that required considerable time and effort to address. In many cases, the issues were not well-covered in the Balanced Scorecard literature: the literature assumes that senior leadership will wholeheartedly champion the decision to implement the Scorecard, that a senior team with authority to make decisions will oversee the process, and that staff throughout the organization will naturally understand and follow. The reality in a large academic library with a history of a more cautious approach to change, a strong emphasis on consensus and a suspicion of non-academic approaches, is often very different.

Getting the senior library leadership team's attention

Not surprisingly, discussions of the Scorecard battled for attention with the immediate—the operational imperatives that suck the time out of typical leadership meetings. Teams had to convince senior leaders that strategy needed to drive operations and that the Scorecard presented a healthy mix of what the organizations have needed for some time. Scorecard team members needed to find champions within the leadership group to support what amounted to an institutional leap of faith—that the Scorecard would apply a level of discipline that would (ultimately!) simplify operational decisions, reduce waste and provide greater clarity around priorities.

All four teams reported success in engaging their leadership teams relatively early in the process. The leadership groups came to realize that the Scorecard could raise the level of discussion at executive meetings, simplify decision making and help steer budgetary decisions. The site with two Associate University Librarians on the Scorecard team experienced the least difficulty in moving the initiative forward. This parallels the leadership involvement U. Va. had when they first adopted the Balanced Scorecard in 2001. Teams with a more distant relationship to the senior leadership group encountered more difficulty during the early days in getting the leadership's attention, securing time on

leadership group agendas and ultimately capturing interest in the Scorecard.

Overcoming resistance—the human dynamic

Participating libraries found that some of their staff colleagues viewed the Balanced Scorecard with a degree of suspicion—in some cases, even cynicism. This response is not unique to libraries—with its emphasis on performance measurement, change, and accountability, employees of any organization are likely to offer resistance to the Scorecard process, and countless articles and book chapters offer strategies on how to address this reaction. One presenter at a recent scorecard conference for mission driven organizations drew laughter from the audience when he spoke about how he handled “malicious compliance” among his units.

The tension between strategy and operations was experienced by all teams. Staff expressed concern about not seeing their specific work assignments explicitly linked to the strategy map, metrics and initiatives. The four teams conveyed a similar message back to their organizations: In some cases, the work being done by a particular unit is extremely important to supporting institutional priorities, but in itself, is not strategic at the organizational level.

In addition, the ARL initiative was underway during a particularly dire economic crisis when library budgets were stretched to the limit and layoffs were a distinct reality at many institutions. At the individual level, the Scorecard can be threatening—although not generally directly tied to job evaluations, it can be seen as a form of public performance management, and often is used to focus attention on strategic goals at the expense of ongoing, perhaps outmoded, operations. Even in flusher financial times, UVa experienced staff reluctance to set “stretch” targets in their areas for fear of failure.

It also may be that certain elements common to the organizational culture of academic libraries may contribute additional resistance to the Balanced Scorecard.

First, libraries and library staff are not widely known as change agents. On the contrary, the collective focus has traditionally been on preservation and stability. Even key innovations

have often been focused on maintaining continuity and access to historical material, albeit in new ways. Academic libraries, in particular, like the colleges and universities of which they are a part, are just beginning to substantially change their basic physical and organizational structures. Only in the last decade have libraries begun to prioritize digital over physical collections and hire programmers as they once hired bibliographers. In many ways, libraries still operate very similarly to their counterparts a century ago. Libraries are working at change but, unlike their counterparts in the fast-paced commercial world, still change relatively slowly.

Second, academic libraries and library staff are not predisposed to adopt business tools. Often mirroring the views of the academic community which they serve, libraries tend to think that the scholarly nature of their work precludes the successful use of business applications. However, there are signs that this attitude is beginning to change, with outcome-based budgeting and return-on-investment models gaining traction at institutions of higher education.

Finally, libraries tend to operate within silos. This too is reinforced by the larger structure of the college or university, where individual departments typically retain a great deal of autonomy. Despite the contemporary focus on collaboration and interdisciplinary scholarship, academics still tend to work on their own. Library staff aren't used to coming together to talk about the organization as a whole. Staff members tend to focus on their own areas of specialization (cataloguing, reference, etc.) and don't typically create forums to facilitate high-level discussions about the future of the entire organization.

By implementing the Balanced Scorecard, planning teams are asking staff and campus stakeholders to make several leaps of faith. LOCAL CONSTITUENTS ARE BEING ASKED TO BELIEVE that tracking progress will increase the probability that the Library will achieve its collective goals, THAT change is necessary and good, that a solution developed by and for the business world may have value in the academic environment, and that collaborative action will achieve greater success than working independently.

Making decisions/authority

The Scorecard, and the strategy that underlies it, is a compendium of choices or decisions – many of them hard ones. The Strategy Map forces the organization to choose one priority or direction over another. The final choice of metrics reflects a collective decision about what truly matters and is worth counting. The specific projects or initiatives linked to the Scorecard reflect hard decisions about where the organization will invest its time and limited resources.

Some participants reported issues associated with governance and authority structures. In some cases, decision-making structures overlapped, thus getting in the way of setting clear priorities. In other cases, the decision-making structure was not clear.

More often though, the issue was behavioral rather than structural. Participants encountered hesitancy to commit to one plan over another and a reluctance to be the one to make the final decision. Staff often reported that they did not have enough information to provide an opinion on a given tactic. Groups tended to revisit the same issues over and over again. Groups had difficulty actually closing.

This reluctance might be associated with the historic focus on consensus as a decision-making style within many academic libraries (and within the academy as a whole). Achieving 100% consensus on a given issue can take time and sometimes results in weaker solutions.

The four teams used a variety of techniques to arrive at decisions. All sites used a blending of staff committees to work on various aspects of the scorecard. At the end of the day, in all four sites, final decisions were made by the senior leadership team. Some sites had success with expressing the continuous nature of the review process. The strategies were framed as hypotheses, the best choice of action at the given time and with the given information. Mid-year adjustments and regular review were part of the process.

Integrating the Scorecard into the strategic planning process

The four groups recognized that incorporating the Scorecard into their libraries' existing assessment

program was relatively easy but, if that was the full extent of the integration, the implementation would be only partially successful. The Scorecard is not, as might appear at first, simply a container for assessment data. Rather, the scorecard is a management and change process first, and a metrics process second.¹⁶ The teams recognized that the scorecard required a robust planning and decision making cycle. To be effective, the senior leadership group needed to be reviewing the metrics and the strategic initiatives on a regular basis. The review meetings needed to be deep and focused on achieving success. The scorecard becomes the catalyst for rich conversations and sometimes difficult decisions—not just another cluster of data to shelve from quarter to quarter.

Communicating progress with Staff

Given the complexity and intense integration of the scorecard into the organizational fabric, regular communication of progress with staff proved to be essential—but not always easy.

The strategy maps provided a good graphical representation of the Library's strategic objectives—but the interrelationships between the objectives, the metrics and the initiatives were hard to explain. Participants struggled to find the right visual to bring all the pieces together and some pieces were undoubtedly lost in translation. The leads struggled with providing the right information at the right time—without unnecessarily confusing their colleagues. In many cases, chunks of time past without noticeable progress—and the initiative moved to the back of people's consciousness. And of course, the participants themselves were learning as they went along.

The participants tried a variety of approaches to share their stories with their colleagues and their campus communities. Most teams sent out regular communiqués to library staff and held a variety of face-to-face sessions (presentations, hands-on workshops, etc.). Some sites reported the best progress when blending the balanced scorecard information with other broader events.

Conclusion

The year-long ARL initiative has met its initial objectives. The four local implementations are still a work in progress, but the leads are fully trained and the infrastructure is in place. The sites

continue to refine their measures, set their targets and, occasionally, circle back to their original objective statements. Data is being collected. The leadership teams are starting to see their first deliverables out of the Scorecard process.

Although still early in the game, the concept of identifying standard suites of objectives and measures that ARL libraries can select or start from appears to hold merit. Strong commonalities are evident in the four sites' work. As well, the ARL objective to test a collaborative approach to assessment has been fruitful. The opportunity to discuss concepts and wording with peers helped reduce road blocks. The community of practice around Scorecard has helped make each implementation richer.

The study has identified the challenges but also the tremendous opportunities for implementing a Scorecard in an academic library. The process requires a significant allocation of time and intellectual effort. The process requires a significant and ongoing commitment from senior leadership to be successful. The strength of the scorecard is its linkages. The process, if done effectively, can help solidify the bond between the organization's strategic objectives and the specific initiatives it elects to undertake. The Scorecard forces an organization to have new, sometimes challenging, conversations and to analyze aspects of its current and future state that may have otherwise gone unexamined. Ultimately, the Scorecard may substantially shift an organization's strategic direction or dramatically change how its human capital and other resources are allocated. The Scorecard is, by its very nature, a change driver. And the change is relentless. The model commits the organization to continuous and regular reflection and to communicate the results of those reflections with a new level of discipline and precision.

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A Usable Movable Feast: Usability and the Mobile Library Website

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Abstract

With the proliferation of truly web-friendly mobile devices and applications, the mobile web has attracted a great deal of attention from the academic library community. Many remain skeptical, however, of the degree to which mobile versions of databases, bibliographic management tools, and library websites are likely to impact student or faculty use of library resources and services. The University of New Brunswick began exploring a move to the mobile web following a full redesign of its library website in 2009. This paper will discuss the variety of methods (needs assessment surveys, patron interviews, questionnaires, web analytics and, on-site usability testing) used to engage library users in the initial development and testing of prototype designs for UNB's mobile library site. Our testing and consultation with students revealed a positive base of interest in the mobile web. Continued dialogue with students and faculty is needed in order to determine services and resources most relevant to mobile contexts.

Introduction

Mobile devices are becoming ubiquitous at the University of New Brunswick as they are at universities around the world. The numbers are staggering. According to the Horizon Report: 2010 Edition, there are nearly 4 billion subscribers within the mobile market.¹ Of American adults aged 18-29, 93% have a mobile phone, and it is predicted that by the end of 2011, more Americans will have smartphones than feature phones.² (Analysis by the International Telecommunication Union confirms that Canadian and American figures are very similar.) These figures speak to the phenomenon we see happening in our libraries. Although we know that our students are drawn to web-friendly handheld devices, we are generally less clear on how students are using their devices, and how they would like to be able to connect with the library on their smartphone.

At the University of New Brunswick we recognized in the summer of 2009 that we were ready to develop a mobile version of our web site. Our recent web design project had left us committed to listening to our students. We wanted, and needed, to hear what they had to tell us about the devices that they use, the ones they plan to buy, what they would find useful on a mobile library site, and how they would use it. Then, we committed to testing our site with them as it developed. It's a risky proposition to design anything for students without engaging them in the process, and a mobile site is no exception to this rule!

While skepticism about the utility of mobile versions of databases, bibliographic tools and even library websites is well-founded, more and more of our students are carrying network-capable devices and are using them to access data and services. Not very long ago, "anytime, anywhere" referred to the challenge of delivering content to students sitting at a computer somewhere off-campus. Today, "anytime, anywhere" has been taken to a whole new level as students use their hand-held devices when they are literally almost anywhere at all. The increase in use of mobile computing has been evident at UNB over the past several terms, and seemed to jump exponentially at the beginning of winter term 2010. *The World in 2009: ICT Facts and Figures*, published by the International Telecommunication Union, states, "Mobile cellular has been the most rapidly adopted technology in history. Today it is the most popular and widespread personal technology on the planet."³ While this trend seems incredible, the speed with which it is moving at our university would appear to support the claim.

University of New Brunswick

The University of New Brunswick (UNB) is one of the oldest universities in Canada. It is a medium-

sized, comprehensive university with strong graduate and professional programs, and is the provincial university. New Brunswick itself is a small province, in geographic size and population, on the east coast of Canada. Total student enrollment at UNB is close to 12,000 undergraduate and graduate students. The university is a key instigator of research and development in the province. There is a growing international student population, with students arriving at UNB from over one hundred countries. One of the distinguishing characteristics of UNB is its two-campus structure. One campus is in Saint John, the province's largest city, while the original campus is inland in the capital city of Fredericton. Significantly for the libraries, the two campuses do not share a library system, though they do formally collaborate on the library catalogue, online databases, and the website.

UNB Libraries Website

Coinciding with the upturn in the use of mobile devices was the redesign and launch of the UNB Libraries website. Our website redesign project was launched in the fall of 2008, with the site itself introduced a year later. In key ways, the website redesign project established our approach to the development of the mobile site, and for projects to come.

From the outset the terms of the redesign project were fundamentally different from how we had previously approached our web site. At the request of our Saint John campus, the new libraries site was to be developed to serve the needs of both campuses. For many years each campus had had their own version of a library site with the majority of services supported by library systems staff on the larger, Fredericton campus. Leadership of the project was given to the Associate Director of Libraries (Learning and Research Services) in Fredericton, and the two directors guided the establishment of a committee broadly representative of the various areas and activities within the libraries. The Committee's guiding principles included:

- Our page must integrate the UNBF and UNBSJ sites.
- The Committee's recommendations must be responsive to the needs and preferences of our "audience"—undergraduate students, graduate students, faculty, and library staff.

- Our page must meet accessibility standards.

This project signified a profound change in approach at UNB Libraries, which is reflected in how we set about developing a mobile site. The combined effect of leading from a services perspective, enhanced commitment to responding to the needs of users, and a focus on accessibility standards was significant. While we have had a strong tradition of usability and accessibility testing at UNB, the change in philosophical approach was due in part to the participation of two of the authors in the Library Assessment Conference 2008 in Seattle. We returned from the conference enthused and committed to ensuring that the project was informed by user input and testing at every stage, and that's what happened.

Capturing the Mobile User Experience

Web designers and user experience researchers have been working to come to grips with the mobile experience for some time. Jakob Nielsen's earliest published attempts at evaluating the user experience with the mobile web are a decade old,⁴ and while his more recent work documents some improvements with web access on modern smartphones and touch screen devices, he concludes that usability on the current mobile web is comparable to mid-90s desktop web usability, and that it is still "neither easy nor pleasant to use the Web on mobile devices."⁵ Nielsen does note that sites designed specifically for mobile devices enjoy much higher success rates than "full" sites in mobile user testing, but also warns that designing navigation and content for the mobile web requires careful consideration of user needs and an understanding of "the special circumstances of mobile use."⁶

Devices:

The limitations and capabilities of mobile devices themselves are among the factors that must be considered in developing and testing for the mobile web.⁷ Although it's not uncommon to hear of mobile devices referred to by the single umbrella term of "the small screen," a visit to a local mobile carrier's kiosk or storefront will confirm that there is little uniformity in screen sizes or functionality in current mobile devices. Nielsen divides mobile devices into three broad categories based on screen size; feature phones, smartphones, and touchscreen phones), and finds considerable range in the quality of the user

experience across these categories, with small-screened “feature phones” performing roughly half as well as larger, touch-screen devices.⁸ While Nielsen wonders if, given pervasive usability problems with the smallest class of screens, developers should be concerned with developing for feature phones at all, Griggs, Bridges and Rempel point to the fact that these lower-end phones actually make up the majority of devices currently in use.⁹ While they admit that there are difficulties in designing for the full range of mobile devices available today, they argue that developers should still aim to deliver usable content to as many mobile devices and browsers as possible. Brian Fling suggests that developers can’t hope to support every device, but should design for the device or devices that are most common for the target user group (which may or may not be the most popular devices of the moment). Server logs provide some of the best data to determine which devices are currently being used to access online content, and can help identify the devices most important to your community of users.¹⁰

Contexts:

In addition to the constraints of the mobile platform, the mobile user experience is equally defined by the contexts of use. Consideration of mobile information needs, and likely or possible locations or occasions for the use of a website or application is an important aspect in developing an understanding of user behaviors and preferences on the mobile web. Collecting data for these complex contexts for use often involves engaging users in settings beyond traditional lab tests. *Diary studies* are one option for capturing the mobile user experience, and typically require the tester to interact with a site or application over an extended period of time (days or weeks), recording their thoughts and experiences via note taking or web-based questionnaires. Although these studies may offer insight into users’ motives for engaging with the mobile web, as a method for usability assessment, they may suffer from missed data, since actual usage is unobserved and participants in these studies only report what seems significant to them.¹¹

Field testing is another option for mobile usability testing. In contrast to traditional usability or user experience studies performed in labs or other controlled settings, field testing still observes and

records actions and activity, but the user’s office, classroom, or other setting becomes the test site.¹² Brian Fling even suggests that approaching potential users in a café for quick testing can be an effective way to collect data.¹³ While these settings may seem uncontrolled and could introduce the possibility of interruptions, unexpected technical problems or failures, some argue that these interruptions are actually essential to truly understanding the context in which applications are used.¹⁴ Field testing does create additional challenges in capturing or recording user actions, for which a number of mobile recording solutions have been explored.¹⁵ Depending on the factors being studied in a usability test, field testing may not actually identify any more usability issues than traditional lab settings, and the additional time and equipment involved in meeting users in the field may not be warranted in every case.¹⁶

Survey

As a first step in consulting with our user community, a brief web-based survey was designed to determine the level of interest in a mobile library website, as well as to develop a better understanding of the current usage of mobile devices among graduate and undergraduate students at the University of New Brunswick.¹⁷ An invitation to participate in the survey was sent to all undergraduate and graduate students at UNB in early February of 2010, and the survey remained open for a three-week period. No additional incentives to participate were offered. Although the response to the survey was quite small (just under 150 surveys completed), the survey did yield some interesting results, not least of which was a sense of enthusiasm for the idea of a mobile site. Students offered plenty of encouragement (“an excellent idea,” “this is a ‘must-do’ thing”) and well-intended advice (“even basic options would be a good start,” “make it fast and easy to navigate,” “don’t make it pretty, make it functional”).

Respondents and devices:

Nearly half (47%) of all respondents came from graduate programs at UNB. This may indicate a proportionally stronger interest from graduate students (graduate students typically account for approximately 15% of the university’s student population). We also noted that more graduate students owned a smartphone than

undergraduates, which may account for their greater interest in a mobile web site. Overall, 43% of all respondents reported a smartphone as the device they used most often (other options being “cell phone” or “other mobile handheld device”), with iPhones and BlackBerry devices being the most frequently mentioned. Web analytics from our regular website during the first half of 2010 showed that the overwhelming majority of mobile traffic originated from iPhones and iPods, followed distantly by BlackBerry. We also asked respondents if they planned to purchase a new mobile device in the next two years and, if “yes” or “unsure,” what type of mobile device they would most likely consider buying: smartphones were the overwhelming choice (85%).

The survey confirmed that access to the web was an important aspect of mobile device use for our respondents. Over 90% of all respondents reported that their device was web-capable, and nearly half of all respondents (48.2%) reported using the mobile web on a daily basis. When asked what features and capabilities would most influence their choice of a new mobile phone, access to the web was the most popular answer.

Usage, Past and Future:

Not surprisingly, communication (phone and text) and social networking were the most

frequently reported uses for mobile devices. Video, photos, games and audio (including audiobooks) were much less frequently reported as typical use. Respondents were also asked about their use of research information on their mobile device and while many reported searching for “research information,” far fewer (30% or less) reported having read an ebook or searching for an article on their mobile device.

Finally, we presented respondents with a selection of library resources and services and asked how likely they would be to use them if they were available on a mobile device. Among the most popular selections, with 60% or more of respondents reporting as being either “likely” or “very likely” to use, were notices (books due, etc), library hours, contact information, and maps. In contrast to the fact that a relatively small group of respondents reported having searched for articles in the past, 63% reported that they would be likely or very likely to use that option if it were available in a mobile version.¹⁸

Development and Testing

Based on survey findings, our initial focus in developing a mobile site was on offering a limited number of resources and services (figure 1). Specifically, these areas included:

Figure 1: Early draft, as tested

- **Hours and locations:** Providing hours for each of our library locations, primary contact information, location information including maps and floor plans.
- **Ask Us:** a link to a mobile instant messaging widget (from libraryh3lp).
- **Mobile eResources:** a listing of licensed databases currently available in mobile versions. This area of the site also included links to various apps, which would display according to the detected device.
- A link to the full site

Given evidence from the survey and local web analytics, we also made a conscious decision to focus on smartphones (particularly iOS (Apple), BlackBerry, and Android devices) during the initial phase of development and testing.

Testers:

In planning for testing the first draft of the mobile site, focus was given to graduate students as an initial target group. Grad students had shown a higher level of interest in the development of a mobile site in our survey and, given that testing would occur during the summer term, it seemed more practical and likely that we would be able to recruit a sufficient number of graduate students for usability testing. Diary studies or field tests seemed beyond the scope of current needs for evaluation, but we did want to capture some sense of context for the use of the mobile site, or at least prompt our testers to consider their use of the site in a truly mobile context. Recruitment for the test was accomplished via email invitation. Interested participants were informed that they would need to use their own mobile device for the

test, and were asked to inform us of what phone or other device they would be using. A total of eight testers were selected from the sciences, social sciences, and engineering, using devices reflected by those most often reported in the survey and in web analytics reports. Each tester was provided with a \$20 honorarium for their participation.

Off-Site Testing:

Participants were asked to test the mobile site in two very different settings; an independent off-site visit to the site and an observed on-site test. In the off-site visit, testers were provided with the URL for the mobile site, and asked to visit the site from a mobile location, "probably away from your home or office." No specific tasks were provided, but testers were asked to complete a brief web-based questionnaire after they had completed their visit to the site. The questionnaire was intended to collect testers' locations at the time of use, any technical difficulties encountered when using the site in a mobile context, and any uses, resources, or needs that were unmet during

their visit to the mobile site. Although unobserved in this portion of the test, we hoped that testers would be prompted to think about the utility or usefulness of the mobile site in ways that they might not have been in a lab setting.

Respondents reported a variety of locations for the remote visit, with home, work, or a university location being most common. In the questionnaire, commonly reported expectations for site content included hours, location information, and contact information, all of which were present on the site. There was also some reported expectation for search capability as well, both in the form of indexing/abstracting databases, which were present, and the library catalogue, which was not available on the draft mobile site during testing. Those testers that did explore online indexes sometimes encountered difficulty with logins, though the reasons for those difficulties would not become fully apparent until later in testing. Generally, participants' overall impression of the site was

positive, with only one of the eight remote testers reporting that they would be unlikely to use the mobile site again; while this tester complemented the site, she felt that it was simply "limited to few tasks."

On-site Testing:

After having completed the remote visit, a date and time was scheduled for on-site testing with seven testers (one of our participants was unable to attend the scheduled time). The on-site session consisted of six tasks, completed using the participants' own mobile devices. Participants were asked to think aloud as they worked through the tasks, and actions were recorded through video recording (figure 2) and note-taking by two observers, who were present in the room during the test. After the tasks were completed, we asked a few debriefing questions to provide participants with the opportunity to share their opinions of the mobile site and mobile resources.

Figure 2: Recording test sessions



Perhaps partially due to the testers' prior exposure to the site, and to the simple structure and navigation of the mobile site, testers had little difficulty with most of the tasks provided. Even presented with multiple libraries, locating contact information, location information, and using floor plans were quickly and easily achieved by testers using the mobile site. Testers quickly pointed out the lack of a library catalogue as a notable omission. Testers did share some interesting insights into their communication preferences. Phone links, present throughout the site, were found to be most attractive when enough context or explanation was provided; a phone number provided in the footer of every page was avoided by one tester simply because he couldn't be sure

of where it would go. One of our tasks asked testers to "contact someone" to ask a specific question, which all testers responded to by selecting the library's "Ask Us" IM service. There were no problems or difficulties observed in using the mobile IM widget (testers were able to IM to a library staff member during the test session), but some noted that IM might not be their preferred means of contact. Rather, testers noted that their preference (IM, text, or telephone) might vary depending on the setting, their question or need, and the amount of time they had to spend on contacting the library.

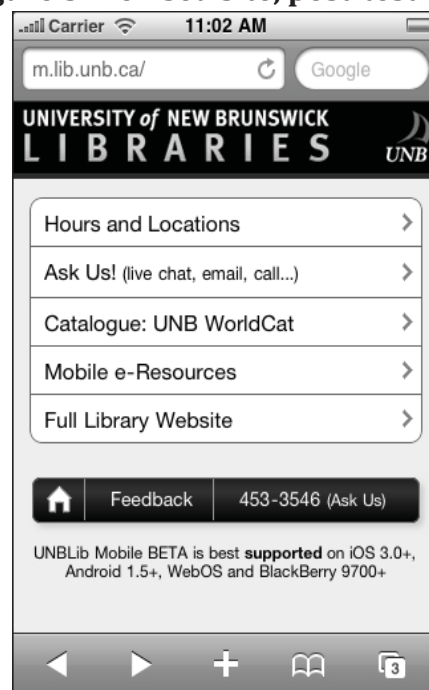
As part of user testing, we asked participants to find an article using a mobile version of a large

full-text database. While users had little difficulty finding the database, their experience in connecting to and using the database varied more. We were able to observe the login issue noted in some of our off-site questionnaires and determine that first, the proxy login screen had not been reformatted for the smaller screen, and second, the complex passwords required by campus IT were awkward to enter on mobile devices. Not every user experienced these difficulties while testing on-site, only those who chose to use a network other than the campus wireless connection (the choice of how to connect to the web during the session was left up to the testers themselves, and recorded as part of the observer's notes). Our testers showed no obvious difficulty with navigating the database's search forms, entering search queries, or navigating search results. Some testers did experience difficulties with viewing full text content, but problems seemed mostly related to the capabilities of the

devices themselves, particularly the lack of a PDF viewer.

We queried testers on their interest in using their mobile to access and read full-text articles and ebooks. Nearly all participants expressed interest, some very enthusiastically, in the ability to access full-text content online. However, when asked if they had ever read an ebook or article on their mobile device prior to testing, most reported that they had not, or that they had only "tried it." Two of our 7 testers reported accessing full-text content regularly on their mobile devices; for the first of these testers, it was the availability of an iPhone app (Papers, a pdf reader/manager) that had improved his access to scholarly articles on his mobile device. The second tester did not mention a specific application, but told us that his mobile device had actually become his preferred reading device, having become accustomed to reading text on the smaller screen.

Figure 3: Revised site, post-testing



Conclusions and Next Steps

User consultation has provided direction for the development of our ongoing mobile design strategy, and a number of changes have been implemented as a result of the feedback and data collected during testing (figure 3):

- The library catalogue was not available in a mobile-specific version at the time of testing, and our testers quickly noted the omission. We are now testing a beta mobile version of the WorldCat Local catalogue as part of the mobile site.

- Contact links, and phone numbers in particular, should be clearly labeled, or given in appropriate context to make clear who the user is contacting. Testers were reluctant to select phone links when they were unsure of where or how their call would be directed.
- Testers made clear that there was no single "best" way to contact the library's "Ask Us" service, and that their preference would be determined partially by the context in which it was used. We have restructured that page to offer IM, phone and desk location information, and are currently considering options for SMS (text) as well.
- Where longer lists of information are involved (hours and contact information, in our case), testers noted that less is better. Longer lists have been shortened, providing the most likely desired information first, with a link to more comprehensive information. For example, hours are now displayed as the current and following day only (shortened from a week's worth of hours), with a link to more complete hours.
- Most of our testers expressed a limited interest in (and a limited history of) extended reading on their mobile device, preferring larger screens (laptops or desktops) when reading large amounts of text. However, testers also expressed a high interest in *searching* for scholarly content, and had little difficulty navigating through result pages in the database tested. Adding to the mix, several survey respondents and interested test participants mentioned the iPad as their planned purchase or preferred mobile device. Whether or not the larger display of iPad or similar highly portable tablet computers will prove to be a more or less popular or effective means for users to access library services and content in mobile contexts remains to be seen.

Development of our mobile site, and evaluation of its use, continues, and the changes noted above will be assessed as part of further testing with graduate and undergraduate students in the coming months. Web analytics are in place to monitor use of the mobile site as we move into our initial release to the university community.

The development of a mobile site raises questions around technical and service support as well. Testers did encounter some technical difficulties

in accessing databases and full-text content online, some of which were directly related to the devices themselves or to the method by which users were connecting to the mobile web, both on and off site. It is worth remembering that, just as libraries are expected to provide reasonable support not only for our own pages but also for the electronic products we provide access to on the desktop, we should expect that our users would seek support for those services on their mobile devices as well.

As pointed out by Hu and Meier, it seems that we have not yet "reached a tipping point" in the adoption of mobile devices for accessing scholarly content.¹⁹ Our testing and consultation with students showed a small but positive base of interest in the mobile web, and all indicators point to growth in the use of capable, full-featured mobile devices in the future. Continuing dialogue with students and faculty will help ensure the library's ability to offer resources and services that are both usable and useful in the developing mobile landscape.

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LibGuides Usability Testing: Customizing a Product to Work for Your Users

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Abstract

After moving subject and class research guides from static html pages to Springshare's LibGuides system, the University of Washington Libraries investigated how these guides and their built-in features were being understood and used our by students. This paper will describe usability testing that was conducted on our LibGuides subject guides in the fall of 2009 and how we used test findings to develop a new set of guidelines for guide authors to use in developing guides. We will cover the usability testing process, methodology and findings, as well as how data was remodeled into new recommendations for library staff authoring our LibGuides in order to make them more consistent and usable. We present how usability can improve a library's own understanding of students' search and navigation process, as well as how an outside vendor's system can be customized to create an improved user experience overall.

Introduction

In an effort to continually improve users' experience of our resources, usability has become a programmatic step in the development of websites at the University of Washington Libraries. We have discovered that user testing is especially important when relying on an outside vendor's system. Implementation of the system can be adjusted to fit a local user population's needs, and testing the system can also help identify issues that the vendor might want to consider addressing on a universal level.

In summer 2009, the Libraries began subscribing to Springshare's LibGuides system, a hosted content management system designed specifically for library research guides. Subscribing to this service provided a system with easier tools for authors to create and maintain guides, and a wide variety of options for organizing and presenting

various kinds of content. We set up the site to take advantage of the LibGuides system features and created a template that authors could choose to use in creating their guides, and that would work across a broad range of disciplines. Rather than spend much time trying to customize the site homepage and navigation to match how we previously had provided access to our guides, we configured it to use the default structure of the LibGuides system. Subject liaisons created guides in different ways, some using our template to put together a very basic replica of the resources listed in their pre-Libguides subject guide, while others took advantage of the system's adaptability by creating numerous "sub-guides" and developing their own look and feel to distinguish their guides from others.

Our subject liaison program consists of over 60 library staff who support the academic departments of the university. The University of Washington is a large public research university consisting of 16 colleges and schools and serving over 45,000 students annually. When the new subject guides launched in the fall of 2009, all subject guides were required to be published using the new LibGuides system. In order to determine how users were responding to the various guide layouts, how effective the guides were in conveying the usefulness of subject-specific resources and to inform our system design, we started the usability testing process. A list of research questions (see Appendix A) was developed collaboratively with subject liaisons and Libraries Information Technology Services staff to investigate uncertainties with the site's design.

Method

Users

We recruited seven undergraduate and three graduate students. Going into the study, it was

our assumption that the subject guide's primary audience was beginner researchers, and so we recruited more undergraduate than graduates. The ratio is also more reflective of the student body, with undergraduates comprising approximately 77% and graduate students comprising 21%.¹

Participants also varied by gender and web and research experience. Additionally, we screened out previous UW Libraries usability participants and library employees with the assumption they would have more familiarity with the library website than the average user.

Test Format

To begin the study, participants were asked to complete a short survey about their background and library usage, including class rank, previous library instruction, and their familiarity with the subject guides. After completing each task, the participants rated their "ease of use" on a five-point scale.

At the end of the study, participants completed a post study questionnaire of Likert scales and open-ended questions, as means to gather the participant's experience, attitudes, issues, and perceived usefulness of the subject guides.

Six research scenarios were used during the usability session in the subjects of anthropology, psychology, English, history, and dance. Users also were asked how to find various formats, such as images.

After the users completed the scenarios, they were asked to participate in an Xs & Os exercise, in which they were given five screen shots of pages from various LibGuides. Users were instructed to circle areas of the page that they found useful, cross out any area of the page they did not find useful, and to add in comments or content they felt was missing (see Appendix B).

Libraries staff were invited to watch the recorded tests and participate in debriefing sessions.

Task Variation

The study consisted of intentionally varied task types. The majority of our tasks were specific, e.g., we asked users to find a specific book, or find an article on a given topic, with the purpose of

testing a particular feature within the guides. For example, to see how users reacted to drop down menus or a particular organization of a page, we needed to lead them through the process we wanted to test.

Users also completed open-ended tasks, e.g., to find a resource on the topic of their choice within the broad subject of history, allowing us to see how they created a topic, where they looked for information, how many sources they looked at, etc.

Equipment

The usability session was conducted using Microsoft Windows XP Professional Version 2002, Service Pack 3, Internet Explorer 7, Mozilla Firefox 3.5.7, Morae 3, and a webcam in the usability lab. The moderator's chair was positioned slightly behind the participant to provide close access to the participant's actions and to allow for the moderator to question the participant. Morae was used to record the participants' audio, video, and screen movements.

Test modifications

Over the course of the test, several changes were made as issues arose. Both the system search box at the top of the guides and the "Find E-Journals by Title" search box were heavily misused and were removed after testing half of the participants, as they were deemed too big of a stumbling block, preventing us from observing other pertinent issues.

This change, along with guides that were modified after they were printed out for the Xs & Os exercise, affected data collection because of the inconsistencies, even though most changes were minor.

Additionally, it was our goal for participants to use the Images Databases & Resource subject guide to find an image. However, the initial image we asked them to find was accessible through the library catalog, resulting in participants finding the image there instead of in the Images guide. Consequently, a decision was made to use an image that could only be found through the Images guide or an image-specific database.

Lastly, we made a change to the history research scenario after the fourth participant. Initially, the

scenarios all instructed them to find a specific item. During observation, we realized that we also wanted to see how users explore and create topics without our direction. To address this issue, the scenario was modified so participants would choose a topic and resource of their choice within the broad subject of history.

Summary of Findings

Usability testing showed that some system structures, like the LibGuides homepage layout and navigation from the homepage to general guides and more specific sub-guides were confusing for users. Format-related guides were difficult to browse for when mixed with subjects/disciplines, even if they were pulled into a separate category or onto the side of the page. The search function for the site was consistently misused to find specific materials like books and full-text articles. We also identified other issues

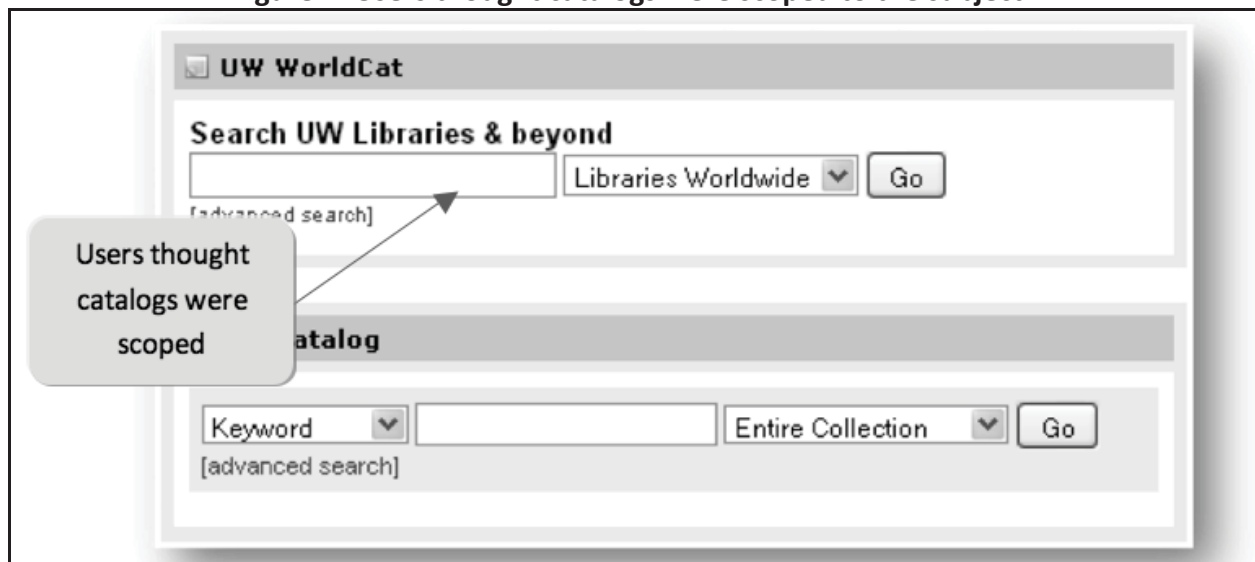
related to page layout inconsistencies that could be improved with stricter content guidelines.

We grouped our findings based on the changes we decided to make within our LibGuides system. These changes are organized around four concepts that we found our guides should follow: provide guidance and context, provide a more consistent layout, improve navigation and follow best practices for the web.

Guides Should Provide Context and Guidance

During the study, there was a great deal of confusion surrounding the perceived scope of the library catalogs. Users often thought the search boxes were scoped to the subject they were currently on (see Figure 1). For example, if a student was on the American Literature LibGuide, he or she would think the catalog search box was only searching within American Literature materials.

Figure 1. Users thought catalogs were scoped to the subject.



Other students wondered what the difference was between the catalog search on the guides and the search on the library homepage. In this case, users were confused about the purpose of the catalog search on the subject guides. Students were also confused by resources that lacked a description, such as lists of database titles with no explanatory text.

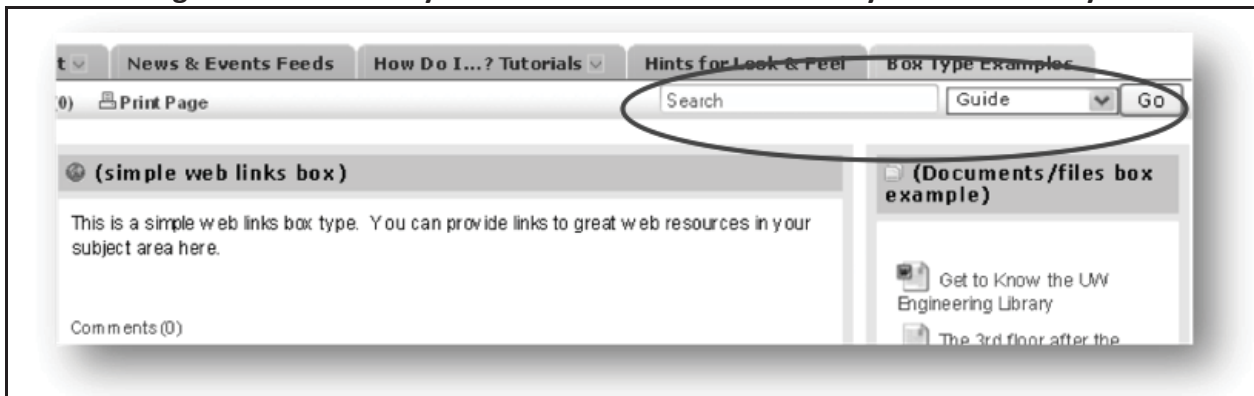
During the post-test survey and the Xs & Os

activity, several users mentioned that they wanted to see resource-oriented information tailored specifically to the subject they were on and less general information about the discipline (such as RSS feeds of events happening in that university department or non-tutorial videos). Some users, however, felt that this additional information could be useful in guiding them to topic ideas for a research project, but felt that this kind of content should not be prominent on the guide home page.

We also found that the LibGuides system search box included by default on the top of each LibGuide and in the LibGuide Index was not understood in context to its location (see Figure 2). This search box is intended to allow users to search the content of the given institutions' guides, as well as the library's catalog and site (using a drop-down menu). After testing the first five participants, it was very clear that users did not understand what the top search box on the guide was searching. Each student used the top search box incorrectly at least once and several of

them used it incorrectly multiple times. It appeared that the participants would use search without reading the drop down options, thus, making assumptions about what it was searching. One student vocalized that she understood what the search box was searching, but only after using it, receiving no results, and then reading the drop down option. Because the function of the search and the mental models of the users varied so greatly, the search box was removed after testing the first five participants.

Figure 2. LibGuides system search box was consistently used incorrectly.



Another research goal of testing was to learn where users go when they feel lost or confused. Currently there are "How Do I...?" tutorial videos available collectively on the "How Do I...?" LibGuide and integrated into some boxes on the subject guides. Links to our Research 101 interactive online tutorial, chat widget and contact information also appear throughout many guides. In our observation, we found that the participants went to a variety of places for support. They frequently used guides in the General Research Help category, the "help" section of various pages (including external sites), and the "How Do I...?" guide. Students commented that they would like more help understanding how to research, both in general and within a specific discipline. We also found that they wanted similar "types" of content (such as tutorials and librarian profiles) to appear in the same area of the subject guides.

We also found that format-specific resources (such as image and news databases) were better located when they appeared within a subject guide, rather than as separate guides. Users had a

great deal of trouble finding image databases and the Images LibGuide. For the first half of the test, users consistently found the image requested in the task through the UW WorldCat catalog. Realizing this was not what we intended, the task was changed to include a very current photograph, essentially requiring users to use an images database to complete. Even with this change, not all of the participants used the Images LibGuide, as two of them found the image through other guides that had included links to image databases.

Additionally, most users spent a great deal of time figuring out where to look for images. The average number of "wrong paths" taken to find images—that is, pages that users clicked on looking for images that were incorrect—ranged from 0-9 with an average of 3.5. Moreover, three participants said they would have given up if they were not taking part in a study, and one user did not successfully find the correct image, though she believed she had. Many users also mentioned that they would not have gone to the library to find images because they did not think the library

had that content, or they were used to using Google to find images.

Guides Should Provide a More Consistent Layout

During testing it was observed that users frequently did not notice a guide's tabs right away as a navigational option. Users' eyes were drawn to the top middle of the page first and would focus on content there, especially if there was actionable content, such as links to other pages or resources.

Additionally, during the Xs & Os activity, one user commented that she felt the tabs were visually separate from the guide and were part of the UW Libraries header.

Through observation and user comments, it was also found that inconsistent layouts confused the users. User behavior demonstrated that inconsistent structure made it hard for them to find resources and created confusion during the tasks. This was especially apparent when the individual subject guide did not have an introductory Home page/tab.

Several people mentioned that they preferred consistent layouts among the guides. Additionally, users vocalized that they felt that the guides were lacking a focal point, and that they desired an obvious place to direct their attention and actionable content that would lead them to what they should do next.

Most of our subject guides feature a Home page/tab that welcomes visitors to the guide and includes the subject librarian's profile. Others did not have a Home page/tab and instead simply featured a series of pages organized by content ("Articles," "Books," "E-Journals," etc.). During testing we found that users seemed disoriented and unsure of what to do next when landing on a guide without a Home page/tab or a guide whose Home page/tab was not the first tab.

When asked, users overall liked the current look and feel with a preference for brighter tab and

heading background colors. They did however have mixed reviews about guides that had sparser layouts, and several users expressed that they would have liked to see more images to add visual interest and break up content. It was also found that most users did not seem to notice or did not mind the colors schemes changing from guide to guide.

Guides Should Have Better Navigation

Based on usability testing we performed in 2002, we began listing our guides in an A-Z list of about 100 subjects laid out over three columns. More guides, either for classes or for more specific subtopics within that subject area (which we call sub-guides), were then linked under the general guide for that subject. The A-Z list of subjects is the list of subject categories we moved into LibGuides.

Participants liked that there were more specific sub-guides, like History of Asia or Medieval History, which they felt would help people new to the subject understand a subject's breadth. However, during the study users would often go straight to the sub-guides within a subject and would miss helpful content provided on the general guide. Guides did not show or link back to categories and links from the sub-guides to the general guides were inconsistent.

Users also had trouble finding what they wanted on the LibGuides Homepage, due in part to the fact that the Homepage list is very long and difficult for users to scan (see Figure 3). Users seemed to conceptualize a term in their mind and then scan the page for it. This becomes problematic when what they are looking for is not subject, but a format, like an image. Only one out of ten participants found the Images guide in the list on the LibGuides homepage.

Additionally, none of the users seemed to notice the information on the side boxes, such as "Featured Guides" or "Helpful Links" right away. It was not until users were confused or having difficulties that they noticed the side content.

Figure 3. Original LibGuides homepage.

W UNIVERSITY LIBRARIES UNIVERSITY of WASHINGTON

ask us! email | chat | phone

off-campus access (log in)

UW WorldCat | UW Catalog | Site

Search UW Libraries and beyond [advanced search]

UW Libraries Home » Subject and Class Guides Home Admin Sign In

Welcome to Subject and Class Guides

These pages provide access to library resources - article databases, catalogs, reference resources, web sites - organized by topic. These pages were created by the librarians responsible for the areas of study listed.

[Browse All 196 Guides \(A-Z\)](#)

More Guides

- UW Bothell/Cascadia Guides
- UW Tacoma Guides

Helpful Links

- UW Libraries Home
- Libraries & Hours
- Find Articles
- Browse E-Journals
- Interlibrary Loan (ILL)
- Course Reserves
- Purchase Request
- Ask Us!
- UW Librarians

Browse by Subject

You can also browse by Librarian

- "Class Guides"
- "General Research Help"
- Aeronautics & Astronautics
- African Studies
- American Ethnic Studies
- American Indian Studies
- Anthropology
- Architecture & Urban Planning (Built Environments)
- Art
- Atmospheric Sciences
- Bioengineering
- Biology
- Business
- Canadian Studies
- Chemistry
- Children's Literature
- Chinese Studies
- Cinema Studies
- Civil & Environmental Engineering
- Classics
- Communication
- Comparative Literature
- Computer Science
- Dance
- Demography
- Dentistry
- Drama
- DX Arts (Digital Arts and Experimental Media)
- Earth & Space Sciences (Geology & Geophysics)
- Economics
- Education
- Electrical Engineering
- Engineering
- English
- Environmental Sciences
- Fisheries
- Forest Resources
- French
- Gay & Lesbian Studies
- Geography

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- UW Writing Centers and Resources**
by John Holmes - last updated on Oct 29th, 2009
- Video | DVDs, VHS, more...**
by John Vallier - last updated on Nov 06th, 2009
- GENST 199: FIG Research and Discovery Project (Fall 2009)**
by Kathleen Collins, Ben Tucker, Amanda Hornby, Ian Porter - last updated on Oct 23rd, 2009

Library Guides

These pages provide access to library resources - article databases, catalogs, reference resources, web sites - organized by topic. These pages were created by the librarians responsible for the areas of study listed.

Can't find what you're looking for?
[Ask us!](#)

Guides Should Follow Best Practices for the Web

In general, users did not have issues with the labels of pages/tabs and seemed to understand what they meant. However, users also did not widely explore the tabs, mostly using the "Find Articles" tab and the "Find Books" tab for the tasks we asked them to complete. There was a general preference for tabs with shorter names and fewer tabs on a guide, to help them focus on the most important elements first. Database titles

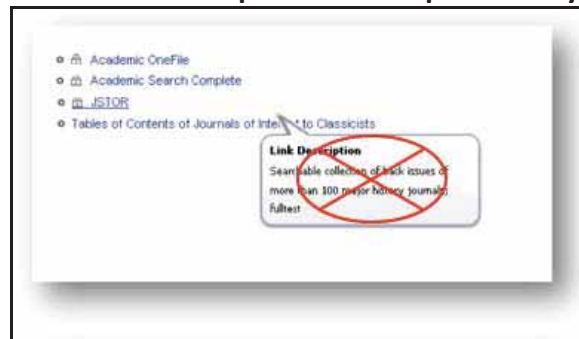
that used acronyms or resources that did not have much description were rejected in favor of resources with more reassuring titles or descriptions that included key terms, like "full-text."

It was also found that students did not read descriptions of resources when these resources appeared as rollovers (see Figure 4). One user verbalized that she preferred static descriptions because rollovers forced her to remember what

each said when making a decision on which resource to choose. We learned that important

information should remain as static text on the page, rather than being hidden under a rollover.

Figure 4. Students do not like important descriptions in dynamic rollovers.



Next Steps after Usability Testing Remodeling Data into New Guidelines

Staff observations from the usability testing were compiled at a debriefing session in December 2009. In January the Usability Team presented the Libraries Browseable Resources Discovery Group (BRDG) with a Recommendations Matrix (see Appendix C) that detailed recommendations to improve the usability of guides for researchers. BRDG, a group charged with creating and maintaining browsable resource discovery tools on the Libraries website, was tasked with taking these recommendations and turning them into workable, formal guidelines that subject liaison librarians could use to implement changes to their subject guides. While usability testing gave us insight into what was and was not working for our users, devising new requirements for a multitude of guides proved challenging. These requirements needed to work for over one hundred general subject guides, each of which was targeted to different disciplines with varied research needs and were authored by librarians with varying approaches to layout and content.

The group first worked through the Recommendations Matrix to devise a list of

changes that librarians would need to make to their guides and then prioritized them to be “requirements” or “suggestions.” We also looked at the new Libraries patron personas, a usability project completed in early 2009 that created five representative patrons of the UW Libraries,² and used that information to also help make decisions about changes to the guidelines. A presentation to Libraries staff of LibGuides usability testing results in February gave us the chance to explain the process and general findings. This forum also gave us a chance to introduce the Libraries patron personas and to alert subject liaison librarians of the upcoming changes that would be expected for their guides, and get their feedback on how they would like assistance with the process.

BRDG created two documents for subject liaisons to use: a guide template that included the required LibGuide Home page/tab and content layouts, and a detailed checklist of step-by-step instructions for making changes to the guides (see Figure 5). Screenshots and links to screencasts were inserted into this checklist in order to provide clarification on how to make these changes and how the finalized subject guide should look.

Figure 5. Screenshot of step-by-step instructions for guide authors, detailing the LibGuide Home tab/page template

Required Changes: First Priority

The top priority for changing the UW LibGuides is that each guide have a Home page with the same, basic 2-column layout and content. Steps 1-5 will show you how to create that layout. You can complete these steps in any order, or you may prefer to start your Home page from scratch.

Your guide must have a two column layout with a "What's in the Guide" box at the top of the left column. This box lists the tabs found in the guide, with a description of what the user will find there.

Any additional content (see requirements in Step 4 & 5) must appear below the "What's in the Guide" box & Profile.

The screenshot shows a LibGuide for 'Example Guide' with a navigation bar, a 'What's in the Guide' section with a bulleted list of resources, and a 'Class Guides and Related Guides' section. Annotations with dashed boxes and arrows point to the 'What's in the Guide' box and the 'Class Guides and Related Guides' section.

New Home page/tab Template Orients Users
A new guide Home page/tab, which was tested on the last five usability test participants to ensure that the content and layout was helpful, was turned into a template and required on all guides. It includes a large, central box titled "What's in the Guide," with a bulleted list of each page/tab title in the guide followed by a short description of what the different tab labels, like "Reference Works," mean. Having the main navigation in a box also gives us the opportunity to place the contents of the guide directly in the users' line of sight, because the guide tabs were sometimes overlooked. This also shifted extraneous content, like news videos or feeds that often would appear on the Home page/tab of a guide, over to the side.

Related guides and links are listed below the "What's in the Guide" box and the author's profile to the right. Consistency in the Home page/tab layout across all LibGuides will help users viewing multiple guides.

More Description Provides Guidance and Scope
Resources like the library catalog that are not already scoped to the subject area now provide specific tips and guidance on how to use that resource to find information within the subject area. For example, suggesting phrases or LC

subject headings helps show users how to best frame a search within the discipline. Besides providing tips, the description for all resources provides an opportunity to highlight the strengths or limitations of a particular resource, point out useful tools or ways of limiting/sorting searches within the resource, or other hints to help users. This increases the value of the subject guides from being merely lists of recommended resources, to being actual *guides* to doing research within a given discipline.

BRDG created template boxes for both library catalogs that included textual descriptions and a place to include tips for using the catalog. Librarians are expected to copy the template but edit the text to make it context specific to their guide.

Improved Layout and Navigation Guides Users to Appropriate Content

The LibGuides Homepage is back to the same three-column layout we had before we acquired LibGuides. The LibGuides Homepage template did not have enough customization options to mimic the former layout, so the page is hosted on our own web server. We also bypass the LibGuides category pages, so that users must first go through the general subject guide and then drill down to more specific sub-guides from there.

This forces them to recognize that there may be broader or related resources available in a broader discipline.

We also standardized general layout decisions, like placing all related “help” content on the right-hand side of the page and keeping all main content areas in the widest column.

Beginner vs. Expert Needs

A crucial part of any usability effort is to discern user needs. It became apparent to us during the analysis of the post-test questionnaire and users’ comments that there was a clear line between beginner and expert needs.

Beginners need guidance where to look, how to start, and how to conduct research. They are unsure of what resources are available and need descriptions of resources because they are either unfamiliar with the topic or with research in general. Once they become familiar with the main resources, they need guidance on how to find more in-depth sources.

Experts on the other hand, are already familiar with general and discipline-specific databases. They are looking for specialized sources in their field that will help them become further engaged in their work.

It is important to note that “beginners” and “experts” do not correlate with undergraduate and graduate standing necessarily, but rather with the student’s engagement in research and their expertise (or lack of) in a given subject area.

Keeping this need in mind, we now recommend that authors consider creating separate boxes for “Starting Points” and resources “Beyond the Surface” for more specialized resources.

Using the New Guidelines and Checking for Librarian Compliance

The checklist for guide authors created by BRDG explained the new guidelines for subject guides, what steps one should take to achieve that guideline and the rationale behind each change. BRDG gave staff about 3 months to make the changes (until the end of the academic year). During that time we provided support for authors by offering personal consultations in-person or via email, and hosted three drop-in “workparties”

to dedicate time to review the guidelines, work on the guides and provide one-on-one assistance.

At the end of the grace period, BRDG divided up the guides alphabetically and reviewed each guide for compliance and general usability. Each BRDG member then sent emails to guide authors, one for each guide, highlighting what was done well and offering suggestions for improvements on the guide. The personalized emails were well-received by staff and served as a reminder for those who had not yet made changes to their guides.

Because there is no way to enforce the guidelines beyond this, BRDG’s ongoing plan is to highlight an outstanding LibGuide periodically as an example of worthwhile features or content to emulate. We hope this public praise to peers acts as positive reinforcement for staff to constantly improve the usability of their webpages.

Usability Limitations and Further Study

There are some limitations of doing a formal usability test to observe the normal use of a guide. The testing environment may be quite different from a user’s normal research/study environment. Having an observer/test moderator looking over the user’s shoulder may induce test anxiety and make them more apt to rush through tasks. Some users may feel pressured to provide the “right” answer (even when you reassure them there is no right answer), and work on a task longer than they normally would. Questions to further investigate as students and faculty return to campus for a new academic year include how users access the guides and if that can be improved, how often guides are used for research, and how they compare with other help content provided by the Libraries. These questions can be assessed with other methods, such as surveys, focus groups, and web analytics.

Conclusion

LibGuides lets you customize the look of the site to match your existing brand and help users know where they are. Providing consistency across systems not only helps brand it as your own content, but gives you the opportunity to provide the same tools and links (in our case, our “ask us” links and our catalog and site search boxes) in the same place.

Customizing beyond the branding—redesigning layout and navigation—lets you tailor it to meet the needs of your specific users—both the authors who work within the system to create the content, and the end-users who navigate the resulting site content. For example, at the UW, the organization of the content within the system (general guides and sub-guides) did not work well with existing navigation structures like category pages (where it is difficult to visually indicate the importance of a general guide other than moving it to the top of the list). Customizing how users navigate to guides was easier than further rearranging all of the content provided by 60 or more staff.

Customizing also gives you the opportunity to discard any features that you do not use or that might otherwise confuse your users, like the top LibGuides search box that appears by default on each page in the system.

The content hosted by LibGuides is just a part of the entire UW Libraries website. Customizing it to complement the other systems helps us manage a larger chunk of the user experience with the

Libraries. Users are constantly delving into other systems over which you have little or no control, so it helps the user to customize when you can. Doing usability testing with your users will help you customize the system to suit their needs and improve their research experience.

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Notes

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Appendix A

Research Questions

- How do people want to browse or find information within the guide?
- What general layout improvements can be made, including the organization of the layout, and content to include or exclude?
- Do inconsistent layout structures between guides confuse the user?
- Do the top navigation labels make sense?
- Do users have difficulty navigating back to Lib Guides after researching within a particular offset?
- Do external links on the page confuse or disorient users?
- Are the drop-down menus confusing? Do users know the first tab is clickable?
- Do users get the sense that doing research in varying disciplines is different?
- Do users like the current look and feel?
- Do inconsistent color schemes confuse users?
- Do users know which database to search? Do they know the differences between them?
- Do users know which catalog to search? Do they know the differences between them?
- Where would users go for help if they felt lost or confused?
- Can users find images?

Appendix B

Subject Guides Usability Study Protocol

Introductions (4 minutes)

Thank you for agreeing to take part in our research study. My name is _____, and I'm going to be walking you through this session.

During the rest of the session, I'll be working from a script to ensure that my instructions to everyone who participates in the study are the same.

Let me explain why we've asked you to come here today: We're evaluating the Libraries' subject guides page.

During the session, I will ask you to use the web site to do a variety of things and will observe you as you do them.

As you do these things, please try to do whatever you would do normally.

I want to make it clear that we're testing the *site*, not you. You can't do anything wrong here. In fact, this is probably the one place today where you don't have to worry about making mistakes. If something is unclear to you, that means we can learn something.

We want to hear exactly what you think, so please don't worry that you're going to hurt our feelings. We are here to gather information and will use this to improve the site, so we need to know honestly what you think.

As we go along, I'm going to ask you questions and ask you to think out loud, to tell me what's going through your mind. This will help us a lot.

If you have questions, feel free to ask. I may not be able to answer them right away, since we're interested in your perceptions, but I will try to answer any question you still have when we're done.

One last thing. We would like to record this session so that we can later review what happened, mostly so I can take a second look at this session and take better notes. We don't use our recordings for purposes other than helping us learn about the site.

If you would, I'm going to ask you to sign something for us. It simply says that you are willing to take part in the study.

[distribute consent form; provide a copy for the participant if they want it]

Do you have any questions before we move on?

[Press record on Morae]

Now, you will begin with a short questionnaire. (3 minutes)

UW Task List: (35 minutes)

Now let's start with some tasks I would like you to try. You are going to play the role of a researcher in a variety of fields of study. Look for the information requested for each task. During each task make sure to "think aloud." Please open a browser window. I will guide you to the Subject Pages [Navigate to the Subject Guides page from the Library homepage.] Please Begin

Task 1

1. For your anthropology class on North American Indians you have decided to write your final assignment on cultural anthropology and the Cheyenne Indians. Locate the book The Cheyennes : Indians of the Great Plains by E Adamson Hoebel for your paper. When you are finished please return to the library Subject Guides homepage.

Suggested Questions: * (Format has been changed from a table view to a list view)

- What do you think each search engine does?
- What would make you choose one search engine over another?

Things to Notice:

- Does the user seem confused by the lack of description under the search boxes?
- Does user have issues navigating back to Lib Guides?
- Was prompting or assistance necessary? Yes/no # of times _____

Successful Completion Criteria

- Preferred path: Subject guides>Anthropology>any >finds resource
- Does the user stay on the preferred path?
- Does the user complete the task?
- Success Score
 - ___/2

Task 2

2. Locate an image of Barack Obama and Hu Jintao together from their recent gathering. When you are finished please return to the library Subject Guides homepage. When you are finished please return to the library Subject Guides homepage.

Suggested Questions:

- What would make you search one image database over the other? (Do the descriptions have any effect on which database over another?)

Things to Notice:

- Does the user have trouble determining which guide to search?
- Does the user read the descriptions for the databases? (text below the link)
 - ___ No ___ Quickly Skimmed ___ Read Thoroughly
- Does the user have issues navigating back to Lib Guides?
- Was prompting or assistance necessary?
 - Yes/no # of times _____

Successful Completion Criteria

- Preferred path: Subject guides> Images, Audio, Video > Image Databases & Resources >Images by Subject>Pacific Northwest>Any Seattle-related Database> finds image
- Does the user stay on the preferred path?
- Does the user complete the task?
- Success Score
 - ___/2

Task 3

3. You are enrolled in an English class. You have read a few books by Ralph W. Emerson and want to write a paper about his role in American literature. Locate a resource to use in your paper. When you are finished please return to the library Subject Guides homepage.

Suggested Questions:

- Do the tabs on top make sense to you?
- What does “Find Articles/E-Journals” mean to you?
- How many databases would you generally search in for a resource?

Things to Notice:

- Can the user find the American Literature subject guide which is not on the homepage? What term did the user scan the list for? (English or American Literature)
- Does the opening of the subject guide in a new window confuse the user?
- Was prompting or assistance necessary?
 - Yes/no # of times_____

Successful Completion Criteria:

- Preferred path: Subject guides>English>American Literature tab or link on 2nd page>finds resource OR Browse all guides>American Literature>finds resource
- Does the user stay on the preferred path?
Does the user complete the task?
- Success Score
 - ___/2

Task 4

4. You are taking a psychology course and are interested in writing about child behavior for your midterm paper. Your professor wants you to write about current research in the field, so she requires that your resource be less than 5 years old. Please locate a resource on child behavior that has been published in the last 5 years. When you are finished please return to the library Subject Guides homepage.

Suggested Questions:

- What are your thoughts on the look and feel of this guide? Does it matter to you that the colors and layout can differ from guide to guide?
- What would make you search one database over the other? (Do the comments or rating have any effect on which database over another?)
- Do the link descriptions influence where you’ll click?

Things to Notice:

- Does the user read the link descriptions? (pop-ups from mousing over, if applicable)
 - ___ No ___ Quickly Skimmed ___ Read Thoroughly
- Does the user read the descriptions for the databases? (text below the link –articles, text in right hand column – UW catalog)
 - ___ No ___ Quickly Skimmed ___ Read Thoroughly
- Was prompting or assistance necessary?
 - Yes/no # of times_____

Successful Completion Criteria

- Preferred path: Subject guides>Psychology>Find Articles>finds resource
- Does the user stay on the preferred path?
- Does the user complete the task?
- Success Score
 - ___/2

Task 5

5. You are taking a history class and need to write a paper. Locate a resource on the topic of your choice. When you are finished please return to the library Subject Guides homepage.

Suggested Questions:

- Do you like the look and feel of this guide?
- What would make you use one search box over the other?

Things to Notice:

- Does the user read the descriptions for the UW Catalog search boxes? (text next to search boxes)
 - ___ No ___ Quickly Skimmed ___ Read Thoroughly

- Was prompting or assistance necessary?
 - Yes/no # of times _____

Successful Completion Criteria

- Preferred path: Subject guides>Psychology>Find Articles>finds resource
- Does the user stay on the preferred path?
- Does the user complete the task?
- Success Score
 - ___/2

Task 6

6. You are taking a dance class and you have to write a short research paper on the history of Renaissance Court Dance. Please locate an article for your paper. When you are finished please return to the library Subject Guides homepage.

Suggested Questions:

- Does this guide give you a sense of how dance research is different from psychology research?
- What are your thoughts about the layout of the page? (articles)
- Now that you're in the subject guide, do you find it useful to have short screen casts showing you how to do specific tasks? Where would you usually look for help?

Things to Notice:

- Did the user have any issues with the drop down menu?
- Was prompting or assistance necessary?
 - Yes/no # of times _____

Successful Completion Criteria

- Preferred path: Subject guides>Dance>Find Articles>finds resource
- Does the user complete the task?
- Does the user stay on the preferred path?
- Success Score
 - ___/2

X's and O's exercise: Lib Guides (7 minutes)

Now I'd like to know more about what specifically you use/don't use or like/dislike about the content on this page.

Instructions

- circle any items on the page that you like and would use the most
- cross out any items on the page that you don't like and don't use
- add any items that are not on the page that you would like to have there for your own use

Questionnaire and Debrief (5 minutes)

Thank you. That completes the tasks.

I have a brief questionnaire here that I'd like you to complete. The information you provide is for our use only.

[Facilitator visits observation room while participant completes questionnaire, to ask if there are any follow up questions from observers. Returns to room and asks follow up questions.]

Do you have any comments or questions about today's session?

Once again, I'd like to say thanks for coming today.

[Give the participant their payment]

Appendix C

Recommendations Matrix

Recommendations	Issues	Supporting Evidence
Provide static descriptions under each database for users to scan	<ul style="list-style-type: none"> - Users didn't want to remember what a rollover description contained. - Users wanted descriptions of the databases they were presented. 	Users have a general preference for static text/information -- upfront, not buried, so they don't have to mouse-over in order to access. P2 wrote "Too little info" next to the database links on the History guide during the Xs & Os activity.
Supply short descriptions of what search boxes include	Users wanted short descriptions of the search boxes they were presented.	P5 wrote "blurb" next to the search boxes on the Dance guide. P3, "[would like to see] explanations on functions of the search engines."
Place the most important information in the top center of the page	The center of the page is often used for boilerplate information leaving users confused, and unsure of what to do next.	Time after time, user's eyes were drawn to the center of the page, as seen through observation and the Xs & Os activity.
<ul style="list-style-type: none"> • To increase visibility, tabs should be a contrasting color from the background and other colors used on the page • Reinforce the structure of the page by using similar colors for the headings background and the tabs • Reiterate tabs with textual links in the top center pane 	<ul style="list-style-type: none"> - Users didn't always notice the tabs right away. - Lack of coherence with the color schemes of the guides. - Users felt the tabs were part of the UW site not the guide 	<p>In guides where the tabs were a more saturated color, participants seemed to notice the tabs quicker.</p> <p>Users expressed a preference for tab content to be repeated in the body of the page, with explanations</p>
Keep the number of tabs to a minimum. If something can be a contextual link then place it in the body.	<ul style="list-style-type: none"> - Information overload for users - Cluttered pages 	<i>"Repetitive tabs cluttered the pages and made it more overwhelming to be looking at a page trying to figure out where to start. Making it crisp and easy to navigate would be really useful."</i> P1 P8 noted "cluttered" on the Dance page in reference to the tabs.
Minimize Redundancy. It confuses users to have a search box for a database and a link to the database on the same page.	Users were confused about links and search boxes that went to the same place.	Four users noted redundant content during the Xs & Os exercise.
Provide guidance on how to find books, etc. from the lib guide. Specify that the search	<ul style="list-style-type: none"> - Users are confused by duplicity on Lib Guides and the Library homepage. 	Numerous users thought the search was scoped.

is not scoped.	- Users thought search boxes on Lib Guides pages were scoped to the subject area of the guide they were on.	P1 after searching the library catalog in several guides said, "Can I go through the normal catalog?"
Keep like content boxes together (i.e. Help and tutorials)	Need to reduce clutter and create focal points	This will help guide student's eyes when looking for content. P5 expressed wanting a "help" section in which all tutorials or help information would be located in the same place as opposed to in various locations on the page. <u>Resource:</u> "Your design should organize the user interface purposefully, in meaningful and useful ways based on clear, consistent models that are apparent and recognizable to users, putting related things together and separating unrelated things , differentiating dissimilar things and making similar things resemble one another." (from: <i>User Interface Design Tips, Techniques, and Principles</i>)
Add an "Advanced" link next to each search box when possible	Users have to do a search and then find the advanced search from within the database's interface.	P2 circled the "advanced search" link during the Xs & Os exercise. P10 "Maybe more options for doing an advanced search more immediately."
Break up content with use of visuals	Pages lacking a focal point	<i>"I suggest adding something interdisciplinary and making webpage more visually helpful."</i> P9 <i>[What suggestions do you have?]</i> "More visuals." P5
Break content into more subcategories. Users have requested places to help them find topics.	Users unfamiliar with a subject desire subcategories to help them get started researching	P1 <i>[What she'd like to see]</i> "Perhaps the departments broken down more into different subsets of subjects. For example, how History was broken down into Medieval History." P5 <i>[What she'd like to see]</i> "More subtopics on the various guide pages" P1 "It would be helpful if the departments were broken down more into different subsets of subjects for people researching in an area they are not used to."
Keep the amount of words in each tab short (3 words max)	Users are missing content because tabs have too many words	P10 Didn't notice the "photos" part in the tab "News Broadcasts, Transcripts, & Photos" <u>Resource:</u> "Users typically see about 2 words for most list items; they'll see a little more if the lead words are short, and only the first word if they're long."

		Jakob Nielsen, Alert Box, UX Expert http://www.useit.com/alertbox/nanocontent.html
Breaking up “Starting Points” and “Further Research” databases		P10 – sees useful information buried P9 – wants to break them up
Homepage		
Still to be discussed, options: 1. Add an anchored alphabetical list to the top of the homepage 2. Adding a scroll bar and anchoring for quick finds (About.com example) 3. Reverting to the 3 column layout	The length of the list is very long and difficult to scan <i>Challenge:</i> Users want to browse the list to know what is there but many were scanning for a specific term	
Separate formats and highlight main features Suggestions: - Create tabs on top to separate out formats - Remove extra content to highlight the main content - >>Remove “Featured Guides” as this was not used frequently - >>Remove the Library guide explanation box on the side bar and increase the size of the explanation on top	- Access to format specific content through lib guides is difficult (e.g. Images) - Mix of format vs. subject vs. class guides in list	Nine out of ten users had difficulty finding the Images guide. Two users claimed they “would have given up already” if they were on their own. Six out of ten users found images without going to the Image guide at all.
Remove all content from the second level page other than the sub-category pages.	Users found it confusing and often though it was a guide itself.	

Librarians Do It Differently: Comparative Usability Testing with Students and Library Staff

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Abstract

Our experience as librarians suggests that library staff search and locate library resources differently than college students. We bring to our work knowledge about library collections and search tool functionality that may inform our strategies for finding library resources. Through our training and experience, we have developed more accurate mental models for the information universe for which our library website is a portal. The purpose of this research is to explore that hypothesis and if it has merit, to articulate those differences in information seeking behaviors, particularly search strategy and tool use. As those patterns of difference are identified, the findings may be used to improve the usability of the website for students as well as illuminate real student behaviors for library staff.

In general, library staff used different strategies, selected different tools and used facets and search limits in ways that were different than students carrying out the same tasks. Their “pre-knowledge” about library collections and differences in how search tools function informed their search strategies. Students were more interested in efficiency and assumed a “Google-like” search functionality when presented with a search box.

Introduction

Our experience as librarians suggests that library staff search and locate library resources differently than college students. We bring to our work knowledge about library collections and search tool functionality that may inform our strategies for finding library resources. Through our training and experience, we have developed more accurate mental models for the information universe for which our library website is a portal. The purpose of this research is to explore that hypothesis and if it has merit, to articulate those

differences in information seeking behaviors, particularly search strategy and tool use. As those patterns of difference are identified, the findings may be used to improve the usability of the website for students as well as illuminate real student behaviors for library staff.

Related Literature

The current exploration relates to several bodies of literature, including research on the information seeking of college students and how it develops through increased exposure to academic library resources and information literacy. Recent study of mental models in information seeking is also of interest, as mental models impact how students and library staff approach the use of search tools on the library website. The research methodology draws upon the usability testing literature, particularly as it relates to academic websites and how they compare with tools with which students are most familiar.

Lippincott¹ writes that NetGen students perceive the Web as their information “universe.” This perception differs from that of librarians who think of the library as the starting place for research. In their review of library subject guide use, Reeb and Gibbons² also reference a disconnect of mental models that students and librarians have as to how information is organized. Students’ expectations of information systems are influenced by their experience with robust retrieval tools that fit their personal needs. Subject guides need to be contextual for students as they fulfill their course assignments.

Researchers at MIT³ looked at all types of information seeking behavior for graduate and undergraduate students, using interviews and photo diaries. Their research demonstrates some differences between the two populations, where

graduate students demonstrate more complex, deeper information seeking skills. Although graduate students proved somewhat more successful with known items, undergraduates are more efficient in topical searching. This dichotomy between efficiency and accuracy is relevant our research, as similar differences emerged between students and library staff.

Yan Zhang⁴ explored undergraduate college students' mental models of the Internet for information seeking. He used several methods, including interviews and the elicitation of drawings. Successful use of an information retrieval system requires understanding four components: information source, information organization schema, search mechanism, and interface. Students form their mental models of search engines based on system cues and feedback. Zhang reports that "several students regarded that there were people sitting behind 'a curtain,' searching everything, and getting back results to them."⁵ The literature indicates that students may come to the website with naïve ideas about how the search tools work and what to expect of results.

Usability expert Jakob Nielsen's⁶ research demonstrates that users have developed a firm

mental model of how a search tool is supposed to work. Most of our students bring those expectations to their work with the library-offered search and discovery tools. Mental models are developed through experience, and improvement of the mental model depends on system cues delivered with search results.

More specific to students' use of library catalogs is Dimitroff's⁷ research on mental models and bibliographic retrieval systems. Her results demonstrated that there is a strong relationship between the completeness of a mental model and the success of a search, with implications for both system design and instruction. Experience will have an influence on the development of one's mental model as well as instruction or education. To support the development of more accurate mental models, systems must provide users with a robust search engine as well as feedback mechanisms that enhance their learning.

Research Context

In the summer of 2009 Syracuse University Library launched a freshly-designed website with new search and discovery tools and a re-designed search box.

Figure 1 - Library Home Page



At this launch our new Discover search was the primary search box, defaulting to a keyword search in the Library's catalog. The Discover tool was added as a more user-friendly solution to the traditional, now Classic catalog. It is an Encore (Innovative Interfaces) overlay to the Voyager (Ex Libris) online catalog. Discover supports more robust keyword searching and offers faceted browsing within the search results. The link to the Classic catalog was moved to a menu of Quick Links. The classic version supports indexed title, author and subject heading searches and browsing. The tabbed presentation to other searches for library resources was also new, taking the user to a databases title search, an e-journal title search and an article search supported by a the MetaLib (Ex Libris) meta-search engine. The Article search conducts a federated search against three general article databases.

User tests with undergraduate and graduate students were conducted in the fall of 2009. We were surprised with the results. When asked to ascertain the availability of the novel *Beloved* by Toni Morrison, half of the students selected a record that was incorrect. They did not distinguish between the novel itself and a secondary source of literary criticism about the novel. Were students in a hurry and not reading the screen? Was the organization of the information on the screen distracting them, or was the relevancy of the search engine not as robust as others with which they were more familiar, i.e., Google or Amazon? These questions led to another. Would library staff fare better at the task of locating a specific title in the Library's catalog? Using the same testing protocol with library staff, we hypothesized that library staff would handle this question differently and be more successful. What was not expected were additional differences that emerged, indicating that students and librarians have differing mental models they apply to the use of the Library's website. These different models are informed by experience and knowledge of Library resources and search tool functionality.

Methodology

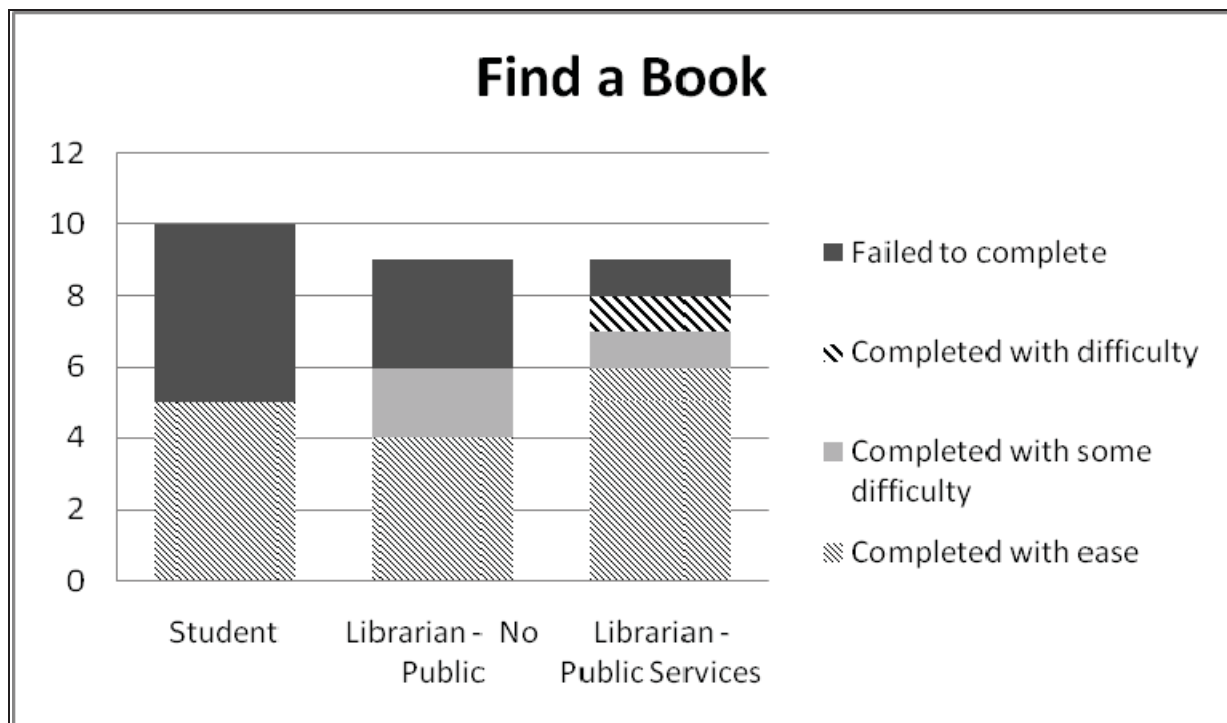
We conducted pilot tests with 3 students. After slight modification of the instrument, the user test was given to 10 students (3 undergraduates and 7 graduates). In the second phase of the research, the user test was conducted with 18 library staff members, divided for analysis into those who work with the public in reference and instruction and those who do not.

Student participants for this study were recruited from within the library building using prominent signage and a flash drive giveaway as incentive for participation. Library staff members were recruited for participation via an email solicitation and of the 18 who volunteered, 9 were experienced with reference or instruction (public services) and 9 were not.

All participants were asked to complete five tasks with a starting point of the Library's home page at *library.syr.edu* [Figure 1]. Tasks for the usability test were selected to represent typical tasks that users conduct as they look for and use library resources. The tasks were written to be simple and unambiguous. They were read aloud and provided in writing to each participant. The session was recorded using Morae software to capture the computer screen action.

- Locate the book *Beloved* by Toni Morrison. Is this book available for you to check out of the Library?
- Locate an electronic journal in the subject of psychology.
- Find a multi-media item, like a video, for a presentation you are doing on health and the college student.
- Find and access the full text of an article from the online journal *Nature*.
- Show me how you might locate first-hand accounts or primary resources (diaries, newspaper articles) by people who worked on the Erie Canal (1840-1860).

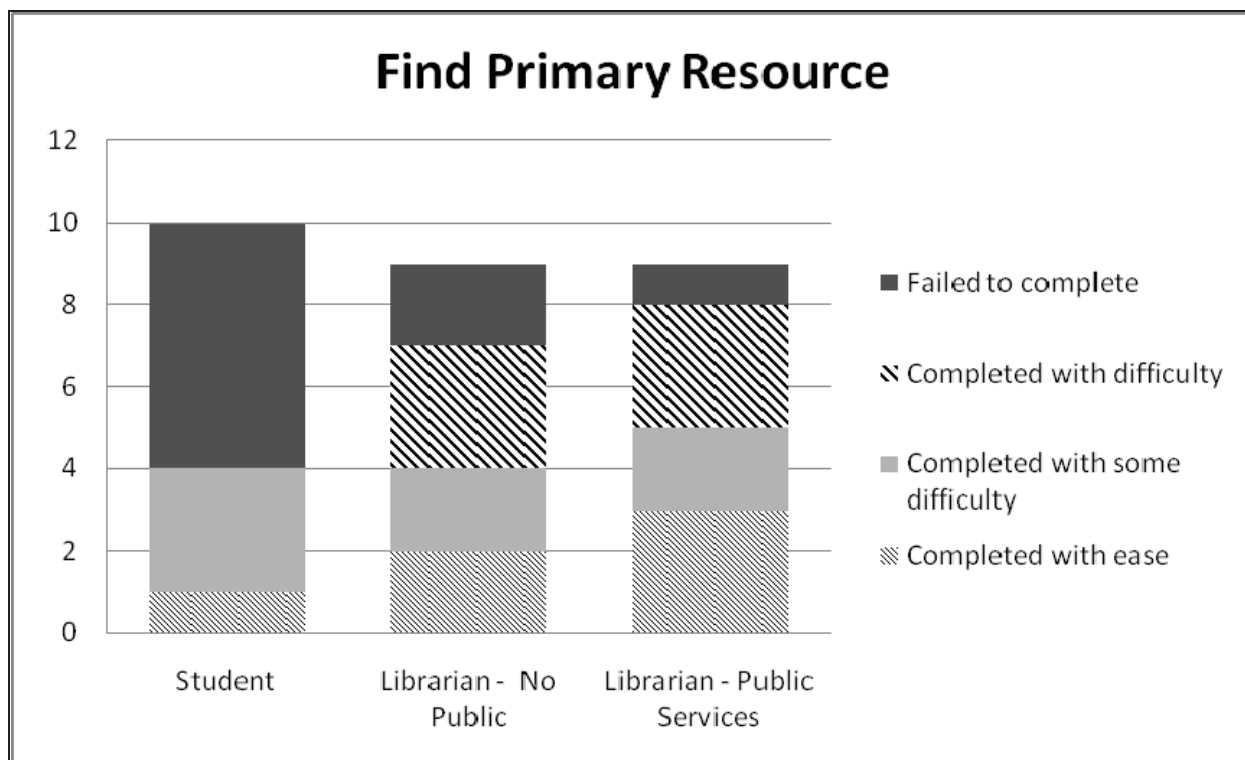
Described here are findings for two tasks, finding a book and locating primary resources. Upon analysis, these two tasks reflected differences in search behaviors most clearly.

Figure 2 - Finding a Book

When asked to locate the book *Beloved* by Toni Morrison and to note its availability for check out, each student started their search with Discover. When searching, some students entered both author's name and book title, yielding satisfactory results. This syntax would result in an error if the Classic catalog was used. In only one example did a student invert the name of the author – most typed a variation of “beloved Toni Morrison.” Students successful with this task completed it with ease. However, out of the 10 students, 5 did not identify the correct catalog record for this task, selecting a secondary source about the author's work.

In contrast to students, 9 out of 18 library staff members began their search for this book by navigating to the Classic catalog. Using this interface required staff to bypass the default search box on the Library's home and click on a link to the catalog. Some asked for permission to go to the more familiar old version of the Library's website, indicating that they were not yet confident in their use of the new catalog search tool. Others stated a preference for a more structured approach to their search, using the advanced search tools for author and title. As illustrated in Figure 2, Library staff were more successful with this task.

Figure 3 - Finding a Primary Resource



Users were also asked to locate a primary resource, described as a first-hand account of someone who worked on the Erie Canal. This question was written so participants did not need to know the term “primary resource,” nor the dates of the Erie Canal in history. Users of all types had less success with this question, even though it was more open ended than the task of finding a specific title. In this task, completion was defined not by locating a specific catalog item, but locating a resource that the participant deemed satisfactory.

Most students began this search with the Discover catalog. A few ventured beyond the default search box and navigated to the Articles search tab. None used the Classic catalog. Students who were successful with this task had additional knowledge about library research in primary materials—for instance that older newspapers might be found on microfilm. This was demonstrated by their selection of that format facet. Others used a search syntax that combined subject and format into a single search string. Expressions like “erie canal primary materials,” or

“articles by people who worked on the erie canal” were used.

Staff members used a variety of search tools to locate primary materials. 4 staff members bypassed the search box entirely and navigated instead to our Special Collections Research Center page, assuming that primary materials could be located there. Like students, staff depended on their knowledge of the nature of primary resources and used facets or limits.

In several cases, the library staff would suggest multiple strategies. After retrieving one record, they would return to the home page and start another navigational path—or suggest alternatives verbally. To some extent this behavior was skewed by the investigator’s presence. It may also be that librarians do enjoy the process of searching, and are less ready to settle for something that is merely “good enough.”

Analysis

For these search tasks, we saw differences between students and library staff in four aspects:

- Selection of search tools

- Syntax used for searching
- Prior knowledge of library resource organization
- Level of searching persistence

Selection of search tools. All students started their search for a book using the default search box—the Discover tool. They did not explore the page for additional search options. Students unfamiliar with the site would have no way of knowing that there were two search tools available to them for searching the catalog content.

Library staff draw upon their knowledge of library holdings and search tool functionality when searching and navigating the website. We saw examples of this in their selection of the Classic catalog for known item searching, and their bypassing of the search box to seek information about special collections holdings of primary resource materials. In fact, staff may be less enthusiastic than students for trying out a new tool in the context of a usability “test”—having more confidence in their abilities with the familiar tool. Even anticipating the difficulty of a new search tool indicates a difference in mind set.

Syntax used for searching. When searching within Discover for an author, students did not use special syntax, i.e. inverting the author’s first and last names. Students were also more likely to use detailed language in the search box. For instance, they might include both the author’s name and the title of the book. In searching for primary source material, they might add a specific format (i.e. diary) to the search query. We saw examples of students using the kind of syntax they have learned to use for searching Google. When they received unexpected results, they would add search terms rather than remove them. This tactic corresponds to Zhang’s findings, where students aim to be precise and specific, using more words instead of one.⁸

Prior knowledge of library resource organization. Students often had trouble distinguishing between a catalog record for a book about *Beloved* by Toni Morrison and the actual novel. Our findings do not shed light on this difference, although it relates to findings at MIT that show accuracy improving with library experience. Students may be in a hurry.

Alternatively their “mental models” for relevancy may provide expectations that the first records would match their query – that a search for *Beloved* would put that title at the top of the list.

In searching for primary materials, both groups drew upon prior knowledge. For students, this was demonstrated in the use of facets to limit by format; for staff, it was demonstrated also by users navigating directly to an area of the website where primary resources are likely to be found—Special Collections. Staff also recognized that for this type of search, multiple resources might be available and persistence, as well as the trying of different strategies, is required.

Level of persistence. Persistence is demonstrated in the care with which the user reads the screen and evaluates the search results. It may be exhibited by trying different search strategies. When searching in a subject area, staff members demonstrate persistence and an interest in trying alternative strategies. Library staff took more time, on average, to locate materials. Their navigation through the systems was more deliberate and measured and frequently they verbalized their thoughts aloud. One of the differences between librarians and other users is the level of persistence that librarians bring to the search endeavor. Nothing is more gratifying than a complicated search, or strategizing about the path to the best or most comprehensive set of resources. This may not be the case for college students. They prefer finding over searching.

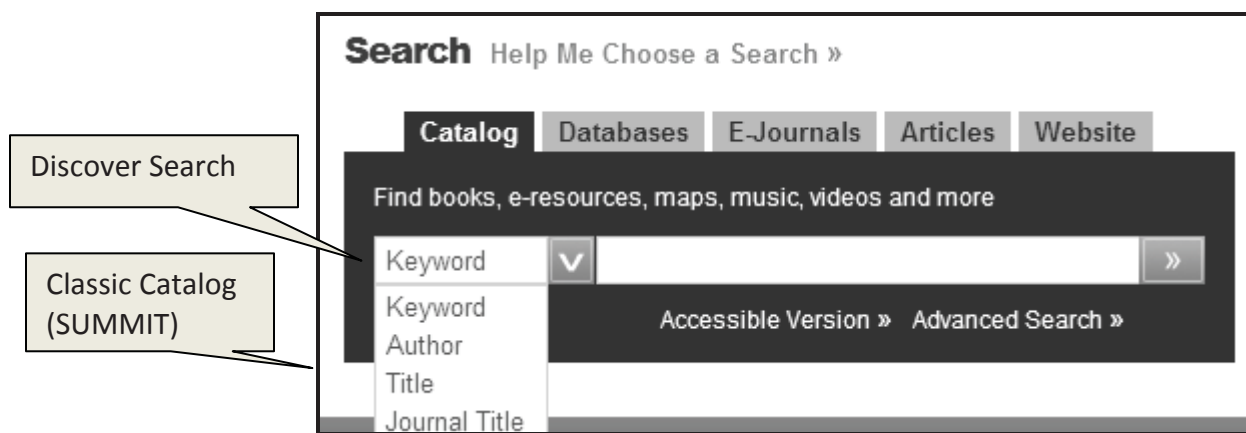
The differences in the use of tools and strategies are indicative of different mental models. It makes sense that those of us who use these systems frequently will develop more accurate mental models for the library information universe, even without formal education or training. The challenge is to recognize how our library-oriented models may not be those of our students. For example, in most information seeking with an Internet search engine, students have no need to ask themselves, “Is this a known item or a subject search?” Neither Google nor Amazon requires the searcher to distinguish between a known item and topical search. Students’ firm mental models of how searches work set up expectations that a single tool and search query formulation will work for all types of information retrieval tasks. It makes sense, then, for our students to approach

the top level search box as they would an Internet search engine. In our library portal design and instruction, we need to balance our search offerings and their presentation to accommodate

alternative mental models for the online information universe in a way that leads to success more of the time.

Implications for Web Design

Figure 4 - Updated Search Box



As illustrated in Figure 4, several changes were made to the search box. Changes were made based on the assumption that students would be more successful if they were better able to learn how the different search tools worked. We added a prominent “Help Me Choose a Search” page with a link near the search box. We made it easier for all users to access the Classic catalog. This improvement included collapsing the two catalog searches into a single search box. The keyword search defaults to Discover, the other searches go directly to the Classic catalog interface. Finally, we changed the tab label to Catalog.

It remains to be seen if these changes will be noticed and used or if students will continue to use the keyword search box for all types of searches. And they may also continue to have success, much of the time, with their Google-influenced search strategies.

Students’ behavior when using the website is impacted by the search tools they know best—Google, Yahoo, Amazon or some other tool. They lack the experience with library systems and their less accurate mental models may hinder searching success. Our changes are designed to help the development of mental models about library

resource searching for users. Research demonstrates that system cues and feedback from search results help users to formulate mental models. We might jumpstart that development by preventing “dead ends” for searchers. When possible, we should configure “error” messages in ways that provide suggestions and appropriate links for help.

Implications for Instruction and Reference

Designing better interfaces requires library understanding of its users. How can library staff enhance their own understanding of students’ mental models? We conduct usability testing with students. We insure that our web development projects include student participation. We listen to their questions during instruction and reference sessions. When students come to the reference desk, we typically ask how we can help them.

In addition to these measures, what if we started a reference interview in a different way? For instance, when the student sits down for a consultation, what if the librarian first asked to see the search strategies already pursued? What if the reference interview started with the request, “Show me what you did”? A few interactions like

this might go far in helping library staff gain a more accurate picture of the processes students use to conduct a search—their mental models.

Our testing indicates that students' mental models for the information universe do not contain separate categories for structured searches (indexed by author, title and subject headings) and non-structured, or keyword searches. When approaching a search task, students may not analyze the type of search they are conducting. They may not ask themselves, "Is this a known item?" or "Am I conducting a subject-related search?"—And yet in our presentation of search tools, and in our instruction, we ask that the user consider this aspect before they even begin. To create usable portals to library content, we must consider the different stance we bring to information seeking than that of our students. Our aim must be to bridge the gap between our own knowledge of library sources and search tools and those our students bring with them. Our practical challenge is developing online interfaces and instructional strategies that foster in our users more accurate mental models that support their effective exploration and discovery of library resources that best meet their information needs.

—Copyright 2011 Nancy B. Turner

Notes

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Measuring Use of Licensed Electronic Resources: A Progress Report on the Second Iteration of the MINES for Libraries® Survey on Scholars Portal and Other Resources for the Ontario Council of University Libraries

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Abstract

Entering into its 10th year, the Ontario Council of University Libraries' **Scholars Portal** (<http://www.scholarsportal.info/>) is systematically evaluating its content and services. Running a second iteration of the MINES for Libraries® Survey is a key element in this assessment activity. MINES for Libraries® (Measuring the Impact of Networked Electronic Services) is a 5 question, point-of-use, web-based survey that captures user demographics and purpose of use of e-resources. Originally implemented in 2004/05 with 16 OCUL libraries, MINES measured the use of 8.2 million e-journal articles from 7,219 locally-loaded e-journals made by a 365,000 FTE user base. In 2010, the user base has grown to over 400,000 FTE and a corresponding expansion in e-resources being measured—now 20 million e-journal articles, 240,000 e-books, over 40 abstracts and indexes and other formats licensed both by the consortium and by individual libraries.

For OCUL, their 2010 instance of MINES for Libraries® is marked by key differences in methodology that bear comparison with the 2004/05 survey methodologies and findings. First among those differences is the delivery mechanism by which users encounter the survey—Ex Libris' SFX open-URL resolver. The

open-URL resolver expands the content types being measured as the user accesses the resources within the SFX knowledge base. Secondly, far fewer Institutional Ethics Review Boards granted permission to run the survey in mandatory mode in 2010—only 5 of the 20 schools were approved; all others were required to run an optional version. Since the 2004/05 survey was entirely mandatory for all participating members, this difference in approach will provide conversion factors between optional and mandatory results. Finally, in 2010 the sampling period is 1 in every 250 for a 12 month period and will be contrasted with the 2004/05 sampling methodology of a two-hour or four-hour sampling period per month.

Aggregated survey results collected at the mid-point of the survey period (June 2010) are compared with previous findings to help address the following questions:

- How does the use of consortial products compare to that individually-licensed content? What can we infer from those results about profile and visibility of these collections?
- How are patrons discovering different formats such as e-books?
- Who are these patrons, and why are they using electronic collections?

- What are the implications of running the survey in mandatory and optional modes and what are the characteristics of the non-respondents of web-based, intercept surveys in the academic institution?
- What conclusions can be drawn about the efficacy of surveying users via an open-URL resolver?
- Can this methodology be implemented continuously, creating consortial and institutional benchmark data by which to make informed decision-making about resource allocation?
- What can the data tell liaison librarians and subject specialists about the usage of electronic resources assigned to their subject area, and about the users from their liaison department or school who use electronic resources?

Introduction

Results of library surveys such as LibQUAL+® and the ARL Annual Statistics document strong user demand for more and more electronic resources. Academic libraries respond by licensing or purchasing e-resources in both a consortial context and as an individual institution. The increasing proportion of collections budgets directed to electronic acquisitions is ample reason for systematic assessment and evaluation measures to be carried out on these resources, particularly in the current environment of increased accountability and demonstration of value.

In 2004/05, the Ontario Council for University Libraries (OCUL) found the MINES for Libraries® protocol to be an effective means of surveying its members¹ and determined that a second iteration should be conducted in 2010. The repository environment surveyed in 2004/05 was the Scholars Portal (<http://spotdocs.scholarsportal.info/display/sp/home>), which provides a shared technology infrastructure and shared collections for the member libraries of OCUL. Scholars Portal Journals is a digital repository with a common search interface to over 20 million scholarly articles drawn from journals covering every academic discipline. Currently, it represents more than 8,000 journals, with a peak usage of more than 20,000 visitors and more than 700,000 daily

article downloads.² Since it collects articles from many different disciplines and different journal publishing vendors in an authenticated environment, the Scholars Portal is a particularly useful testbed for evaluating the use of e-journals and e-books. In addition to resources, the Scholars Portal hosts the Ex Libris SFX open-URL resolver for all of the member libraries that choose to enable it.

OCUL 1

In 2004/2005, the MINES/OCUL study (OCUL 1) focused on e-journals loaded on Scholars Portal. There were 20,293 respondents across all of the member schools. The purpose of the study then was to determine:

1. How extensively do sponsored researchers use OCUL's Scholars Portal? How much usage is for non-funded research, instruction/education, student research papers, and course work?
2. Are researchers more likely to use the Scholars Portal from inside or outside the library? What about other classifications of users?
3. Are there differences in Scholars Portal usage based on the user's location (e.g., in the library; on-campus, but not in the library; or off-campus)?
4. Could MINES, combined with usage counts, provide an infrastructure to make Scholars Portal usage studies routine, robust, and easily integrated into OCUL's administrative decision-making process for assessing networked electronic resources?

The OCUL 1 study found that:

- The subject affiliation of the majority of the respondents was science, comprising 23.2% (4,698 respondents), closely followed by medical health (21.6%), social sciences (19.2%) and applied sciences (14.4%). The primary purpose of use of these resources is coursework (42.6%), followed by sponsored research (26.2%), and other research activities (16.2%).
- A cross tabulation of purpose of use with location shows that a large portion of the use is off-campus (45.1%, 9,158/20,293) and most of that off-campus use happens for the purposes of coursework (47.2%, 4,319/9,158). The value, Other research, has 17.3%

(1,581/9,158) uses off-campus, and the value, sponsored research, had 19.9% (1,826/9,158) uses off-campus. On campus location but outside the library is the second most frequent location for users of the Scholars Portal (34.9%, 7,088/20,293). A large portion of the on campus uses are for sponsored research (42.2%, 2,994/7,088). The next most frequent purpose of use for on campus location was coursework (29.2%, 2,073/7,088). Only 4,047 out of the 20,293 (19.9%) uses take place within the library. From uses within the library, 52.8% (2,138/4,047) are for coursework purposes, and only 12.3% (498/4,047) of the uses within the library are for sponsored research.

- It is relatively easy to continue this evaluation on an ongoing basis to justify the costs associated with the purchase of electronic resources.³

OCUL 2

In this second study of OCUL's electronic resources (OCUL 2), the deliverables are similar to the first study, that is:

- To capture in-library and remote web usage of the OCUL Libraries e-resources in a sound representative sample using the MINES methodology.
- To identify the demographic differences between in-house library users as compared to remote user by status of user.
- To identify users' purposes for accessing OCUL's electronic services (that is, funded research, non-funded research, instruction/educational use, student research papers, and coursework).
- To develop an infrastructure to make studies of patron usage of networked electronic resources routine, robust, and integrated into the decision-making process.

The research questions arising from these deliverables in OCUL 2 are more ambitious.

- How does the use of consortial products compare to that individually-licensed content? What can we infer from those results about profile and visibility of these collections?
- How are patrons discovering different formats such as e-books?
- Who are these patrons, and why are they

using electronic collections?

- What are the implications of running the survey in mandatory and optional modes and what are the characteristics of the non-respondents of web-based, intercept surveys in the academic institution,
- What conclusions can be drawn about the efficacy of surveying users via an open-URL resolver?
 - Can this methodology be implemented continuously, creating consortial and institutional benchmark data by which to make informed decision-making about resource allocation?
 - What can the data tell liaison librarians and subject specialists about the usage of electronic resources assigned to their subject area, and about the users from their liaison department or school who use electronic resources?
 - Comparing the results from two instances of the MINES for Libraries® Survey, what methodological issues impact the ability of libraries to benchmark as individual institutions and as consortia members for informed decision-making about resource allocation?

Because this midpoint report does not yet have all of the data, some of these research questions will remain unaddressed until the final data results are compiled in February/March 2011.

In addition to a more ambitious set of research questions, the methodology in OCUL 2 is more inclusive than the methodology in OCUL 1, although both are based in MINES for Libraries®. In OCUL 1, only resources offered by Scholars Portal were surveyed. In OCUL 2, the point of interception for the survey is the Ex Libris SFX openURL server, hosted by OCUL at the University of Toronto, but utilized by almost all members of OCUL. Therefore, local resources and consortial resources (Scholars Portal), e-journals and e-books, and any service that the library wishes to configure to link through SFX can be surveyed. OCUL 1 used a random moment research design, surveying a randomly chosen two hour period each month. OCUL 2 is using an every nth systematic sample design, which is technically easier to implement. The final

difference in research design between OCUL 1 and OCUL 2 focuses on the ethics review. In OCUL 1, five years previous, the survey was mandatory in all participating libraries. In a mandatory survey, all of the questions in the point-of-use intercept survey are required. In OCUL 2, ethics review boards are apparently more stringent, and the mandatory survey will be run in only five libraries. However, this constraint is actually an opportunity to investigate further the differences between the results of mandatory and optional surveys in identical populations, an inquiry begun in Kyrillidou, Plum and Thompson.⁴

OCUL 2 addresses a number of important issues. It builds on OCUL 1, and takes advantage of the research environment offered by OCUL's centralized distribution of networked electronic resources. It tracks changes in usage, the make up of users, and the purpose of use in the same universities over time to reveal differences in the patterns of use. It demonstrates the efficacy of a point-of-use intercept survey enabled through the open-URL SFX server, and suggests that other libraries could use this common technology to achieve similar information about their user groups. It examines the differences in the results

between optional and mandatory surveys, which could result in important methodological understandings about the non-respondents in optional surveys, since almost all library surveys are optional. It reports on using an every *n*th intercept methodology as compared to a random moment methodology, and suggests how the every *n*th survey sampling plan could be used continually to create a true culture of assessment.

OCUL (Ontario Council of University Libraries)

OCUL (<http://www.ocul.on.ca/>) is comprised of twenty-one member libraries that work cooperatively to enhance information services through consortial purchasing, resource sharing, document delivery and other activities and services. These members vary significantly in scope, disciplinary focus and in size (from 870 FTE (Algoma) to 68,334 FTE (University of Toronto)).

Table 1: OCUL Partner Institutions, their full-time student equivalents (FTE) as of July 2010, participation in 2004/05 and 2010/11 MINES for Library® surveys and whether in mandatory, optional or mandatory & optional.

Table 1: OCUL Partner Institutions, their full-time student equivalents (FTE) as of July 2010, participation in 2004/05 and 2010/11 MINES for Library® surveys and whether in mandatory, optional or mandatory & optional.

Partner Institutions	FTE , July 2010	OCUL 1 - 2004/05	OCUL 2 - 2010/11	OCUL 2 – Total Responses as of June 2010
Algoma	870	Not part of OCUL	Optional	
Brock	14,557	Mandatory	Optional	383
Carleton	20,743	Mandatory	Optional & Mandatory	379
Guelph	21,452	Mandatory	Optional	289
Lakehead	7,583	Mandatory	Optional	90
Laurentian	7,630	Mandatory	Optional	174
McMaster	24,944	Mandatory	Optional	1400
Nipissing	5,535	Mandatory	Optional & Mandatory	147
OCAD	3,010	Mandatory	Optional	0
UOIT	5,147	Mandatory	Optional & Mandatory	70
Ottawa	32,230	Mandatory	Optional	1551
Queen's	20,751	Mandatory	Optional	921
Royal Military College	1,792	n/a	n/a	n/a
Ryerson	26,841	Mandatory	Optional & Mandatory	1009
Toronto	68,334	Mandatory	Optional	7385
Trent	7,030	Mandatory	Optional	270
Waterloo	27,674	n/a	Optional	1264
Western Ontario	33,119	Mandatory	Optional & Mandatory	1438
Wilfrid Laurier	14,054	Mandatory	Optional	596
Windsor	14,419	Mandatory	Optional	436
York	45,235	Mandatory	Optional	860
Total	402,950			18662

Table 2: OCUL Institutions conducting MINES in MANDATORY mode, with full, partial and total responses as of June 24, 2010.

MANDATORY	Full Responses	Partial Responses	Total Responses
Carleton	182	0	182
Nipissing	89	0	89
UOIT	34	1	35
Ryerson	586	24	610
Western Ontario	819	15	834

Table 3: OCUL Institutions conducting MINES in OPTIONAL mode, with full, partial and total responses as of June 24, 2010.

OPTIONAL	Full Responses	Partial Responses	Total Responses
Algoma	0	0	0
Brock	297	86	383
Carleton	154	43	197
Guelph	244	45	289
Lakehead	78	12	90
Laurentian	142	32	174
McMaster	1155	245	1400
Nipissing	52	6	58
OCAD	0	0	0
UOIT	32	3	35
Ottawa	1205	346	1551
Queen's	725	196	921
Ryerson	329	70	399
Toronto	7260	125	7385
Trent	220	50	270
Waterloo	923	341	1264
Western Ontario	483	121	604
Wilfrid Laurier	452	142	596
Windsor	332	104	436
York	698	162	860

Scholars Portal

In 2001, OCUL established Scholars Portal (www.scholarsportal.info), designed to serve as an information infrastructure to deliver digital content in support of research, teaching and learning within the province's universities. In addition to digital content delivery, Scholars Portal includes a number of core services that are shared by all members, including an interlibrary loan fulfillment service (RACER), citation management software (Refworks), and Ex Libris' SFX open-URL resolver. When MINES for Libraries® was implemented in 2004 for OCUL 1, the digital content being measured was comprised of e-journals (8.2 million articles from 7,219 full text electronic journals) that had been locally loaded onto the Scholars Portal platform. Since then, the number of e-journals has grown to 20 million journal articles from over 8,000 full text electronic journals. As well, extensive growth has occurred in other formats: over 40 abstracts and indexes (Search), 240,000 e-books, and portals to

statistical and geospatial data collections. SFX, the open-URL resolver that connects users to this digital content, is an integral component of the 2010 implementation of MINES since it acts as the delivery mechanism by which the patron encounters the survey.

MINES for Libraries® Methodology

The MINES for Libraries® methodology has been well documented in a series of articles and on the ARL website (<http://www.arl.org/stats/initiatives/mines/index.shtml>). A bibliography of MINES is found at <http://www.arl.org/stats/initiatives/mines/minesresources.shtml>. Kyrillidou, Olshen, Franklin, and Plum⁵ explain how MINES was used in OCUL 1. Franklin and Plum⁶ present the MINES background and how it has been used in academic and medical libraries. Kyrillidou, Plum, and Thompson⁷ examine current methodological considerations with MINES and its future developments, some of which are being implemented in OCUL 2.

Briefly, MINES for Libraries® is an online, transaction-based, point of use, intercept, web survey methodology, in use since 2000, which collects data on the purpose of use of electronic resources and on the demographics of users. As mentioned in Franklin and Plum⁸ MINES for Libraries® is a:

- set of recommendations for research design
- set of recommendations for Web survey presentation
- set of recommendations for information architecture in libraries
- set of validated quality checks.

In the past the interception points for the web survey have been through rewriting proxy servers, database-to-web scripts, authentication systems, electronic resource management systems, locally developed scripts, and open-URL servers. At one library the intercept point was the campus router. If the survey can intercept usage at a virtual gateway, such as an open-URL server or the campus router, fewer respondents are missed through bookmarks, open access, etc., and the survey results are more valid.

The sampling plan for MINES is typically a randomly determined, two hour period per month over a year. As discussed in Kyrillidou, Plum, and Thompson,

Under the two-hour survey sampling plan, the MINES Web survey protocol is interested in capturing subsequent uses of the databases or e-journals after the survey is initially filled out by the user. Therefore, the Web survey should set up a session with a session ID to track subsequent uses of surveyed resources (typically e-journals and database) during the survey period, and write the values from the completed survey to subsequent uses for that patron. Usually the session ID is tied to the browser session.⁹

The session is the most difficult function to implement in the MINES web survey, and in some libraries it has proven to be intractable. In OCUL 2, the two hour session is replaced by an every *n*th intercept. This methodology is described in greater detail under the Random Sampling section below. It is an elegant solution for which the Scholar Portal information technology administration and programmers

should be acknowledged (Alan Darnell, Bilal Khalid, Vidhya Parthasarathy, and others). A session is a tricky concept, and differs depending on whether the session involves just one database or e-journal source, an aggregator of databases or e-journals, several different databases or e-journals offered by different aggregators, or federated searches across numerous databases, e-journals, or aggregators. The every *n*th solution obviates the need for sessions, since it surveys the user only once in a specified range of uses, and does not track subsequent usage, answering some real questions about privacy, which can be reasonably asked of the session model. The systematic sampling plan is the equivalent of the random sampling plan of the random moments sample for validity, reliability and inferential statistics. In the OCUL 2 study an additional layer of randomness was added to the systematic *n*th research design.

Literature Review

Two standards-setting books for designing web surveys are Dillman, Smyth, and Christian¹⁰ and Couper¹¹. Dillman, Smyth, and Christian's book has a wide scope, covering internet and telephone surveys, and has several chapters on the writing of questions. Couper's book focuses on web design and has useful discussions of the empirical and technical aspects of web surveying. Gunn¹² and Bertot¹³ frame the web survey discussion for libraries. Gunn is concerned with methodology, whereas Bertot reports on the lessons from years of running national surveys of public library Internet connectivity and use. Intercept web surveys evaluating the usage of networked electronic resources have received some attention. A. White and E. D. Kamal¹⁴ have a helpful survey of locally developed, data collection points for library resources, including the use of web surveys.

Publications addressing MINES for Libraries, a web based intercept survey, have been documented at <http://www.arl.org/stats/initiatives/mines/minesresources.shtml>. The first OCUL MINES for Libraries study has been documented in Kyrillidou, Olshen, Franklin, and Plum¹⁵ and by T. Olshen.¹⁶ Further work on the OCUL MINES data has been done by Scigliano,¹⁷ which compared web based usage to library print holdings, library acquisitions budgets, and

sponsored research revenue.

Response rate, randomization or systematization, and timing or the insertion of the intercept point are the three major issues with web based, intercept surveys. Burkell has a useful discussion of non-response in library surveys, and strategies to mitigate the effect of non-respondents. She observes that non-response results in a biased sample, but the real question is whether this bias influences the survey results.¹⁸ As Burkell notes, "This is the central dilemma of nonresponse: the impact of nonresponse on survey data cannot be determined without data (either actual or estimated) from nonrespondents."¹⁹ Thompson; Cook, Heath, and Thompson; and Cook and Thompson²⁰ handle the seemingly low response rates of LibQUAL+® (10-15%) by arguing for representativeness, that is, do the characteristics of the participants who answered the survey resemble the characteristics of the population. Interestingly, one of the few efforts to calculate non-response in the sample and to estimate characteristics of non-response is the print survey methodology described by Franklin.²¹ However, this method is not relevant to web surveys. OCUL 2 compares optional with mandatory results for a systematic sample (every *n*th) for the same population, and will be able to shed some light on both the characteristics of the non-respondents of the optional surveys and the effect of non-respondents on the survey results.

The second issue of web surveys, randomization or systematization, is addressed by the MINES methodology. Because the OCUL MINES survey is a randomized sample (OCUL 1) or a systematic sample (OCUL 2), both with replacement, methods of statistical inference may be used to analyze the results of the sample to infer conclusions about the population.

The third issue with web-based internet surveys, that of timing, is handled by administering the survey from a central open-URL SFX server. Wakimoto, Walker, and Dabbour²² discuss the myths and realities of SFX. MINES, as documented in Kyrillidou, Plum, and Thompson²³ has used open-URL servers as an intercept point in previous surveys. With a clear understanding of its strengths and limitations as a intercept point for web surveys (see the following discussion of SFX), the open-URL resolver server is a viable

intercept point for measuring usage and determining the characteristics of users of web-based networked electronic resources.

Research Design

SFX as delivery mechanism

Ex Libris' SFX open-URL resolver is the delivery mechanism by which the user encounters the MINES survey; reliance upon the SFX knowledge base contributes to the expansion of content types being measured. OCUL has been utilizing SFX as its OpenURL link resolver since 2004/05. Today, it is a heavily-used product, triggered many times a day by most institutions within OCUL. The majority of electronic resources are linked with SFX, acting either as a SOURCE, generating requests for articles, books, other content types and services or as a TARGET, serving as a destination for content and services.

Beyond full text resources, users may encounter additional services and resources such as virtual reference, discovery layers, library catalogues, RACER, the consortium's interlibrary loan requesting system, RefWorks, technical support forms and citation capture features via the SFX menu. Because SFX is used so ubiquitously across OCUL campuses, it is an obvious choice to initiate or invite participation in user surveys. A notable limitation of this approach is that some schools and some user groups may not implement SFX to the same degree as other OCUL members. For example, studio art and other creative arts programs in which traditional text-based research activities are not as prevalent do not utilize many of the SFX-enabled sources.

Random sampling

The sampling period is once every *n*th time for a 12 month period (unlike the 2004 version which ran for a random two hour period every month for 12 months). For the University of Toronto, frequency was 1 in 500 while for all the other participating institutions, the frequency was 1 in 250. The sampling method represents both systematic and random approaches. By institution, a lottery selection process occurs every 250 times the SFX menu is invoked.

Specifically, a random number was selected for each school between 1 and 250 at the beginning of the survey and is drawn every 250th time

thereafter. When a user attempts to access content via the SFX menu, their numbered call to SFX is checked against the number randomly drawn. If his or her number matches the random number, he or she will be presented with the survey, the front-end of which resides on LimeSurvey (<http://www.limesurvey.org/>), with data being stored in ColdFusion. Using SFX to initiate the survey is accomplished using the SFX admin proxy setting. An SFX administrator can add a proxy prefix that will be automatically appended to all resources activated in SFX and that are selected for routing through the institution's proxy server. Scholars Portal programmers

replaced this proxy rewrite URL with the URL of their MINES survey check script. The script checks whether the present call to SFX matches the number in the lottery draw for that cycle of 250 SFX menu triggers. If so, the user is presented with the survey, if not, the user proceeds to their resource.

Encountering the MINES survey via SFX.

Figures 1 through 5 below demonstrate the path that a user could potentially follow when encountering the MINES intercept survey through SFX, using Ryerson University as the example.

Figure 1: SFX source with Get it! link

The screenshot shows a document view page for "The omnipresent hubbub" by Jascha Hoffman. The page includes a navigation bar with tabs for Basic, Advanced, Topics, Publications, and My Research. Below the navigation bar, there are options for Print, Email, Copy link, Cite this, and Mark Document. The main content area displays the title, author, and abstract. A circled "Get it! Ryerson" link is visible in the top right corner, along with a "Check SFX for Availability" link. The page also features a "Find more documents like this" section with subject filters for Sound and Noise pollution.

The screenshot shows the Ryerson University Library page for "The omnipresent hubbub". The page header includes the Ryerson University logo and the "Get it! Ryerson" logo. The main content area displays the title, source, and a circled "Full Text Online" link. Below the link, there are options for "Check Holdings" and "Need help? Ask a Librarian service". The page also features a "Technical problem? Report it with Get It! Feedback" link.

Figure 2: SFX menu with full text target and other target services

```
'ss_threshold_local' => undef,  
'ts_threshold_global' => '',  
'op_threshold_global' => '$obj->parsedDate(\>=\','1869\','1\','1\')',  
'displayer' => 'FT:NO_FILL_IN',  
'proxy' => 'yes'  
  }, 'SFXMenu::ContextService' ),  
'@rft.aunit1' => [  
  ]  
, 'ContextObject::Generic' );  
  
(eval): Generating target url with 'getFullTxt' method.  
Parsers::TargetParser::get_target_url: Parser returned 'http://www.nature.com/openurl?volume=464&spage=1281&issue=7293&genre=article&title=Nature' instead of object. Probably old parser. Convert.  
SFXResolver::Engine::target_url: TargetURL is 'http://www.nature.com/openurl?volume=464&spage=1281&issue=7293&genre=article&title=Nature'.  
SFXResolver::Engine::target_url: Adding proxy info.  
SFXResolver::Engine::add_proxy: Institute ID for proxy: '0'  
SFXResolver::Engine::add_proxy: Trying to see if proxy is enabled: S,142.150.195.111,,S,yes  
SFXResolver::Engine::load_proxy_module: Instantiating proxy module 'Parsers::Proxy::EZPROXY'.  
SFXResolver::Engine::load_proxy_module: Successfully instantiated proxy module 'Parsers::Proxy::EZPROXY'.  
SFXResolver::Engine::add_proxy: Calling Parsers::Proxy::EZPROXY::HASH{0xa10a978}=>createUrl.  
SFXResolver::Engine::target_url: Storing stats.  
SFXResolver::Engine::store_stat: Storing stats: $VAR1 = {  
  'URL' => 'http://statistics.scholarsportal.info/mines/surveycheck.cfm?url=http://www.nature.com/openurl?volume=464&spage=1281&issue=7293&genre=article&title=Nature'  
  'CLICKS' => '1',  
  'TARGET' => 'NATURE',  
  'SERVICE' => 'getFullTxt',  
  'REQUEST_ID' => '21781514'  
};  
SFXResolver::Engine::redirect_to_target_url: Target URL: http://statistics.scholarsportal.info/mines/surveycheck.cfm?url=http://www.nature.com/openurl?volume=464&spage=1281&issue=7293&genre=article&title=Nature
```

Figure 3: SFX debugging screenshot

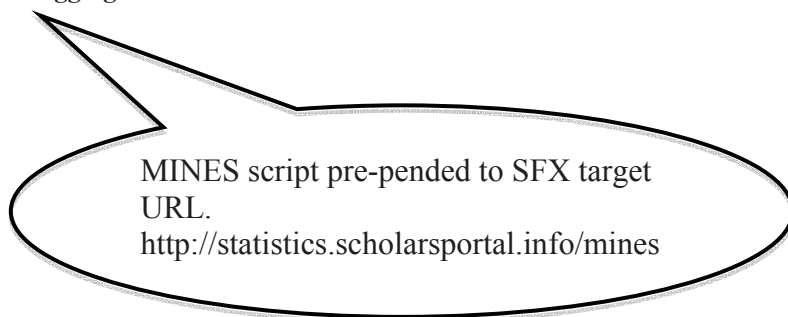


Figure 4: MINES survey using LimeSurvey software. Ryerson's optional survey

Electronic Resources Library User Survey - Ryerson

Your feedback matters!

- This survey has only **five questions**
- Takes **less than a minute** to complete
- Responses are anonymous and will help us better meet your needs

Thank you for your time.

Ryerson University is participating in a province-wide survey of electronic resources usage to evaluate how well Ontario University libraries are meeting your needs.

For more information about this survey or if you do not want to participate in this survey, please click [here](#)

Patron Status

- Undergraduate Student
- Graduate/Professional Student
- Faculty
- Staff
- Library Staff
- Other:

What is your primary disciplinary affiliation or major field of study?

- Applied Science and Engineering
- Business
- Education
- Environmental Studies
- Fine Arts
- Humanities
- Law
- Medical/Health Sciences
- Sciences

/surveycheck.cfm?
Script checks
school, even on
odd days for dual
mode sites, and #
of SFX request in
lottery.

User gets directed
to the proper
MINES Survey or
to their resource,
as appropriate.

Figure 5: Target URL delivers patron to their resource following completion of the survey

Citation Results

The omnipresent hubbub

Jascha Hoffman
Nature **464**, 1281 (2010) | doi:10.1038/4641281a.
[Full Text](#)

The script accomplishes some additional tasks as well. For the five institutions running MINES in both mandatory and optional modes, if the date is an odd number, then the user is directed to the optional survey, if the date is an even number, then the mandatory. On mandatory days, if the 250th user attempts to close the survey, they will be redirected to it until they fill out the survey, or they close down their browser entirely. On optional days, users who choose not to participate using the non-participation options within the survey itself will have their target URL and school information recorded by LimeSurvey. Users who close the window or their browser will not have any values stored in LimeSurvey. The script also records the URL from which the user is coming. As long as the patron is coming from the SFX

menu, the URL will begin with `http://sfx.scholarsportal.info/[schoolname]`. The school name is used to determine to which institution's survey the user is redirected. The script is also set to capture the URL for the resource that the user had attempted to connect to when they were selected to participate in the survey. This resource URL data allows the researchers to go to the same resource that the user selected, and to map the URL to the title of the resource.

Benefits and Limitations of the SFX Methodology, Anomalies in Data

Though the use of SFX has significantly expanded the resources included in MINES over OCUL 1,

not every resource held by the participating institutions has the potential to generate a MINES survey. For example, there is variation in the extent to which institutions within OCUL have implemented SFX. The degree of comprehensive coverage of a library's actual electronic and print holdings depends on the resources, knowledge and diligence that library is able to dedicate to SFX knowledge base management. Only enabled (or activated) resources have the potential to generate SFX menus, and therefore MINES surveys. A couple of the OCUL schools had only activated a small portion of available resources at the time MINES began, so that their response rate was much lower than it could have potentially been. Beyond limitations under the local library's control, there is also a limitation inherent in the SFX software. To date, the content type most represented in the SFX knowledge base is by far the electronic journal. Other resources, such as e-books, data, print journals, audio visual and other non-textual resources are underrepresented. In addition to the variety in TARGETS (content or service resources) some of the most heavily used SFX SOURCES (starting points) have not been implemented at all schools. The library catalogue, journals by title A-Z list, and Google Scholar are the most notable examples of this. The SFX implementation for OCUL 2 is sufficiently different from the Scholars Portal implementation for OCUL 1 that care should be used in comparing the analysis of the two surveys.

One of the benefits presented by the SFX method that is most exciting for the researchers is the capturing of SFX target URLs. Because the script is set to record the URL of the resource the survey participant had selected when they encountered the MINES survey, the researchers can potentially analyze the particular resources chosen along with other responses from the MINES survey. We not only know a user's affiliation, but also the particular resource they were using at the time of their selection for the survey. SFX target URLs generally contain enough meaningful information to determine which vendor or publisher's content was chosen, and in many cases contains information about a journal, article, book or other resource.

One of the most difficult problems facing the measurement of usage of networked electronic resources in college and university libraries is the

increasing impact of open access journals and articles upon the research process. Open access includes both open access journals and article pre-print, prints or post-prints found in institutional and discipline repositories. The articles found in discipline repositories, such as arXiv.org, remain difficult to intercept from the library website or using library systems, such as SFX. However, as Collins and Walters²⁴ demonstrate, more and more libraries are adding open access journals to their A-Z journal lists and open-URL resolvers, and as they do, capturing usage of open access journals, which begins with a library system, becomes more possible.

Unanticipated technology limitations found to date are DirectLink and Verde. DirectLink is an optional feature for SFX that a few of OCUL libraries have activated. DirectLink allows patrons to bypass the SFX menu and directly link to their resource. When a user is directly linking and is using Internet Explorer, the Explorer browser prevents the target URL from being stored. Similarly, users choosing to access resources not through SFX but via other means (e.g., bookmarks) will not encounter the survey. Verde, Ex Libris' ERM system, implemented by a handful of the OCUL schools, also prevents the target URL from being captured. Some library staff members may access the MINES survey through VERDE, and the URL will not be retained. Fortunately, these limitations affect only a small portion of the total results.

A final limitation is that our methods could not prevent nonrespondents from closing their browsers entirely. If patrons do this instead of choosing the 'no thank you' option within the survey itself, their data including the target URL will not be captured.

Ethics Review

As noted in OCUL 1, All Canadian Universities must comply with the *Tri-Council Policy Statement on Ethical Conduct for Human Research Involving Humans* 1998 (Updated 2000, 2002, and 2005) put out by the Medical Research Council of Canada, the Natural Sciences and Engineering Research Council of Canada, and the Social Sciences and Humanities Research Council of Canada (<http://www.pre.ethics.gc.ca/eng/policy-politique/tcps-eptc/>). However, there is a

new draft version of the TCPS under consideration (draft 2008 and 2009), which may be in final revision soon (<http://www.pre.ethics.gc.ca/eng/policy-politique/initiatives/revise-reviser/Default/>). The 1998 version of TCPS, with revisions, is current until the second edition is published. The proposed changes include greater guidance with respect to research exempt from ethics review and a clarified distinction between research and quality assurance activities.

In OCUL 2, only five of the 20 participating libraries received permission to run the survey in mandatory mode. This total deviates significantly from the 2004/05 experience when sixteen of the participating libraries ran the survey in mandatory mode. In OCUL 1 eight of the campuses exempted the study under quality assurance activities and eight campuses received approval after review. Although this difference may not be indicative of a tightening of the reviews of ethics review boards over time, and the anticipation of the new regulations, the fact remains that fewer review boards permitted the mandatory survey, even though the purpose of the survey was to evaluate the effectiveness of a university institution, and could fall under quality assurance activities. Speculations as to why the mandatory studies were acceptable at one university and not at another, when the protocols for the survey submitted to the local university ethics review board were identical for all institutions, may involve the uncertain state of the TCPS and its proposed revisions.

However, this set back has provided the OCUL MINES research team with an opportunity. For the five libraries that received permission to run the survey in mandatory mode, an optional survey, with an opt-out, was also administered. The surveys in these five schools alternate daily between mandatory and optional over the survey year. By comparing the results of optional and mandatory surveys using a systematic sampling plan at the same institution on alternating days, it may be possible to quantify the differences between the responses of optional and mandatory surveys, thus learning about the attributes of the non-respondents of the optional surveys, and determining the possibility of bias. An even more interesting result would be the determination that there are no differences in the values of the

responses between optional and mandatory. Should this latter result be found, it would argue for dropping the mandatory survey altogether. The unenthusiastic response of the various university ethics review boards to the requirements of the mandatory survey may prove to be an important research opportunity, although it is fortunate that five universities permitted the mandatory survey.

Preliminary survey findings

The surveys were launched on February 16, 2010 for 19 of the 20 schools; University of Toronto's survey had been initiated earlier in 2009. Aggregated survey results for the 20 participating OCUL members were captured on June 24, 2010; a total of **15,359 optional survey responses** and **1,750 mandatory survey responses** were collected. By comparison, in the OCUL 1 study, 20,293 mandatory survey responses were collected. In OCUL 1 the surveyed electronic content consisted only of e-journals locally loaded into Scholars Portal, for example, e-journals from Academic Press, American Chemical Society, Blackwell, Elsevier Science, Oxford University Press, Springer-Verlag, Taylor and Francis, John Wiley, and others. In OCUL 2, the potentially surveyed content consists of all resources that are part of the SFX knowledge base, including e-journals (both locally loaded into the Scholars Portal and available only through the information provider's web site), some open access journals, abstracting and indexing databases, e-books, dissertations, library catalogues, fulltext reference materials, some institutional repositories, and other services such as interlibrary loan, Journal Citation Reports, and Refworks. E-books include NetLibrary and Ebrary resources, but not the e-books within Scholars Portal, because these e-books are not yet a target within SFX.

For all these analyses, null values for each question have been dropped. Also for some of these analyses, comparisons are made between OCUL 1 and OCUL 2. The above caveats apply to making such comparisons. It should also be emphasized that these OCUL 2 data are preliminary, and the study is not yet complete. Yet, some of the comparisons are startling, and signal, at least provisionally, changes in usage from five years ago as well as interesting similarities in the distributions of data collected

from optional and mandatory surveys.

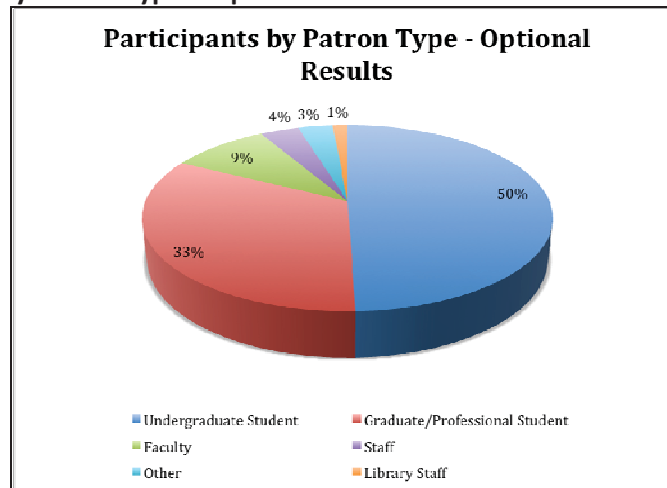
Who is using electronic resources?

Preliminary data from both the mandatory and optional versions of the survey show remarkably similar results with Undergraduates respondents

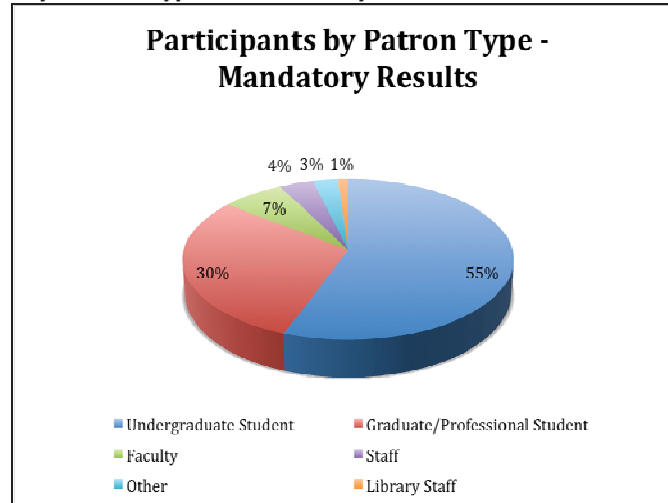
leading with 55% and 50% share of the total results collected thus far. OCUL 1 reported that Undergraduate usage was 46%, Graduate/Professional Student usage was 32%, and Faculty usage was 11%. These results are not much different from OCUL 2.

Patron Type	Frequency	Percentage
Undergraduate Student	7277	50%
Graduate/Professional Student	4872	33%
Faculty	1346	9%
Staff	535	4%
Other	478	3%
Library Staff	201	1%
Total	14709	100%

Figure 9: Respondents by Patron Type – Optional Results – 20 Universities



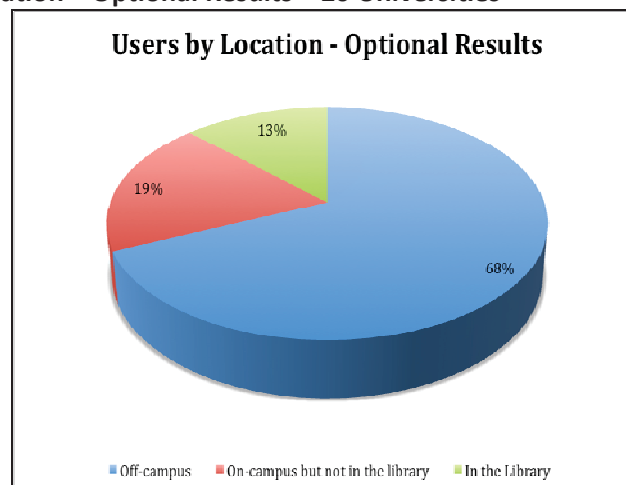
Patron Type	Frequency	Percentage
Undergraduate Student	953	55%
Graduate/Professional Student	513	30%
Faculty	117	7%
Staff	64	4%
Other	47	3%
Library Staff	19	1%
Total	1713	100%

Figure 10: Respondents by Patron Type – Mandatory Results – Five Universities**Where are users located when surveyed?**

In both mandatory and optional survey preliminary results, the majority of users are located off-campus at the point of use. Users in the library generate the least amount of usage of the three possible locations, only 13%. Interestingly, the librarians are far more likely to see and interact face-to-face with these users than the other groups. Impressions from these interactions, although perhaps important, are not

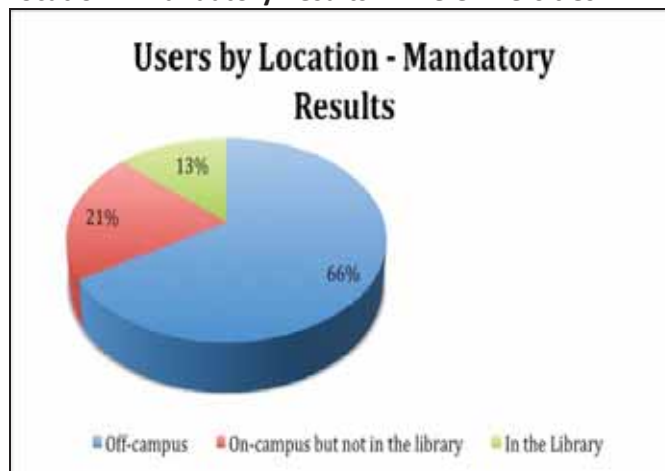
representative of most of the users of e-resources. In OCUL 1, five years ago, 45.1% of the respondents used these resources from off-campus, next from on campus locations but outside the library (34.9%) and only 19.9% of them used electronic resources from within a library building. In OCUL 2 off-campus use is up from OCUL1, but on-campus and in the library usage are down.

Location	Frequency	Percentage
Off-campus	10043	68%
On-campus but not in library	2776	19%
In the Library	1864	13%
Total	14,683	100%

Figure 11: Users by Location – Optional Results – 20 Universities

Location	Frequency	Percentage
Off-campus	1132	66%
On-campus but not in library	356	21%
In the Library	224	13%
Total	1712	100%

Figure 12: Users by Location – Mandatory Results – Five Universities



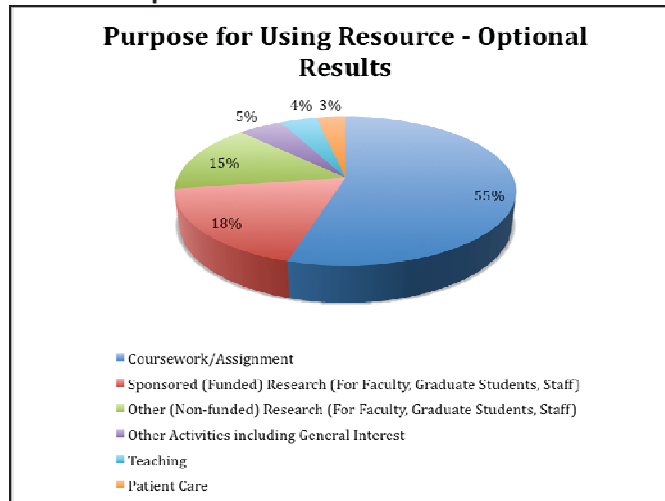
What is the primary purpose of use?

Although the Sponsored (Funded) Research category is not as rigorously defined by federal standards, as it is in the corresponding MINES surveys in the United States, the sponsored usage is about 18%, demonstrating good support by the library for sponsored or grant funded researchers, even with the possibilities to researchers afforded by open access. Further analysis could assign this 18% to various library cost centers, for example, e-journal subscriptions, to determine a monetary value for supporting sponsored research. Such a

purpose is not within the scope of this OCUL 2 study, but it demonstrates the potential value of collecting these data. The patient care responses typically only apply to those universities with a medical school. OCUL 1 reported that the primary purpose of use of e-resources is coursework (42.6%), followed by sponsored research (26.2%), and other research activities (16.2%). Coursework usage is up from OCUL 1, sponsored research usage is down, and other research is roughly the same.

Primary Purpose	Frequency	Percentage
Coursework/Assignment	8012	55%
Sponsored (Funded) Research (For Faculty, Graduate Students, Staff)	2646	18%
Other (Non-funded) Research (For Faculty, Graduate Students, Staff)	2192	15%
Other Activities including General Interest	732	5%
Teaching	610	4%
Patient Care	482	3%
Total	14674	100%

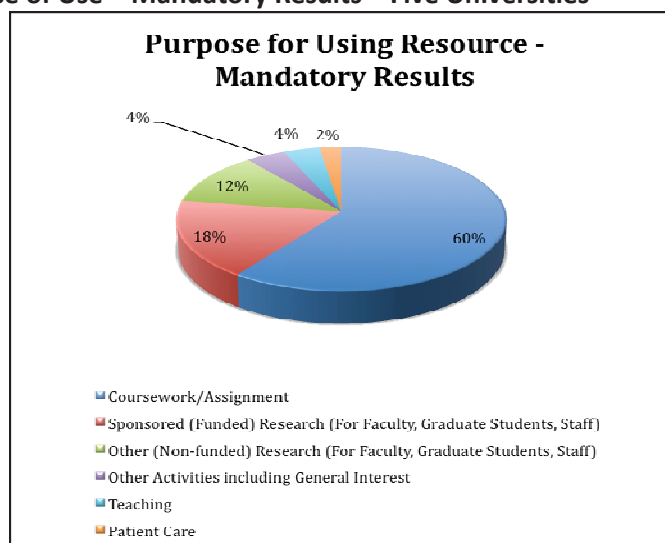
Figure 13: Purpose of Use – Optional Results – 20 Universities



Primary Purpose	Frequency	Percentage
Coursework/Assignment	1024	60%
Sponsored (Funded) Research (For Faculty, Graduate Students, Staff)	301	18%
Other (Non-funded) Research (For Faculty, Graduate Students, Staff)	206	12%
Other Activities including General Interest	73	4%
Teaching	68	4%
Patient Care	40	2%

Total	1712	100%
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Figure 14: Purpose of Use – Mandatory Results – Five Universities



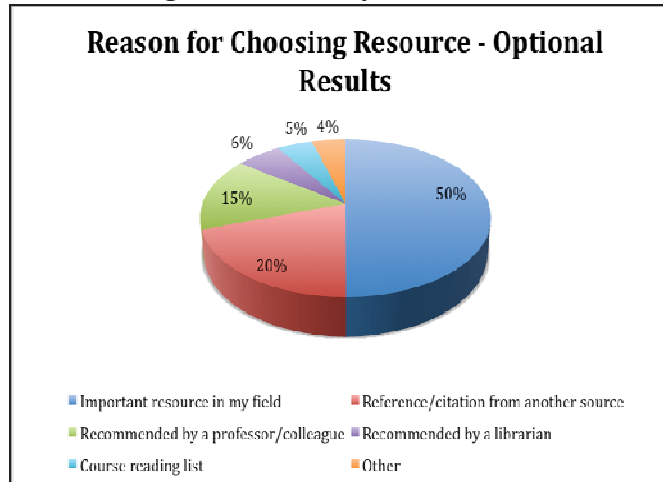
What is the reason for choosing the resource?

The last question on the survey asks what is the reason for choosing the resource, as distinguished from the purpose of use. In this question, the responses are not mutually exclusive, so the number of values is larger than the total number of responses. The intent of the question is to discover how patrons find resources. What is striking, at least to these librarians, is the reason for usage assigned to librarians. In OCUL 2, librarians account for 6% of usage. In OCUL 1,

librarians accounted for 3% of the usage. OCUL 1 reports that the most frequent reason for use was the importance of the journal (50.4%), the second most frequent reason was by following a reference or a citation (30%), next recommended by colleague (12%), followed by course reading assignment (4.6%) and recommended by a librarian (3.1%). Following a reference or citation dropped from 30% to 15-18% and recommended by a librarian, although low, doubled.

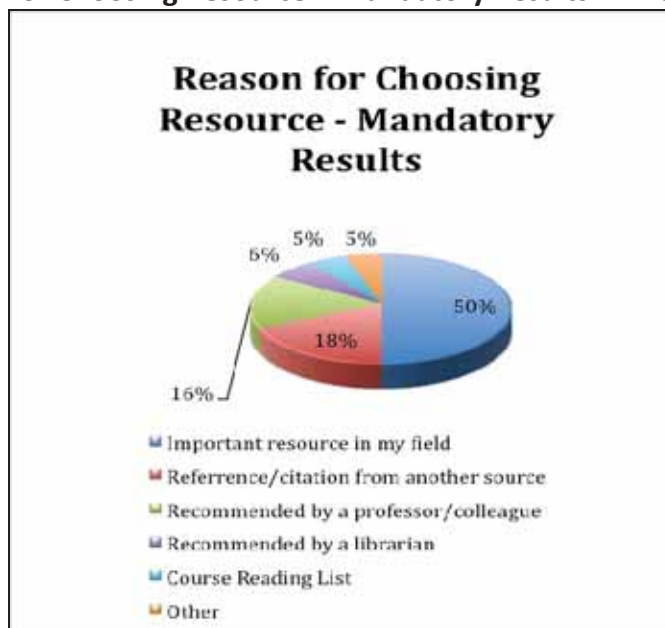
Reason for Choosing	Frequency	Percentage
Important resource in my field	8661	50%
Reference/citation from another source	3444	20%
Recommended by a professor/colleague	2616	15%
Recommended by a librarian	1032	6%
Course reading list	814	5%
Other	775	4%
Total	17342	100%

Figure 15: Reason for Choosing Resource – Optional Results – 20 Universities



Reason for Choosing	Frequency	Percentage
Important resource in my field	994	50%
Reference/citation from another source	355	18%
Recommended by a professor/colleague	311	16%
Recommended by a librarian	124	6%
Course reading list	104	5%
Other	98	5%
Total	1986	100%

Figure 16: Reason for Choosing Resource – Mandatory Results – Five Universities



Does this pattern hold true for the five universities for mandatory and optional results?

In general, there is little difference between the distribution of results for the mandatory surveys for the five universities and the distribution of the optional survey results for all 20 universities. However, does this pattern hold true for the optional and mandatory results of the five universities, which is a better comparison. Interestingly, it does. Below are pie charts representing the distribution of results from the optional survey for the five universities in comparison to the mandatory surveys for the five universities. Although the similarities in distribution between mandatory and optional are

noted only by inspection of the frequency data, more rigorous statistical analyses will be done once all the data collection for OCUL 2 is collected. However, if there is no significant difference between the distribution of values from optional and mandatory surveys, that result is in itself significant. It may mean that the mandatory requirement for MINES for Libraries® Survey is unnecessary. It would also contradict the findings reported in Kyrillidou, Plum, and Thompson²⁵ which found a significant difference between optional and mandatory results. The research design in OCUL 2 may be more reliable than this earlier study, with more records and less opportunity for chance to determine differences between the two groups.

The total records for the optional surveys among the five universities is 1293, and the total for

mandatory is 1750.

Figure 17: Respondents by Patron Type – Optional and Mandatory Results – Five Universities

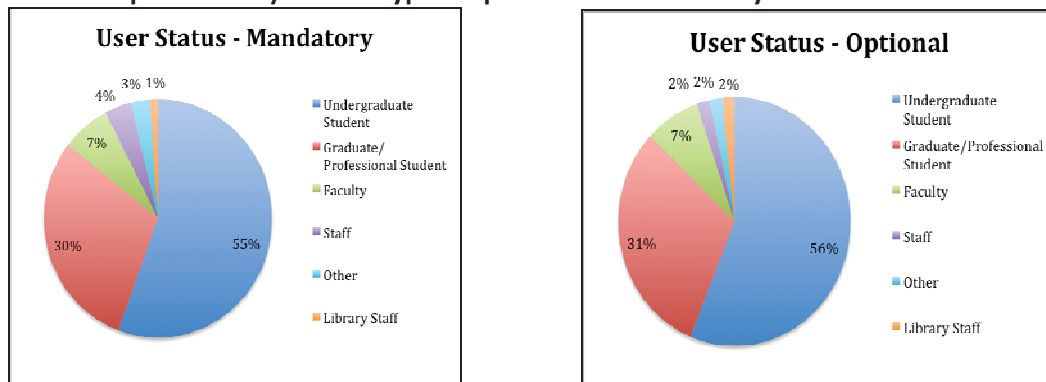


Figure 18: Users by Location – Optional and Mandatory Results – Five Universities

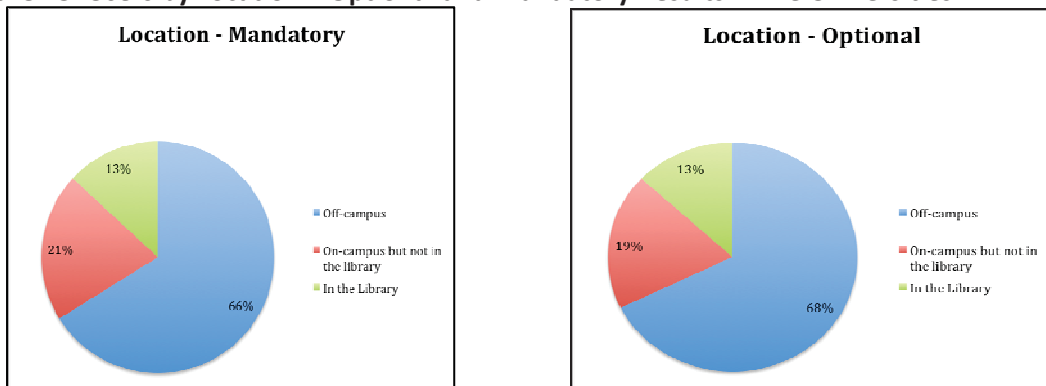
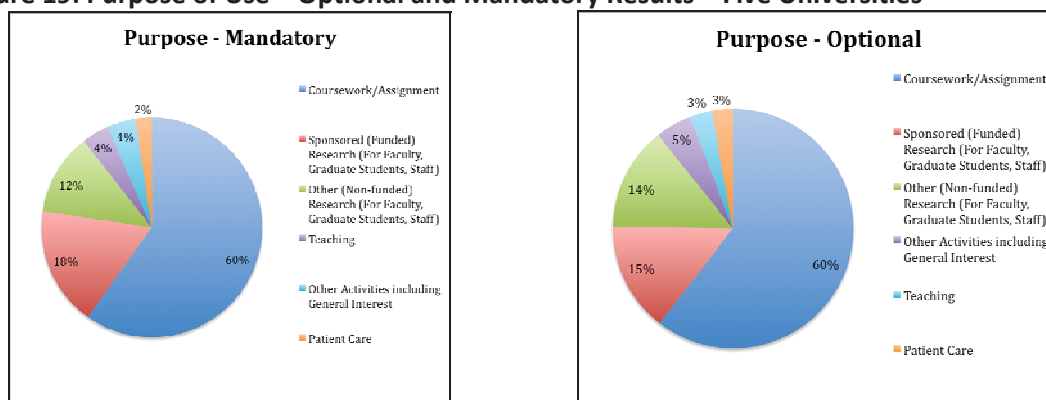


Figure 19: Purpose of Use – Optional and Mandatory Results – Five Universities



Next Steps

This version of the MINES survey for OCU will run for another six months at which point a more fulsome analysis of the collected data will reveal whether our initial findings continue to be reflected. By the end of the study, the data relevant to collection development and usage of

particular resources will be collected and analyzed. These findings will complement additional usage analysis in concert with data available via Jasper Reports and SPUD—the Scholars Portal Usage Data tool—a new usage portal currently under development, which will house COUNTER reports as well as other reports

and analytics using XML and MarkLogic. (As of the writing of this article it includes only ejournals and excludes databases.) As more MINES data is collected, cross-tabulations by affiliation (Business, Education, etc.) and by resource aggregator (ScienceDirect, etc.) will be possible, and will address the initial research questions. The MINES data, coupled with vendor supplied data on resource usage, will give new insight into the use and users of the networked electronic resources of the libraries in OCUL.

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Notes

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Additional Resource

Plum, T., Franklin, B., Kyrillidou, M., Roebuck, G., and Davis, M. "Measuring the impact of networked electronic resources: Developing an assessment infrastructure for libraries, state, and other types of consortia." *Performance Measurement and Metrics* 11(2) (2010): 184-198 . Available from: DOI: 10.1108/14678041011064098 [Accessed 29 August 2010]. Based upon: Plum, T., Franklin, B., Kyrillidou, M., Roebuck, G., and Davis, M. "Measuring the impact of networked electronic resources: Developing an assessment infrastructure for libraries, state, and other types of consortia." In the *Proceedings of the 2008 Library Assessment Conference: Building Effective, Sustainable, Practical Assessment*. Edited by Steve Hiller, and others. August 4-7, 2008. Seattle, WA.

“What’s So Special about Special Collections?” Or, Assessing the Value Special Collections Bring to Academic Libraries

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Abstract

Over the past decade, special collections and archives have become an increasingly important focus of academic and research libraries thanks to the pioneering “Exploring Hidden Collections” survey conducted by Judith Panitch in 1998 and the subsequent formation of ARL’s Special Collections Working Group. Special collections have responded by undertaking large-scale projects to process backlogs, digitize materials for scholarly access and enjoyment, and conduct more instructional outreach for students. Nevertheless, in the current climate in which ARL libraries are examining their value and impact with an eye toward defining their return on investment, special collections and archives are not well-prepared to define the value they contribute because they lack standardized performance measures and usage metrics.

In this paper, we propose strategies for overcoming this impasse by shifting from collection-centric to user-centric approaches to defining metrics for special collections and archives, and by identifying appropriately precise measures that can be consistently and widely applied to facilitate cross-institutional comparisons. We explore, for example, the potential benefits of employing a “reader-hour” in place of the commonly used “reader-day” metric, and correlating it with item usage data in order to gauge the intensity of special collections reading room use. We also discuss attempts to assess the impact of instructional outreach through measures of student confidence in pursuing research projects that involve original documents as primary sources. Defining suitable metrics will enable special collections and archives to better assess and articulate their value propositions in

the context of the rapidly evolving landscape of research libraries.

Introduction

What’s so special about special collections? What kinds of value do they contribute to the overall mission of academic libraries and their parent institutions in terms of support for research, teaching, and learning? How should we measure return on the immense investment that it takes to maintain their secure, climate-controlled facilities, provide salaries and wages for staff, and support the various costs associated with acquiring, processing, and preserving rare and unique materials? How should we measure value and assess impact?

“What’s So Special about Special Collections?” was the title chosen for the inaugural issue of the Association of College and Research Libraries (ACRL) journal *RBM: A Journal of Rare Books, Manuscripts and Cultural Heritage*, which appeared in spring 2000.¹ While the most frequent answer to that question in this issue was the collections themselves,² some articles also pointed to the distinctive qualities of special collections researchers³ and staff and their interactions.⁴ The same title was also used for a special section in an issue of *American Libraries* published later that year which highlighted several collections as well as collaborative collecting projects.⁵

In June 2001, the Association of Research Libraries (ARL) held a working symposium on the future of special collections in research libraries at Brown University.⁶ This led to the creation of an ARL task force charged with engaging the agenda that emerged from the symposium. Following the task

force's final report in 2006,⁷ a new ARL special collections working group was assembled and given a charge that included "contributing to the work underway within ARL to develop qualitative and quantitative measures for the evaluation of special collections."⁸ In October 2009, the ARL partnered with the Coalition for Networked Information (CNI) to host a two-day forum on special collections, "An Age of Discovery: Distinctive Collections in the Digital Age," which opened with a panel session titled "Why Are Special Collections so Important? Exploring the Value Proposition of Special Collections."⁹ Participants at the forum focused on expanding the research potential and value of special collections through the creation of virtual collections of digitized materials. Stephen Nichols explored various aspects of this issue, taking up both the utilitarian argument that special collections do not deserve support unless they are widely used as well as the scholarly perspective that digitization represents a natural evolution which promises to keep the collections alive through new (if not yet fully discovered) transformative uses.¹⁰

In January 2010, ARL announced that it was collaborating in a three-year IMLS grant-funded study titled "Value, Outcomes, and Return on Investment of Academic Libraries (Lib-Value)," whose aim is to "enrich, expand, test, and implement methodologies measuring the return on investment (ROI) in academic libraries."¹¹ Whether or how this study will address special collections is not yet known, but it seems to us worthwhile to suggest some possible areas of engagement, especially since library discourse around value propositions appears to have reached a critical juncture.

Value Propositions for Special Collections

In business parlance, a "value proposition is an analysis and quantified review of the benefits, costs and value that an organization can deliver to customers and other constituent groups within and outside of the organization."¹² As we have noted, value propositions for special collections – although they have not often been labeled as such—typically have been framed around inherent features of the collections themselves or their use by scholars. Summarizing these

viewpoints, Don Waters stated at the ARL-CNI symposium:

At its most simplistic, the value proposition for special collections is that scholarship broadly across fields in the humanities, social sciences, and the sciences just cannot proceed without corollary investment in the acquisitions and carrying costs of the primary source evidence needed to sustain and advance those scholarly fields.¹³

Others, meanwhile, have attempted to articulate the value of special collections in terms of their impact upon a wide range of functions and indicators. These include not only contributions to research and the creation of new knowledge, but also their usefulness for teaching and learning (particularly through the development of critical thinking skills), and even the enhancement of an institution's reputation and prestige.¹⁴

Measuring and Assessing Value

Although special collections and archives communities by and large have not attempted to articulate their own value propositions as such, they have engaged in various efforts to define collection and usage metrics.

The metrics movement in the archival community dates back to the 1960s, when the Society of American Archivists established a Committee on Uniform Archival Statistics. Its functions were:

To collect and analyze information about existing archival statistical systems with a view towards (a) isolating and describing these aspects of archival activity which are measurable, i.e., can be expressed in numerical terms; (b) defining these characteristics with a precision that will eliminate confusion wherever a particular term is used; (c) developing standards for archival statistics that will permit meaningful comparisons and studies of archival institutions throughout the country; and (d) encouraging general adoption of these standards by archival agencies.¹⁵

Unfortunately, no statistical standards for measuring processing activities or usage emerged from this early effort or other subsequent attempts within the archival community—with

the possible exception of the Archival Metrics project, whose user-based evaluation tools for evaluating the quality of archival services and facilities are beginning to see some adoption.¹⁶ Meanwhile, the special collections community and its primary professional organization, ACRL's Rare Books and Manuscripts Section (RBMS), have not defined any of their own statistical measures or assessment standards, although the topic has been discussed at recent RBMS preconferences.¹⁷

A pressing need for special collections and archival metrics therefore remains—as witnessed, for example, by the report that OCLC Research has been preparing to publish concerning the results of its recent survey of special collections and archives in 275 academic and research libraries throughout the United States and Canada. The most comprehensive and detailed investigation of its kind to date, the study builds upon the “Exposing Hidden Collections” survey conducted by Judith Panitch in 1998.¹⁸ In a draft version of their report, authors Jackie Dooley and Katherine Luce remark that their survey results “convey how difficult it is to evaluate data usefully without standard metrics in use across the special collections community.”¹⁹ “We cannot demonstrate the level of value delivered to primary constituencies,” they continue, “unless we can reliably characterize our users”—and, we would add, their use.

While recurrent interest in both metrics and values has been expressed in the special collections and archival communities for some time, little traction thus far has been gained by efforts to define and operationalize the momentum.

A Stalemate

We are thus faced with a stalemate. On the one hand, academic libraries have been focusing renewed attention on special collections over the past decade based on an assumption that rare and uniquely held materials will serve to distinguish research libraries as they rapidly move into a future in which their core collections and services will be constituted by a commonly held array of licensed content and other electronic resources. On the other hand, special collections have done little either to articulate their distinctive value or

identify metrics that demonstrate how they have been contributing to the mission of their parent institutions and the larger academic enterprise they serve. At the same time, the uniqueness of special collections vis-à-vis main library collections has been disputed.²⁰ And yet, turning the uniqueness argument on its head, Waters—like Nichols—has argued that the value proposition for special collections is enhanced through digitization and the resultant opportunities to perform cross-collection analyses and comparisons.²¹

Despite these disconnects, special collections have been producing relevant value on an increasing scale. In addition to pursuing a range of digitization activities, special collections librarians and archivists have also been working diligently to bring primary resources into the classroom to support teaching and learning. The newly published ARL SPEC Kit survey on “Special Collections Engagement” documents the greater levels of effort that special collections have been putting into instructional outreach, exhibits, and public programs in recent years. Nevertheless, the otherwise encouraging report admits that “institutions feel they are not able to quantify the success of their efforts, and this in turn limits the ability to compare activities within the institution or across institutions, to plan further outreach effectively, or to communicate the results of those outreach activities to the larger special collections community.”²²

It seems evident that the inability of institutions to quantify their successes, let alone describe them qualitatively, stems from a lack of standardized metrics for measuring special collections usage and or even commonly agreed-upon values. Following are some perspectives and practical proposals that we hope will prove helpful in advancing through the current impasse.

Approaching Definitions

One problem that immediately arises in trying to identify either the value proposition or appropriate metrics for special collections is defining just what one means by “special collections.” This is typically done with reference to the collections themselves, and includes a list of materials formats and qualifiers concerning rarity and uniqueness and sometimes age and physical

vulnerability. For instance, the 2003 ARL statement of principles titled, "Research Libraries and the Commitment to Special Collections," takes this approach. According to this statement, special collections

comprise manuscripts and archival collections unduplicated elsewhere and one-of-a-kind or rarely held books. They also include items precious through their rarity, monetary value, or their association with important figures or institutions in history, culture, politics, sciences, or the arts. Special Collections extend beyond paper to other formats of cultural significance, for example photographs, moving pictures, architectural drawings, and digital archives. Special collections are also significant for their focused assemblages of published materials so comprehensive as to constitute unparalleled opportunities for scholarship.²³

The 2009 report on Special Collections in ARL Libraries pursued a decidedly different definitional course and identified special collections as "any kind of vehicle for information and communication that lacks readily available and standardized classification schemes, and any that is vulnerable to destruction or disappearance without special treatment"²⁴

These approaches reflect and perpetuate varying degrees of ambiguity. They both also reflect a collections-centric approach. Might it be possible and perhaps more useful to take a user-centric approach, especially when it comes to defining value? Doing so would likely lead us to a different set of metrics and different algorithms for assessing quantitatively and qualitatively the values derived from special collections. By adopting a user-centric perspective, we may be able to look more broadly at how scholars interact with special collections at different points in the research process, both inside and outside of supervised reading rooms, as well as how undergraduate students change their thinking about evidence through interaction with primary sources.

Values and metrics converge and diverge in various ways across the spectrum of library services. While collections that are used in a controlled reading room or staff-mediated

situation are typically described as "non-circulating," this is an imprecise and unhelpful term when it comes to defining metrics. It is, in fact, perfectly appropriate to refer to the process of requesting, consulting and returning special collections materials in a reading room environment as "circulation," for the metaphor and processes it represents are essentially the same as those employed for the circulation of materials from open stacks in the main library. The only substantial difference is that the user is not allowed to remove the materials from a defined location. Likewise, just as raw circulation counts can serve as a basic indicator of the frequency of the use of main library collections, so, too, they can provide a similar index of special collections usage. Thus, a well-defined circulation metric for special collections and archives could also contribute toward a goal of integrating them more fully into the operational perspectives of their parent institutions.²⁵

Taking another tack, speedier circulation in special collections could help researchers work more efficiently and perhaps also more effectively by reducing lag times between requesting and receiving materials and the associated disruptions to study and concentration. Accordingly, retrieval time could constitute a benchmark metric for special collections library service that could be correlated with increased scholarly productivity—an important component of the special collections value proposition, as we have seen above. In fact, the National Archives (United Kingdom) closely monitors retrieval times using its internal electronic paging system with a goal of fulfilling all requests within twenty minutes or less.²⁶

Yet these types of linkages between circulation metrics and end-user values are not currently possible beyond the confines of individual institutions because there is no generally accepted definition for counting many of the types of materials that are found in special collections. While it is not difficult in principle to apply common standards for counting the use of published print materials, such as books and serials, where a count of circulated volume units is the established norm,²⁷ there is no standard or best practice for tabulating the usage of collections of unpublished manuscripts and archives. Special collections repositories that include university

archives or otherwise function as archives tend to count circulation use at the box or container level. By contrast, special collections whose strengths lie in historical and literary manuscripts tend to count circulation use at the folder or even individual item level. Some special collections that include both manuscript and archival collections apply a multiplier to circulation counts of archival boxes—thus, a single box may be tallied as representing 250-500 items if it is a 5-inch wide document case or even a thousand items if it is a full-size record storage container. Such extreme variations in practice tend to render circulation figures for special collections rather meaningless, even for the special collections librarians who collect them.

Another factor that complicates and skews circulation counts for special collections is the concept of a visit. ARL statistics use the ISO standards for calculating visits, which is an averaged gate count over a typical week.²⁸ Special collections libraries and archives, on the other hand, typically require their users to complete a registration form and present some type of identity document as a general security precaution before admitting them to the reading room. The registration record, or another system, such as a daily sign-in sheet, is also often used to track the date and time of the user's visits and occasionally the materials consulted during each visit.

Special collections libraries that track the materials consulted during each visit generally tabulate the use of the same item on different days as distinct circulation counts, whereas other repositories count only the first time the item is requested, especially if they base their count on the number of callslips submitted rather than the number of times the item is actually delivered to the researcher in the reading room. Obviously, this divergence in practice results in statistical counts that cannot be used for cross-institutional comparisons.

To compensate for this lack of consistency, some institutions employ a 'reader-day' metric that considers simply the total number of visits per month or per year. This type of broad metric has its shortcomings as well. For instance, a visit by a local user who requests one volume and looks at

it for ten minutes is given equal weight to a visit by a professional scholar who has traveled from across the ocean to look at a cartful of material and who spends every moment the reading room is open doing so. Likewise, the metric itself does not readily tell us how many unique visitors have used the reading room, or how many days on average the typical user has stayed.

Taking Flight

To overcome the first defect, it would be enough to apply a more precise measure. Looking at the basic metrics other industries have developed to measure their business performance can be instructive. For example, two basic metrics that the airline industry uses to measure overall business capacity and volume are 'available seat-miles' (ASMs), which is equal to the number of available seats times the number of miles flown, and 'revenue passenger-miles' (RPMs), which equals the number of filled seats times the number of miles flown. Dividing RPM by ASM yields a third metric, 'load factor,' which represents the percentage of airline seating capacity that is actually used.²⁹ Because these metrics are simple in concept and can be equally and objectively applied across all airline companies, they are useful for assessing the performance of individual airlines from quarter to quarter, comparing the respective performance of multiple airlines over a single quarter, and benchmarking the overall performance of the industry over time.

While special collections reading rooms are seldom arranged or oriented to calculating seating availability or measuring their performance as a quotient of seats filled, it may be useful to consider adopting a measurement strategy akin to revenue passenger-miles in order to enable libraries to engage in meaningful longitudinal and comparative assessments. As shown above, the 'reader-day' metric fails to adequately convey the amount of time that researchers actually spend in the reading room. It also does not take into account differences in reading room schedule. If a reading room is open for four hours on a Saturday afternoon is that considered equivalent to a weekday when the reading room is open for six or eight or ten hours? Most special collections that employ a 'reader-day' metric do in fact treat all of these as equivalent, which is to say that they

consider a 'day' to be any day when they maintain at least some reading room hours.³⁰

Taking a lesson from the airlines, these shortcomings could be easily remedied by simply refining the basic 'reader-day' metric to instead count 'reader-hours.' Just as airlines use 'seat-miles' rather than, say, 'seat-segments' to gauge capacity and consumption, so, too, special collections libraries could achieve a more precise, consistent and objective measure of their use by counting the actual hours that researchers spend in the reading room.

And it would not be hard to do. To facilitate the tabulation and calculation, the manual tally sheets and reading room logs that most special collections employ to track usage could be replaced with simple electronic databases that staff would use to record the time that researchers enter and leave the reading room. If the log also linked visits with individual researchers, reports could also be constructed to calculate the number of unique visitors during a given time period and analyses of the average visit lengths of various categories of users (such as students, faculty members, visiting scholars and members of the general public). Visitors could even be given 'smart' cards to scan upon entry and exit, like those the National Archives and Records Administration has begun issuing at some of its research facilities.

Furthermore, reader-hour data could be correlated with circulation or item-use data to provide a kind of 'load factor' indicator of reading room usage. How many items, on average, do various categories of researchers consult when they visit the reading room? To facilitate basic comparisons, it would be enough to divide the total number of items used during a given time period by the total number of reader-hours.

Having precise metrics and consistent data collection methods would enable managers to assess the adequacy of their services and staffing over time. Are special collections reading rooms in fact getting busier as evidence from some libraries, largely anecdotal, would suggest? Have changes in policy, such as allowing researchers to use personal digital cameras in the reading room, having an effect on the way researchers are using

their time in the reading room?³¹ Are researchers spending less time in reading rooms because they can now come in and make their own digital copies at no charge and then consult these copies at home on their own time? Or is the opposite occurring: because it is now quicker, easier and cheaper to obtain copies, are more researchers spending more time in the reading room and requesting more materials?

The impact of such changes in policy and practice on researchers and staff alike is potentially significant and therefore should be assessed. How else will libraries be able to make informed decisions about service delivery and staffing unless they have reliable measures and data to guide them? Yet such assessments are not currently possible because special collections have yet to define and employ adequate metrics and data collection methods. In an unpublished study, Elizabeth Yakel and Elizabeth Goldman found that while all repositories have at least some mechanisms for data collection and there are some commonalities in the kinds of statistics collected, there are fundamental differences in the reasons why archives and special collections amass data, how it is collected, and what is done with the information.³² These differences have persisted for a long time and have previously prevented standardization and circumscribed what can be done with this information. The interview data also revealed the limitations of current data collection methods.

In terms of value, a corollary concept that could extend the application of reader-hours and load factor metrics is intensity of use—an idea introduced by Fredric Miller in 1986. In his study, Miller proposed four levels of intensity: incidental use, substantive use, important use and fundamental use.³³ Miller based his analysis on seven data elements pertaining to characteristics of the resource consulted and the nature of the citation. Jacqueline Goggin similarly attempted to demonstrate the value of collection through usage by examining callslips and citations to materials from the Library of Congress.³⁴ These early attempts to understand the impact of special collections on scholarship have not been followed up in more recent years even though methods of citation analysis and visualizations of scholarly networks have become more sophisticated.

The interplay between metrics and values can also be demonstrated by looking at how archives and special collections support the teaching mission of the university. Special collections generally collect data on the number of instructional sessions presented to visiting classes and the numbers of local students who use the reading room. Nevertheless, as the ARL SPEC Kit survey on "Special Collections Engagement" cited above has shown repositories have struggled to assess the impact of special collections on learning outcomes.³⁵

The impact is potentially large. In the final beta testing of the Archival Metrics project "Student Researcher" survey in 11 classes at two universities, we found that 92% (n=444) of the students enrolled in these courses had never used archives or special collections before. Ninety-six percent said that they would return if they had another project that would benefit from the use of primary sources. Although one of the primary arguments levied against special collections has been that their collections are esoteric and outreach insignificant, these findings indicate that much value can be gained from having undergraduates engage with special collections.

The Archival Metrics project along with other studies by Wendy Duff and Joan Cherry³⁶ and Magia Krause³⁷ provide further options for demonstrating the impact of special collections and archives on student learning. Duff and Cherry have measured the effect of archival orientation programs on student confidence in undertaking archival research. The Archival Metrics "Student Researcher" questionnaire is similarly designed to measure confidence and also asks whether skills learned as a part of archival assignments are transferrable to other courses. Krause conducted a large scale field experiment to gauge the effect of archival instruction. Her results show that such instruction helps students develop their critical thinking about evidence. A wider diffusion of these and other evaluation and impact measures are needed to more fully understand the value of special collections to higher education.

Conclusions

Special collections and archives can and do contribute unique value to research and learning,

but their value has not been effectively communicated due to a lack of standards and best practices for measuring and assessing their impact. Although past efforts to define and operationalize special collections and archival metrics have not met with much success in the past, the current focus of research libraries on value propositions and return on investment provides a new opportunity to remedy the deficiency. As we have shown with our proposal for a reader-hour metric, some solutions may only require identifying appropriately precise variations of existing measures that can be applied objectively and universally. In other cases, the solution may simply involve making wider use of available tools, such as the Archival Metrics user surveys.

The key in every case is to define metrics and assessment techniques that are user-centric, that is, defined around user perceptions and demonstrations of value. Quantitative approaches that measure intensity of use offer one possibility, while qualitative interview and sampling techniques offer another. The goal of defining usage metrics for special collections and archives at academic institutions is ultimately to better assess and articulate their value propositions in the context of the rapidly evolving landscape of research libraries.

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Notes

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 28. NISO Z39.7-2004, Information Services and Use: Metrics & Statistics for Libraries and Information Providers—Data Dictionary, <http://www.niso.org/>.
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 30. In fact, space utilization metrics abound on campuses in this economic climate with the goal of making the most efficient use of existing space and avoiding costly new building. At one of our own institutions, the University of Michigan see, <http://www.provost.umich.edu/space/index.html>.
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Analyzing the MISO Data: Broader Perspectives on Library and Computing Trends

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Abstract

Purpose: This presentation analyzes data collected by 38 colleges and smaller universities participants in the MISO Survey (<http://misosurvey.org/>) between 2005 and 2010. The survey gathers input from faculty, staff, and students about the importance, use, and satisfaction with campus library and computing services. The data analysis done by the MISO Survey Team provides a unique look at the relationships between services, changes over time in faculty and student populations, and trends in service provision and popularity.

Design/Methodology/Approach: The MISO Survey Team has developed high standards for data quality by using tested questions, ensuring high response rates and customizing the survey instrument so that participating institutions can address local concerns. Each participating school receives a summary dataset representing all institutions for the survey year for comparison. This presentation will focus on analysis of the larger dataset of all schools and years, offering deeper analysis of user needs than any one school could conduct using its own data. To date, the MISO Survey Team has analyzed the data by faculty age group and student cohort and is now examining how views on services are affected by academic discipline. Finally, the Survey Team

combined the use and importance trends to provide a richer look at longitudinal changes and better predict how constituents will view services in the future.

Findings: The MISO data provide evidence of 2010 trends in stakeholder interactions with libraries. Faculty, for example, decreasingly use the online library catalog, library circulation services, and library reference services, and view these three service categories as decreasingly less important. Of these three service categories, the online library catalog and library circulations services experienced slight drops in perceived importance among faculty while library reference services experienced a somewhat larger drop. On the other hand, faculty increasingly use library databases and are increasingly likely to access online resources from off-campus, which potentially speaks to an increased importance of proxy services. At the same time, faculty consider library research instruction, library liaisons, the library web site, and interlibrary loan to be increasingly important, in that order. As for undergraduates, they are slightly less inclined to use library reference services and much less inclined to use the library web site over time. Conversely, and more so than faculty, undergraduates increasingly use interlibrary loan,

library databases, and particularly digital image collections. Like faculty but even more so, undergraduates consider library research instruction and interlibrary loan to be increasingly important, in that order. Unlike faculty, the undergraduate trend is to view the library web site as slightly less important. Consistent with faculty, undergraduates view library databases and off-campus access as increasingly important.

Practical Implications/Value: The MISO annual summary data help participant schools in identifying their relative strengths and weaknesses, creating peer groups for analysis, and determining whether a problem is a local concern or a nationwide trend. The analysis of microdata provided by the Survey Team allows library and technology decision makers a wider perspective on trends and relationships between services.

Introduction

As higher education changes in response to budgetary, technological, and political pressures, library and technology leaders increasingly look for meaningful ways to assess how and to what extent our organizations support scholarship, teaching, and learning. The MISO Survey is a web-based quantitative survey designed to measure how faculty, students, and staff view library and computing services in higher education.

The core of the MISO Survey consists of questions designed to measure the use of library and IT services, their importance to the campus community, and the level of satisfaction with which the community views these services. The Survey also measures the ownership of technology tools and their use for academic and personal purposes as well as participants' perceptions of their own technology skills, and preferred learning methods. In addition, it measures overall attitude toward library and technology services on campus.

By looking at computing and library services together, the MISO Survey provides a richer context for each set of services while acknowledging the shared nature of many of the services as seen from the perspective of our constituents. While there are many distinct services offered by library and computing

organizations on campuses, librarians and technologists also frequently work together to support instructional and academic computing needs on campus and to provide resources to off-campus students and faculty. In addition, library buildings are, on many campuses, the site of many computing resources

Since the MISO Survey began in 2005, the Survey has been taken more than 43,000 times at 38 participating institutions, 26 of whom have responded to the Survey more than once and 8 more than twice. Overall, more than 10,000 faculty, 18,000 students, and 15,000 staff have completed the Survey.

History of the MISO Survey

The precursor to the MISO Survey was designed by David Consiglio and his colleagues at Bryn Mawr College to assess the effectiveness of the College's recently merged Information Services department. When the Survey proved extremely useful, a group of chief information officers from the Council of Library and Information Resources agreed to use the Bryn Mawr Survey as the basis for a common survey to be administered across schools. This would allow each school to learn from the Survey data gathered on its campus and also compare itself to a group of peer institutions. In addition, by conducting the Survey every year, each institution would be able to evaluate its services over time. Bates College, Middlebury College, the University of Richmond, and Wellesley College graciously agreed to donate a significant amount of a top manager's time toward the project. In January of 2005, the team members met for the first time at Bryn Mawr College to begin this process.

During the spring and summer of 2005, the MISO Survey team prepared and tested the Survey instrument. Their five institutions participated in a pilot of the Survey in fall 2005. Additional schools administered the MISO Survey in spring 2006 and in each spring since then.

MISO Survey Leadership Team

The MISO Survey Team works together to develop long-term strategies, to conduct in-depth analysis of the Survey data, and to complete biennial revisions to the Survey instrument. The co-investigators also liaise with participating

institutions during the Survey season to ensure that the Survey administration goes well. The MISO Survey Team is anchored by David Consiglio, the Principal Investigator for the project, Survey Administrator, and founder of MISO. There are also 4 co-investigators, each of whom works at one of the MISO institutions; the co-investigators generally serve for at least 2 years at a time. The current MISO Survey Team includes David Consiglio from Bryn Mawr College, Joshua Wilson from Brandeis University, Laurie Allen from Haverford College, Neal Baker from Earlham College, and Kevin Creamer from the University of Richmond.

Survey Method, Structure, and Process

At each participating institution, the Survey is administered to all teaching faculty, all staff members who are not members of the library or IT organizations, and a stratified sample of students selected randomly from the population. The Survey is generally administered starting on the fourth Thursday of each institution's spring semester. This approach helps ensure that each institution's data can be compared to data gathered at other institutions.

The Survey's strategy of regular outreach to respondents enables each campus to achieve high response rates compared to other surveys. In addition, surveying a sample of each institution's student body helps to avoid student survey fatigue and further increases the student response rate. These methods helped the Team to achieve response rates in 2010 of 48.8% for faculty, 44.9% for students, and 50.3% for staff.

In addition to the core questions included in each Survey instrument, most participating schools include an expanded set of optional questions and many include custom questions that ask about services not mentioned in the main Survey instrument. Most of the core and optional questions can be customized to reflect the service names in use at each institution (for example, those about the online catalog or the course management system).

Once a school has agreed to participate in the Survey in the coming year, its leadership selects a Campus Survey Administrator (CSA) from among the library or IT staff. This individual is responsible for all aspects of Survey

administration at his or her institution. A member of the MISO Survey Team liaises with each institution, helps its CSA prepare for upcoming Survey administration deliverables, guides the CSA in working with the school's Institutional Review Board, and answers questions as the process unfolds. These preparations for Survey administration take place largely during the fall semester so that the Survey is ready to go live early in the spring semester. A more detailed timeline for MISO Survey administration is available on the MISO website (<http://www.misosurvey.org>).

Once all participating schools have concluded their Surveys, the results are summarized and analyzed during the spring and summer months. Each participating school receives a comprehensive spreadsheet that includes the mean values for questions included in its Survey instrument for each population surveyed (faculty, staff, and students) as well as comparable mean values for all other participating schools. These spreadsheets include results from the current year as well as all previous years. The spreadsheets allow easy comparison of schools and cohorts to show where statistically significant differences exist. Each institution also receives its raw data as well as an SPSS file for further data analysis.

Analysis of MISO Results: What Is Unique about MISO?

While each institution has a rich collection of data to analyze from their own Survey, and from the spreadsheet of mean data for all schools, the MISO team has also spent considerable time analyzing results from all schools and cohorts to see broader patterns from within the data. This broader analysis is one of the unique features of the MISO Survey, as it is done in a statistically rigorous way that allows us to differentiate between patterns that seem emergent based on anecdotal evidence, or changes at a single school, and those that are truly widespread. The team has been able to view changes in student attitudes about services as they move from freshman year to senior year, as well as some changes that are happening in student attitudes over time without regard to class year. We have also looked closely at trends in the use, importance, and satisfaction with our services as it relates to the age of our faculty members. Beginning with the 2010 Survey, we will look at how faculty and students within

the various disciplines interact differently with our services as well. Below, we've provided one example of the kind of trend analysis possible with the MISO Survey instrument by taking a deeper look at how the use of library services has changed over time, and how those changes are different for faculty as compared with students.

Examples of How Analyzing the MISO Data Provides Broader Perspectives on Library and Technology Services

For much of the Team's analysis, we've looked at changes in the use, importance, and satisfaction with services over time. In this section, we'll look more closely at trends in the reported use of

library services, without consideration of importance or satisfaction, as an example of one kind of analysis possible with the data. This section first presents the mean frequency of use for faculty and students 2008-2010 as a benchmark about current use patterns, followed by time trends taken from all institutions which participated in the Survey more than once from 2005-2010 (N=27). It is important to underline at the outset that an analysis of frequency of use alone is not a sufficient gauge of a service's value to faculty and students. Such an analysis does, however, provide one informative, broader perspective on the IT landscape in higher education.

2010 Benchmarks: Faculty and Student Frequency of Use

Figure 1. Sample Sizes and Response Rates

<i>Population</i>	<i>Sample Size</i>	<i>Responses</i>	<i>Response Rate</i>	<i>Total Institutions</i>
Faculty	9482	4707	49.6%	38
Students	22,757	8605	37.8%	38

Frequency of use in the MISO Survey is set on a five-point scale:

- 1 (never)
- 2 (once or twice a semester)
- 3 (one to three times a month)
- 4 (one to three times a week)
- 5 (more than three times a week)

It should be noted that while the numbers used in the scale increase in a linear fashion the categories do not increase linearly. Each successive category represents an increase in use that is three or four times greater than the previous category. As a

result, a person selecting category four uses a service about 16 times as much as a person selecting category two, even if the numbers "4" and "2" suggest there is only twice as much use.

Below are tables illustrating the frequency of use of all library and technology services 2008-2010 (Figure 2 & 3). No attempt is made to isolate what constitutes a library service per se, so that nominal "library" services can be viewed in the context of all services. It is of course difficult to decouple such increasingly linked terms.

Figure 2: Faculty use benchmarks.

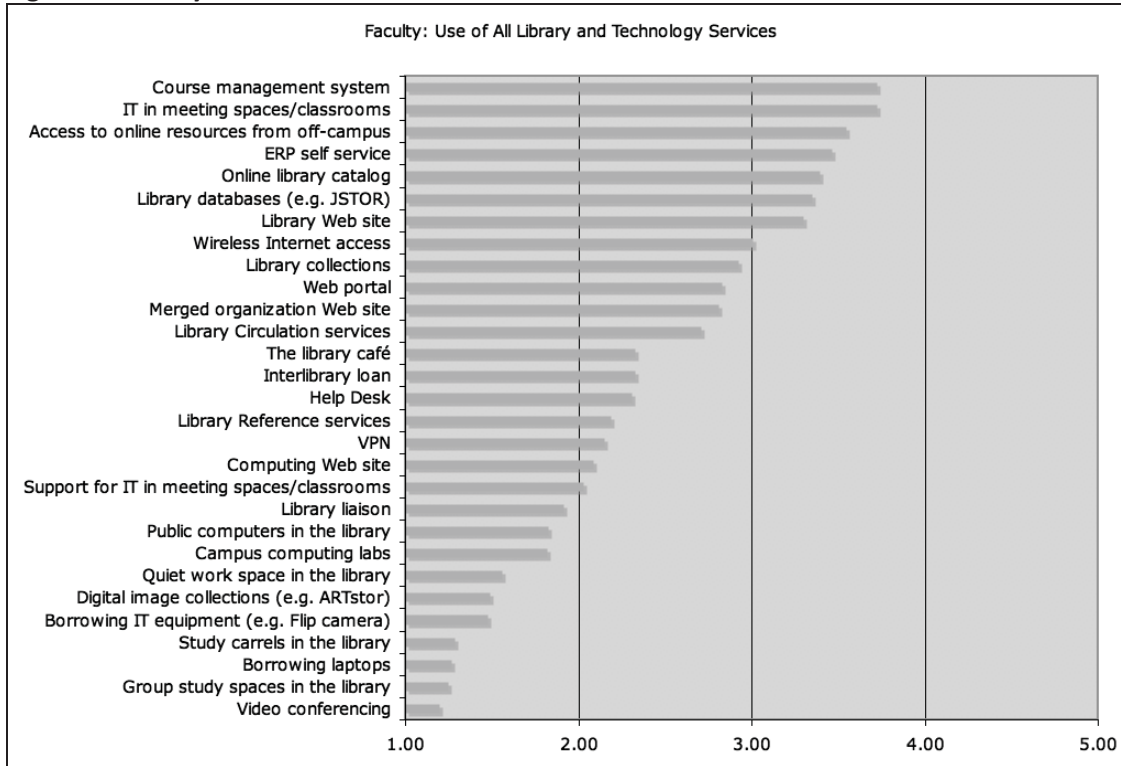
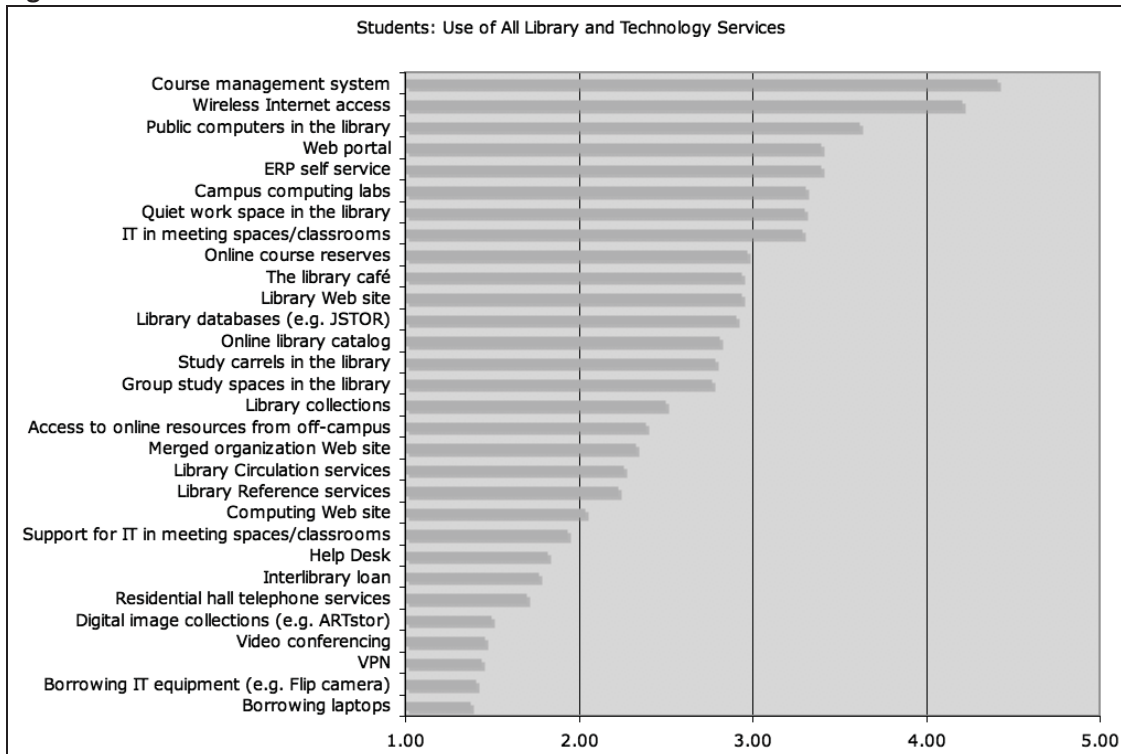


Figure 3. Student use benchmarks.



Selecting from the overall array of services, various combinations can be grouped under a

more focused rubric labeled “the library.” Any attempt to do so is potentially problematic given

local conditions at each institution. Librarian position descriptions at some colleges involve campus course management system duties, for example, while other librarians elsewhere help to maintain access to online resources from off-campus via software proxy servers.

Despite differences in local conditions, there will likely be wide consensus as to what represents a typical library service. These standard library functions are grouped together for comparative analysis (Figure 4).

Figure 4. Comparison of All Library Services Use Benchmarks.

<i>Service Name</i>	<i>Faculty Mean</i>	<i>Student Mean</i>
Interlibrary Loan	2.32	1.76
Library Circulation services	2.70	2.25
Library Reference services	2.18	2.22
Library Web site	3.29	2.93
Online library catalog	3.39	2.80
Library collections	2.92	2.49
Library databases (e.g. JSTOR)	3.34	2.90
Digital image collections (e.g. ARTstor)	1.48	1.49
Library liaison/contact	1.91	Not asked
Online course reserves	Not asked	2.96
Study carrels in the library	1.28	2.78
Quiet work space in the library	1.55	3.29
Group study spaces in the library	1.24	2.76
The Library café	2.32	2.93
Public computers in the library	1.82	3.61

Comparison of the data reveals marked differences in how faculty and students use “the library.”

The most frequently used services by faculty are the online library catalog (3.39), library databases like JSTOR (3.34), and the library web site (3.29). These are the only library services that faculty use at least one to three times a month, on average.

In contrast, the most frequently used services by students are public computers in the library (3.61) and quiet work space in the library (3.29). These are the only library services that students use at least one to three times a month, on average.

The implications for “library as place” are worth serious consideration. Across the board, students report using library facilities more than faculty (Figure 5).

Figure 5: Comparison of “Place-Based” Library Services Use Benchmarks.

<i>Service Name</i>	<i>Student Mean</i>	<i>Faculty Mean</i>
Public computers in the library	3.61	1.82
Quiet work space in the library	3.29	1.55
The library café	2.93	2.32
Study carrels in the library	2.78	1.28
Group study spaces in the library	2.76	1.24

When planning library facilities upgrades, decision makers might do well to consider design with students foremost in mind. They could also synthesize MISO frequency of use Survey data with other empirical research that yields similar

results about faculty and library facilities.¹

Whereas students use a location-based library, faculty turn to online library services with greater frequency (Figure 6). In addition faculty report a

much higher use of “Access to online resources from off campus,” (3.54 vs. 2.38) which presumably includes the use of proxy services

which allow access to library materials outside of library facilities.

Figure 6: Comparison of Online Library Services Use Benchmarks.

<i>Service Name</i>	<i>Faculty Mean</i>	<i>Student Mean</i>
Online library catalog	3.39	2.80
Library databases (e.g. JSTOR)	3.34	2.90
Library Web site	3.20	2.93

Note that it is difficult to determine the extent to which some library services are perceived as location-based or online. For example, library reference services can occur at a physical desk on campus or via email and/or chat. Likewise, the provision of interlibrary loan services occurs via online forms embedded in proprietary databases and at location-based service points. Furthermore, library patrons can typically use circulation

services either online (i.e., a “renew books” option available in the online library catalog) or in a physical facility.

Overall, faculty use most of these hybrid online/place-based library services with greater frequency than students. However, library reference services are used to basically the same extent by students and faculty (Figure 7).

Figure 7: Comparison of Hybrid Online/“Place-Based” Library Services Use.

<i>Service Name</i>	<i>Faculty Mean</i>	<i>Student Mean</i>
Library collections	2.92	2.49
Library Circulation services	2.70	2.25
Interlibrary Loan	2.32	1.76
Library Reference services	2.22	2.18

2010 Trends: Faculty and Student Frequency of Use

To analyze trends in the use of library services, the following analysis relies only on data from schools where the Survey was administered more than once since 2005 (N=27). New questions have been added to the MISO Survey since 2005, stemming from changes in the wider library and technology services landscape. As a result, trend data is available for a smaller number of services because not all Survey questions have yet to be answered more than once by enough institutions

to provide generalizeable trends (denoted by “N.A.” in the figure below).

This section only reports on services where the change in use over time was statistically significant for faculty or students, and where the change was large enough (+/-0.025) to merit attention. Consequently, an “--” value in the figure below denotes a slope (i.e., a possible change over time) that is not statistically significant or not large enough to be of real practical significance.

Figure 8. Comparison of Statistically Significant Library Services Use Trends.

<i>Service Name</i>	<i>Faculty Trend</i>	<i>Student Trend</i>
Interlibrary Loan	--	0.0338
Library Circulation services	-0.0430	--
Library Reference services	-0.0380	--
Library Web site	--	-0.0337
Online library catalog	-0.0430	--
Library collections	N.A.	N.A.
Library databases (e.g. JSTOR)	0.0300	0.0348
Digital image collections (e.g. ARTstor)	--	0.0711
Library liaison/contact	--	Not asked
Online course reserves	Not asked	--
Study carrels in the library	N.A.	N.A.
Quiet work space in the library	N.A.	N.A.
Group study spaces in the library	N.A.	N.A.
The Library café	N.A.	N.A.
Public computers in the library	N.A.	N.A.

The only library services use trend common to both faculty and students is increased utilization of databases like JSTOR (0.0300 and 0.0348, respectively).

With the exception of library databases use, all other significant faculty library services trends reflect declines in usage for faculty: reference services (-0.0380), circulation services (-0.0430), and the online library catalog (-0.0430).

With the exception of library web site (-0.0338), all other student library services trends reflect no change or an increased usage (a rise in digital images collections like ARTstor [0.0711]) and less pronounced but still significant growth in interlibrary loan (0.0338).

Taken as a whole, these divergent trends also suggest important differences in faculty and student library use patterns.

To focus only on notional “library” services is to occlude important developments of interest to librarians, even so, and this is where MISO data distinguishes itself relative to more circumscribed assessment tools. By means of conclusion, one additional technology frequency of use trend deserves careful attention. Both faculty and students increasingly turn to the course management system (0.2110 and 0.1399). The usage slopes for products like Blackboard and

Moodle are much more steep than any increased library use trend. Librarians ought to consider embedding their services in their course management system since that is where their patrons are to be increasingly found.

Conclusion

The analysis above provides one look at the MISO data. By examining the use values for the subset of variables representing library services across time and institutions, we can see trends and patterns that would not have been as meaningful if from a single school. As the MISO Survey has continued and expanded over the years, the usefulness of rich comparable data from a set of peer institutions over time has increased tremendously. In addition to providing a rich source of data, MISO can serve as a model for how a group of schools can collaborate on a shared assessment tool that meets the needs of individual institutions and provides a robust dataset for deeper analysis. The process of designing, updating, and customizing the MISO Survey by a team of library and computing leaders from within participating institutions ensures that the instrument remains relevant to decision making, and that the Survey is easy to conduct. As the dataset becomes larger, and a greater variety of institutions participate, we will continue to plan for ways to increase the usefulness and scope of analysis, while ensuring

that all participating institutions continue to find useful measures of their own service.

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Note

1. Roger C. Schonfeld and Ross Housewright, *Faculty Survey 2009: Key Strategic Insights for Libraries, Publishers, and Societies* (New York: Ithaka S+R, 2010), 5, <http://www.ithaka.org/ithaka-s-r/research/faculty-surveys-2000-2009/faculty-survey-2009?searchterm=key+strategic+insights>.

Are We There Yet? Aligning Planning and Metrics—Strategically

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Abstract

This paper explores how some academic research libraries are realizing the full advantages of the cyclical nature of planning, that is, aligning planning and metrics, strategically. Based on a mini-environmental scan of Association of Research Libraries members, current examples of academic libraries' strategic plans that have embedded or appended performance measures are outlined. A number of libraries describe their intent to measure, often conveying the measures by which the library might evaluate if and to what extent it has enacted its projected plans. Going beyond a description of intent, a few libraries designate specific targets as indicators for their plans' objectives, as measures of their plans' successful accomplishments, and as gauges for future planning and action. Some examples of actual performance metrics that academic and research libraries are utilizing to strategically align planning and measurement may prove useful to other libraries as they embark on future planning initiatives.

Introduction

Google the phrase "strategic planning" and look at the image results. One can see a beautiful kaleidoscope of graphics, most based on the shape of a circle or occasionally a linear model with a feedback loop. In these illustrations of strategic planning, one can find phrases such as "vision," "goals," "priorities" as well as phrases such as "assess," "evaluate," "test." The message of the models is clear—strategic planning is a cyclical process in which planning and assessment are fully integrated, each informing the other. The ideal planning cycle outlines a systematic procedure for indicating what an organization needs and wants to do, for the implementation of expressed plans, for comparing actual performance to planned performance in order to assess success, and for using that information to inform and improve subsequent planning and action.

In the early 1980s with the publication of *Strategic Planning for Library Managers*, Donald Riggs asserted that "a library's strategic planning process encompasses its mission statement, goals, objectives, strategies, alternatives and contingencies, policies, and resource allocations, and their implementation and evaluation."¹ He emphasized the need for information as "a vital cornerstone" in the strategic planning process and proposed the development of a management information system (MIS) that could provide "objective performance measurements and assessments."² A more recent work by Joe Matthews, a Library Assessment Conference keynote presenter, suggests that "a strategic plan consists of an organization's mission statement and strategic vision, near-term and long-term performance targets, and the strategies that will be employed to achieve the vision's goals and objectives."³

From accrediting agencies in higher education, to administrators in state governments, to professional organizations that create library standards, there is an expectation that libraries will show evidence of planning. Similarly, most libraries keep a record of their activities; statistics are submitted annually to key stakeholders to whom the library is accountable and to a variety of collaborative partners and official agencies. Often, it seems, the development of a plan and the collection of data are enacted as separate, unlinked processes. Is there any evidence that libraries "close the loop," collecting data that is strategically focused, documents strategic accomplishment, and connects back into the planning cycle to influence future action? A mini-environmental scan of the self-reported planning and assessment activities of academically-based Association of Research Libraries members was conducted to explore the extent of this strategic alignment between planning and assessment.

It is clear that ARL libraries are working on assessment. An ARL SPEC Kit titled *Library Assessment* collected survey responses in May 2007 from 73 ARL libraries, a response rate of 60%. "Only one library indicated that it did not engage in any assessment activities beyond collecting annual data for the ARL statistics . . . [whereas] the 'typical' library assessment programs began in the 1990s and engage in various assessment activities. . . . The programs most frequently gather statistics (100%), but are also strongly involved in doing various user surveys, Web usability testing, and focus groups. They have performed studies of their Web sites. They track usage statistics for electronic resources and assess user education programs, collections, and reference."⁴ Attendance at the Library Assessment Conference itself is additional evidence of involvement. The initial conference in 2006 had 215 registrants, 150 of whom were from ARL member libraries; today's 2010 conference has 460 registrants with 216 from ARL libraries, a 44% growth in participation for ARL institutions.⁵

It is also clear that ARL libraries engage in planning. A succession of ARL SPEC surveys (1984, 1989, 1995) and other reports document the development of planning efforts in academic and research libraries.⁶⁻⁸ The most recent, *Strategic Planning in ARL Libraries*, issued in 1995, notes that "strategic planning is alive and well in ARL libraries. It appears to be far and away the most common mode of planning and with few exceptions has been deemed successful by library and university administrators."⁹ Forty-seven (out of the then 119 ARL libraries, or approximately 40%) had produced a written strategic plan within the past 5 years. The plans presented in the SPEC Kit include some examples of mission, vision, and values statements, many summarize the environmental context or forecast that context for the future, most maintain a heavy emphasis on the development of goals and objectives. In seeking to find out "how useful strategic planning has been to those libraries and, particularly, how successful it has been" the SPEC Kit revealed that "forty-four of the 47 libraries that produced strategic plans in the last five years believed the effort worthwhile."¹⁰ But these self-reported perceptions are not the same as using methods to measure organizational performance against the goals so as to judge the extent of the plan's success.

The Louisiana State University Libraries Plan issued in 1993 is notable in this inventory with an "Assessment" component for each of the five major goals. Examples of these early Strategic Plan measures, some with targets, are:¹¹

- Patron counts
- Patron responses on user satisfaction survey and user evaluation of services
- Results of materials availability study
- 100% new faculty and graduate students contacted and offered library orientation
- 10% undergraduates and 30% graduates participating in library instruction programs
- 20% increase in records processed for retrospective conversion
- Ten proposals submitted for external funding over a three-year period
- Track number of staff publications annually and impact via citation indexes
- Number of libraries accessing [the library's online catalog]; reports quantifying use of the system

In the last two decades, libraries have been exposed to the development of new planning methods from around the globe. While Management by Objectives (MbO), advocated by Peter Drucker in the early 1950s, remains a popular approach to planning, several other techniques have been influential recently. Hoshin management (also known as hoshin kanri), for example, was initially utilized in the 60s and 70s in a number of Japanese corporations (e.g., Toyota) as a planning system that incorporates Total Quality Management principles. Hoshin defines the vital few long-range objectives and also measures and continuously improves the fundamentals that are required to run the organization successfully. Another contemporary planning technique is the Balanced Scorecard (BSC). Originated by Drs. Robert Kaplan and David Norton in the early 90s, the balanced scorecard started as a performance measurement system but has since evolved to a full strategic planning and management system. BSC outlines four perspectives in which to generate strategic objectives; "balancing" the financial perspective are the customer, internal business processes, and organizational learning and growth perspectives. A set of aligned performance measures focus attention on how the organization is doing in meeting its strategic objectives. These metrics—

and targets—provide feedback, enabling the organization to assess its progress and to develop focused initiatives where performance is not meeting the intended target. As often quoted, Kaplan and Norton emphasize “What you measure is what you get”¹² and suggest that the Balanced Scorecard is

“... a set of measures that gives top managers a fast but comprehensive view of the business. The balanced scorecard includes financial measures that tell the results of actions already taken. And it complements the financial measures with operational measures on customer satisfaction, internal processes, and the organization’s innovation and improvement activities – operational measures that are the drivers of future financial performance.”¹³

These modern planning and management systems underscore that strategic planning is a cyclical process in which planning and assessment are fully integrated, each informing the other.

To explore the extent to which libraries are “closing the loop”, integrating the development of a plan and the collection of data, a mini-environmental scan of ARL university members was conducted by soliciting information about the use of measures and planning on the ARL Directors listserv and by searching each libraries’ web site.¹⁴ Of the 113 ARL university member libraries, nine (8%) do not appear to make any of the products of their planning processes publicly accessible. Twenty-eight ARL member libraries (25%) publicly share one or more of the strategic plan elements of Mission, Vision, and Values and may indicate overall strategic directions, without elaborating on goals and other elements. An additional 72 ARL member libraries (64%) publicly share their complete Strategic Plans including strategies and/or goals; information is also available from the four libraries (3%) that have participated in the ARL Library Scorecard Pilot throughout 2010. Of the organizations that publish strategic plans, 23 ARL university member libraries (20% of the total ARL academic membership) show evidence that they are “closing the loop” connecting assessment data back into the planning process.

Strategic Plans which Describe the Intention to Measure

The 23 libraries that incorporate metrics into their planning efforts embody what Dugan, Hernon, and Nitecki have emphasized in their recent award-winning work *Viewing Library Metrics from Different Perspectives*:

“Metrics . . . play a critical role in showing how libraries advance the mission of the institution . . . Metrics, in sum, play a role in strategic and other types of planning. . . . The adoption of a selective list of metrics that address both accountability and improved customer services, while meeting the needs and expectations of different stakeholders, requires an administrative commitment to the provision of high-quality service and fulfilling an important educational role. Accountability involves a demonstration of managerial leadership and a commitment to maintain an effective and efficient operation that involves collaboration around the campus and beyond.”¹⁵

Probing how these ARL libraries integrate assessment with planning reveals that the most common approach is to *describe the library’s intention to measure*, signaled by plans grouped according to these characteristics:

1. plans that describe in general terms what and sometimes how to measure
2. plans that describe units of measure and sometimes how to measure
3. plans that describe units of measure and the desired result in general terms
4. plans that describe units of measure, desired results and occasionally targets

Some libraries begin to close the loop of the planning and assessment cycle by describing their intentions regarding what they will measure and sometimes how they will be measured. Examples of this approach are seen in the strategic plans of Auburn University, Howard University, Penn State University, and Western Ontario University:

*Auburn University Libraries Strategic Plan 2007-2012*¹⁶ provides a category of Measures such as:

- “Conduct formal user studies to evaluate effectiveness of service”

- “Assess impact of library instruction activities on student learning”
- “Measure employee satisfaction and morale via climate surveys”

*Howard University Libraries Strategic Plan 2005*¹⁷ employs a set of Performance Indicators and the proposed Methods of Assessment such as:

- “Pre- and post-tests to measure participants’ learning”
- “Bibliography prepared by . . . Expository Writing students”
- “Analysis of selected theses and faculty publications”

*Penn State University Libraries Strategic Plan 2008-2013*¹⁸ lists their Strategic Indicators such as:

- “Track and analyze usage of library services and resources, such as traffic counts, and user contacts in person and through online services”
- “Review and analyze collections expenditures by disciplinary area and by format”

*University of Western Ontario Libraries Strategic Plan 2007-08–2010-11*¹⁹ utilizes Performance Indicators that describe what and sometimes how to measure such as:

- “. . . selective needs assessments targeted to specific groups using a variety of techniques: focus groups, usability studies, web surveys or one-on-one consultation”

Some library strategic plans describe the intention to measure by indicating actual units of measure and sometimes how these will be measured. Examples of this approach are seen in the strategic plans of the University of Illinois at Chicago, the University of Notre Dame, Texas Tech University, and the University of Colorado at Boulder:

*University of Illinois at Chicago Library Strategic Plan 2006*²⁰ has Performance Metrics such as:

- “Number of campus units that participate in the University Archives’ Records Management Program”
- “Number of researchers and scholars contributing to the Institutional Repository and open access journals”
- “Improved student and faculty satisfaction with the physical environment of Library spaces”

*University of Notre Dame Libraries Strategic Plan 2004*²¹ indicates some Assessment metrics such as:

- “# collections converted [to digital content]”
- “National Survey (SAILS) [to measure library instruction learning objectives]”

*Texas Tech University Libraries Strategic Plan*²² outlines an extensive set of Critical Success Factors and Assessments such as:

- “Number of requests for Americans with Disabilities Act services”
- “Number of reference questions answered electronically”
- “Amount saved by cooperative purchasing”

*University of Colorado at Boulder Libraries Strategic Plan 2006*²³ added their proposed Measures subsequent to the creation of the plan such as:

- “Instructional Contacts”
- “Information Resources per FTE Student”
- “Size of Digital Collections” (Megabytes)

A third category of strategic plans that describe the intention to measure express units of measure and the desired result expressed in general terms. Examples of this approach are seen in the Strategic Plans of the University of Kentucky, Purdue University, and York University:

*The University of Kentucky Libraries Strategic Plan 2010-2014*²⁴ includes a range of Metrics such as:

- “Increase the number of unique collections that are digitized and accessible”
- “Improve the ranking among public research universities . . . according to the Library Investment Index of the Association of Research Libraries”

*Purdue University Libraries Strategic Plan 2006-2011*²⁵ incorporates Metrics and Benchmark Measures such as:

- “Longitudinal scores from Information and Communication Technology (ICT) Literacy Assessment Test”
- “Number of Libraries faculty participating in collaborative or sponsored research”
- “Reduced number of Libraries’ facilities”

*York University Libraries Strategic Plan 2007-2011*²⁶ added Expected Results/Measurables after the plan was completed including items such as:

- “Decrease the average time to supply materials needed for research”
- “Student survey feedback indicates greater success in finding information through the Libraries’ web”
- “Marked improvement in the ratio of students per study space in the libraries”

Several libraries describe the intention to measure more explicitly, typically incorporating the units of measure and the desired result in either general or specific terms. Often plans in this category mix the intended action plan with particular milestones and sporadically include targets. Examples of this approach are seen in the strategic plans of McGill University, the Ohio State University, the University of Tennessee, and the University of Hawaii at Manoa:

*McGill University Libraries Strategic Plan 2009-2010*²⁷ lists some Targets throughout the plan such as:

- “Reduction of cataloguing backlog by 50,000 items by May 2010; all cataloguing records, including those for e-sets loaded both locally and on OCLC within 1 month of receipt”
- “Two thirds of all branch libraries refurbished with new seating and facilities by May 2010”

The Ohio State University Libraries Strategic Plan 2010-2012,²⁸ which is currently in draft form, proposes Metrics / Milestones such as:

- “Increase percentage spent on e-books from 10% to 15%, fy2011”
- “5 library faculty complete [e-learning] program” by WI 2012

*The University of Tennessee Libraries Strategic Plan FY2008-09 to FY2010-11*²⁹ incorporates a number of Metrics such as:

- “Number of items in e-book collections” (10% increase in number of e-books over 3 years)
- “Increased [Development prospects] face-to-face visits and solicitations”

*The University of Hawaii at Manoa Library Strategic Plan 2008-2015*³⁰ subsequently developed Targets such as:

- “Expand expert care for collections” “as measured by increasing the number of items processed per year by 10%”

Strategic Plans which Specify Metrics and Targets

Four libraries not only describe their intention to measure, but they designate measures and specific targets. These ARL libraries are the University of Arizona, the University of Illinois at Urbana-Champaign, the University of Calgary, and the University of Connecticut.

The University of Arizona Libraries and Center for Creative Photography has been incorporating measures into its planning efforts since it began to utilize Hoshin planning in the mid-90s. Assistant Dean Shelley Phipps states “Hoshin planning aligns the organization to long-term directions and continuously reviews progress . . . [it] requires that systems are in place to gather data and assess potential and actual customers now and in the future.”³¹ As a result of the use of this methodology, she asserts:

“The language of the organization is one of assessment and measurement – indicating a successful culture change to external focus on the needs of customers and the importance of caring and knowing whether intended results are occurring . . . ‘Stretch’ quality standards are accepted as the appropriate approach to guiding continuous process improvement and forcing creative thinking and innovative approaches . . . Challenges still exist in discovering and defining the right measures. . . Sometimes data are not easily obtainable; other times it is difficult to know how to assess outcomes of service or learning processes. Nevertheless, experimentation has lead to a vast amount of learning. . .”³²

The University of Arizona Libraries and Center for Creative Photography Strategic Plan FY 2009-2013 specifies Performance Measures and Quality Standards. One area of organizational performance in particular in which the Library outlines its desired results is Information Services.³³

Information Services Metrics - University of Arizona Libraries and CCP

METRICS	DESIRED RESULT	BASELINE (2005-07)	TARGET (2012)
LibQUAL+® Information Control	Reduce Superiority Gap for All respondents	From -1.09	To -0.87
LibQUAL+® Affect of Service	Reduce Superiority Gap for All respondents	From -0.87	To -0.70
LibQUAL+® Item “Personalization features in the electronic library”	Reduce Superiority Gap for All respondents	From -0.81	To -0.65
Percentage of holdings open to web browsers	Holdings added from 2000 forward of Libraries CCP are in OCLC or otherwise open to most web browsers		100% (6/30)

The use of LibQUAL+® as a measurement tool is seen in a number of the ARL strategic plans that specify measures and targets. The rationale for the use of customer-centered and service quality measures has been clearly stated by Dean Carla Stoffle:

“... as we look at our context—especially the economic environment, our competition, and demands for accountability—it is evident that we cannot live in isolation from the outside pressures our institutions face. We cannot evaluate quality as if a library was an end in itself. We must address and measure the

value of the library by the standards and outcomes that are important to our customers and campus stakeholders.”³⁴

The University of Illinois at Urbana-Champaign University Library Strategic Plan which was issued in 2006 subsequently added metrics in 2009. UIUC includes three data points—the Metric as measured in the baseline year of FY09 and targets at 2 year intervals. To monitor success in meeting the strategic goal “Offer services that meet the changing needs of Library users” UIUC is making use of several metrics and targets.³⁵

User Services Metrics - University of Illinois Urbana-Champaign University Library

METRICS	DESIRED RESULT	BASELINE (FY09)	TARGET (2011) (2013)
Reference transactions	Decrease	127,996	105,000 100,000
Participants in instructional programs	Decrease	27,479	25,000 23,000
Electronic reserves downloads	Increase	642,843	655,000 667,000
Visits to Library Web site	Increase	118M+	130M 150M
Illinois digital collection downloads	Increase	917,900	1.15M 1.4M
IDEALS (repository) collection downloads	Increase	597,464	896,000 1.15M

The University of Calgary 2009-2014 Business Plan includes both Performance Measures and Performance Targets. In particular, Calgary uses LibQUAL+® as a tool to assess the plan goal for

“facilities that support learning and research” and the objective “to provide a high-quality learning environment.”³⁶

Library as Place Metrics - University of Calgary Libraries and Cultural Resources

METRICS	DESIRED RESULT	BASELINE (2007)	TARGET (2010) (2013)
LibQUAL+® Library as Place “Library space that inspires study and teaching”	Change in Adequacy Gap for All respondents	From -0.12	To -0.03 To +0.50
LibQUAL+® Library as Place “Library space that inspires study and teaching”	Change in Adequacy Gap for Undergraduates	From -0.07	To +0.02 To +0.50
LibQUAL+® Library as Place “Quiet space for individual activities”	Change in Adequacy Gap for All respondents	From +0.21	To +0.24 To +0.50
LibQUAL+® Library as Place “Quiet space for individual activities”	Change in Adequacy Gap for Undergraduates	From -0.01	To +0.01 To +0.50

The *University of Connecticut Libraries Plan 2014* mirrors the University’s Academic Plan and in doing so, lays out initiatives for Undergraduate Education and for Graduate & Professional Education. In affirming the case for measures, Vice Provost for University Libraries Brinley Franklin states:

“University governing boards are often comprised of trustees from the for-profit sector who demand accountability; they want to see quantitative measures from university administrators that demonstrate the value of

the University’s investments in its various components. Along with the rest of the enterprise, Libraries are increasingly called upon to demonstrate in quantitative terms the contributions their activities make to their University’s success.”³⁷

The UConn Libraries plan presents Metrics indicating the (Baseline) measure and the 2014 Goal for the Undergraduate Education and for Graduate & Professional Education strategic program areas, respectively.³⁸

Undergraduate Education Metrics - University of Connecticut Libraries

METRICS	DESIRED RESULT	BASELINE (2008)	TARGET (2014)
Group study rooms/spaces	Increase number of technology-enhanced group study rooms/spaces for small group collaboration, student meetings, and tutoring	From 4	To 10
Libraries-sponsored events aimed at undergraduates		1 per year	3 per year
Assessment of information literacy	Library-wide undergraduate-focused qualitative assessments of information literacy	0	1
Faculty initiatives (forums, colloquia, etc.) on infusing information literacy into the curriculum and assessing student skill development		1 per year	3 per year
LibQUAL+® Information Control—"Modern equipment that lets me easily access needed information"	Increase Perceived level of service quality for Undergraduates	From 7.41	To 8.00
LibQUAL+® Information Control—"A library Web site enabling me to locate information on my own"	Increase Perceived level of service quality for Undergraduates	From 7.07	To 7.77
LibQUAL+® Library as Place—"Quiet space for individual activities"	Increase Perceived level of service quality for Undergraduates	From 7.07	To 7.77

Graduate & Professional Education Metrics - University of Connecticut Libraries

METRICS	DESIRED RESULT	BASELINE (2008)	TARGET (2014)
Number of items in DigitalCommons@UConn.edu	Increase	4,800	7,200
Number of e-journals accessible to users	Increase by 4%	17,300	18,000
Number of objects digitized	Increase by 5% per year	65,800	69,100
Usage statistics for digitized objects	Increase by 10% per year	573,167	630,480
Percentage of budget spent on digital format resources	Increase	80%	90%
Student and faculty use of the liaison program		50%	70%
Number of research consultations by academic liaisons and curators	Increase number annually	1,000	2,000
LibQUAL+® Information Control "Print and/or electronic journal collections I require for my work"	Increase Perceived level of service quality for All respondents	From 7.21	To 7.50
LibQUAL+® Information Control "The electronic information resources I need"	Increase Perceived level of service quality for All respondents	From 7.21	To 7.50

Finally, the ARL Library Scorecard Pilot crystallizes the notion of a planning-assessment cycle, an interrelationship which is at the heart of the Balanced Scorecard approach. The collaborative project spearheaded by ARL, with consulting assistance from Ascendant Strategy Management Group, involves the Johns Hopkins University Library, the McMaster University Library, the University of Virginia Library and the University of Washington Library. In this strategic planning approach, each library expressed its mission and a key set of priorities in the areas of customers, business processes, organizational learning and growth, and financial health. Measures and targets—which are focused entirely on the main strategic objectives—reveal to what extent the organization is meeting its strategic intent.³⁹

In *Scorecards for Results: A Guide for Developing a Library Balanced Scorecard*, Joe Matthews underscores the intent of the planning-assessment link:

“Primarily for historical reasons, the vast majority of libraries collect a plethora of internally focused performance measures and statistical information. Some of these measures are reported to the library’s stakeholders, some are used to complete annual surveys required by various organizations, and sadly, many are gathered but then ignored . . . The goal . . . [is to determine] what performance measures and metrics are important within a broader context of strategic planning and management. These important measures should focus on what defines the success of the library and shows the difference it makes in the lives of customers.”⁴⁰

There is evidence of the cyclical nature of planning in the ARL library community. Indeed, there appears to be a growing body of academic and research libraries that are aligning planning and metrics, strategically.

—Copyright 2011 Rayna Bowlby

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Performance Measurement: Organizational Changes and Outcomes Monitoring

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Abstract

An organization may change its structure or the functions of its organizational units for many reasons, such as: (1) addressing existing or potential problems, (2) positioning itself for future needs, (3) increasing performance, or (4) maximizing under-utilized staff skills. Ultimately, however, these changes occur to enable the Library to take full advantage of its contributions to institutional goals. Identifying how changes relate to campus-wide goals ensures that priorities are properly managed. Effective change management and performance improvement requires the development of metrics and targets at the unit and individual staff level that are indicative of performance and progress. Leaders should monitor these indicators periodically and maintain the transparency of all contributing elements. This type of “systems thinking” permits library leadership to manage performance along several dimensions.

Purpose of the Article

Libraries are under greater pressure than ever before to make smart choices and provide results. This level of scrutiny will likely continue and even may increase in the foreseeable future. Combining the right mix of organizational theory, management principles, program evaluation practices, and technical tools requires staff expertise, patience, and a willingness to experiment. This article explains how we designed an evaluation system suited to our specific organizational needs that is also based on a diverse set of theories, principles, practices, and methods.

Background

The University of Texas Southwestern Medical Center at Dallas ranks among the top medical centers in the world. Its Mission Statement includes four goals:

- To improve health care in our community, Texas, our nation, and the world through innovation and education.
- To educate the next generation of leaders in patient care, biomedical science and disease prevention.
- To conduct high-impact, internationally recognized research.
- To deliver patient care that brings UT Southwestern's scientific advances to the bedside—focusing on quality, safety and service.

The UT Southwestern Library is a major medical library with more than 50 staff members to serve its diverse and extensive community. The library consists of 10 operational units and the Office of the Assistant Vice-President for Library Services (OAVP). The library director, deputy director, strategic planner, and two assessment librarians staff the OAVP.

The Library has used a carefully phased, evolutionary process to move the library forward over the past few years. This approach allows library leadership to grow its competencies in related areas as phases are gradually implemented. There are three primary building blocks to the strategy: strategic planning, project and project portfolio management, and assessment. Since assessment is the primary topic of this paper and the associated presentation, a summary of the evolution of that piece will be addressed in this section.

The strategic planning process had been maturing for several years when the library literature about performance measurements, outcomes-based evaluation, and assessment fully caught the attention of library executives. In 2004 these topics

and their relevance to the library were introduced in quarterly strategic planning meetings.

Attention to these topics gradually increased over time until in 2006 a full-time Assessment Librarian was hired to proactively plan the library's assessment activities. Two years later, a second full-time Assessment Librarian was added to help further build the "culture of assessment"—assessment was being incorporated into all major areas of our planning, operations, and monitoring. By mid-2009, the culture of assessment was well-established in the library.

However, a few key indicators were still lacking, such as the ongoing evaluation and assessment of adjustments to the library's organizational structure. Each year the library's Office of the Assistant Vice President for Library Services (OAVP)—in conjunction with the library's organizational advisory group—essentially re-aligns the organization to accommodate growing and future needs. The organizational advisory group consists of staff members from different units who have demonstrated an ability to think strategically, and who have been employed in the library for at least 2 years. The membership of the advisory group changes annually. The primary

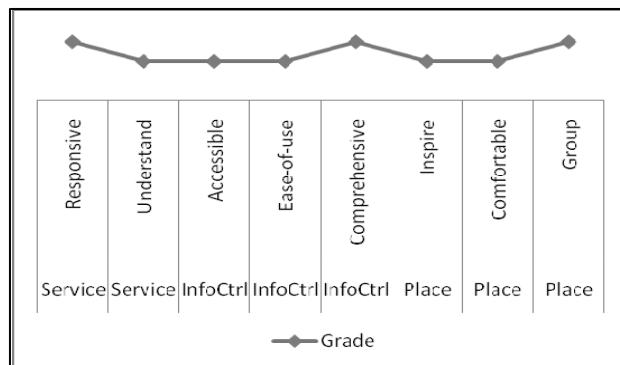
duties of the group—OAVP and the staff advisors—includes administration of an annual staff survey, analysis of the survey results, and the formulation, implementation, and evaluation of changes that occur based on survey findings and/or organizational issues.

The results from the 2009 survey of library staff revealed three major areas of concern: connecting with our clients, library operations, and internal communication. Several organizational changes were made to address these issues, and although the organizational change decisions are heavily data-based, the resulting changes were not adequately monitored, especially in the context of the library's evolving strategic plan.

A number of potential instruments (developed in-house) were considered as possible monitoring tools. However, none of them adequately correlated the specific organizational changes that were being made to the library's mission statement, strategic plan, and, most importantly, the goals of the Campus. An example of one of these experimental instruments was based upon LibQUAL+® dimensions (Fig.1).

Fig. 1. Evaluation Instrument #1

Category	Item	Grade
Service	Responsive	3
Service	Understand	2
InfoCtrl	Accessible	2
InfoCtrl	Ease-of-use	2
InfoCtrl	Comprehensive	3
Place	Inspire	2
Place	Comfortable	2
Place	Group	3



The instrument that was eventually developed and then further refined over time is the main subject of this paper. With this instrument, one can effectively assess and evaluate organizational changes and their impact upon departmental and strategic plan progress, as well as integrate essential accountability and tracking functions with important organizational changes. In essence, the instrument “connects the organizational dots.”

Methods

Is there one best way to measure performance? Is it possible to identify a cause-and-effect relationship between internal changes and external impacts? Can success criteria be isolated that are truly indicative of individual, unit, and organizational effectiveness? The library hypothesized the answer to each of these questions was “yes.”

With that hypothesis defined, an individual—specifically, the senior Assessment Librarian (AL)—would develop an evaluation plan that addressed the effectiveness of several organizational changes. The AL was familiar with several theories and practices in performance

measurement, organizational behavior, and program evaluation and knew several approaches were available (Table 1). However, no one approach included all the elements needed for the library’s particular organizational context.

Current practices and trends in the fields of performance measurement, program evaluation, and library assessment factored significantly in the development of the evaluation plan. From “building effective, sustainable, practical assessment” to outcomes-based evaluation and theory-driven evaluation science, an effort was made to create a plan that could meet professional standards in program evaluation.

Additionally, the specific organizational context and the features of an evaluation plan implied by that context also needed to be considered (Table 2).

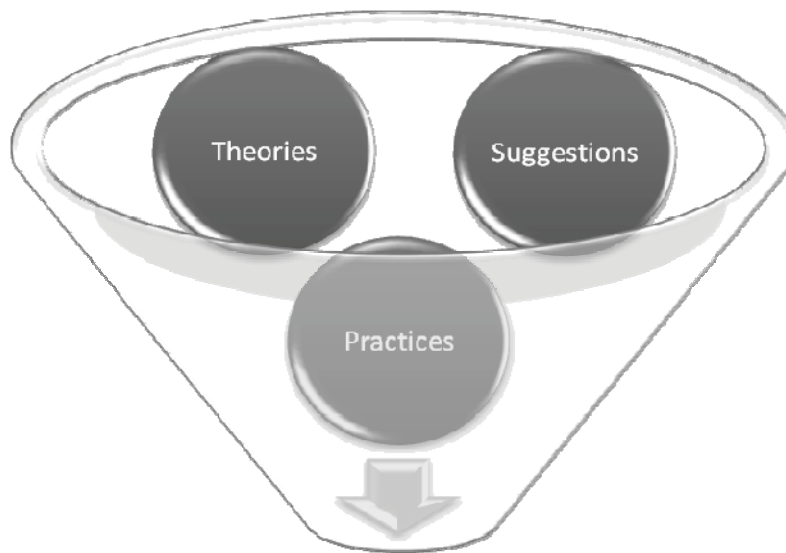
After weighing the strengths and weaknesses of each approach, referring to a few books and articles, and considering the suggestions of the members of the Library’s organizational advisory, the AL designed a plan that suited the needs of the library (Fig. 2).

Table 1. Evaluation Models and Approaches

Model or Approach	Key Contributing Element(s)
Outcomes-based planning and evaluation (OBPE) ¹	Requires the identification of an unmet need that can be addressed with specific actions that include methods which measure the changes resulting from those actions.
Balanced scorecard ²	Used to evaluate organizational effectiveness from four perspectives: user, internal, finance, and learning/growth.
Utilization-focused evaluation ³	Involves stakeholders in the development of an evaluation and in the use of evaluation findings.
Benchmarking ⁴	Compares an organization's services and products against a similar organization recognized as an exemplar.
Logic modeling (cause-and-effect linkages) ⁵	A systematic visualization of cause-and-effect linkages among resources (inputs), activities (outputs), changes (outcomes), and long-term results (impacts).
Continuous quality improvement ⁶	Ongoing improvement of a process based on constant measurement and analysis of results produced by the process.
Impact evaluation ⁷	Focuses on the fundamental long-term changes, intended and unintended, resulting from program processes and activities.
Outcomes monitoring ⁸	Periodically reviewing results, intended and unintended, that occur from changes made to address specific issues.
Feedback loop ⁹	Modifying the design of a system based on interaction among the elements of the system.
Cost-benefit ratio ¹⁰	Considers multiple variables, numerical and non-numerical, to determine the ratio between benefits and costs – short and long-term, direct and indirect.
Mixed evaluation methods ¹¹	Integrates multiple elements - quantitative and qualitative - in evaluation design and analysis.
Performance indicators ¹²	Expressions, often numerical, used to characterize performance descriptive of organizational effectiveness.
Theory-driven evaluation science ¹³	Uses the most rigorous scientific methods in designing and evaluating programs while considering practical constraints.

Table 2. Organizational Context and Evaluation Plan Features	
Context	Implication for the Evaluation Plan
Staffing reallocations occur regularly.	Breadth and depth – there needed to be multiple indicators to gauge progress along several dimensions (i.e., behavior change, improved effectiveness, better performance, increased learning)
Organizational realignment is often used to address organizational issues.	
Staff competency in evaluation varies widely.	Practicality, feasibility, transparency, and usefulness – the plan needed to be one that could be readily implemented and easily maintained, yet useful.
Library use of technology is constantly evolving.	
Commitment to Library planning, assessment, and evidence-based librarianship	Realistic and results-oriented - the plan must capture anticipated/unanticipated results as well as consequential/ inconsequential results, and focus on institutional outcomes.
Library’s vision statement: “Give every member of the UT Southwestern community biomedical information that makes a difference.”	
UT Southwestern institutional mission: patient care, education, research, and improved health care.	

**Fig. 2. Evaluating Organizational Change
An Evaluation Change Model**



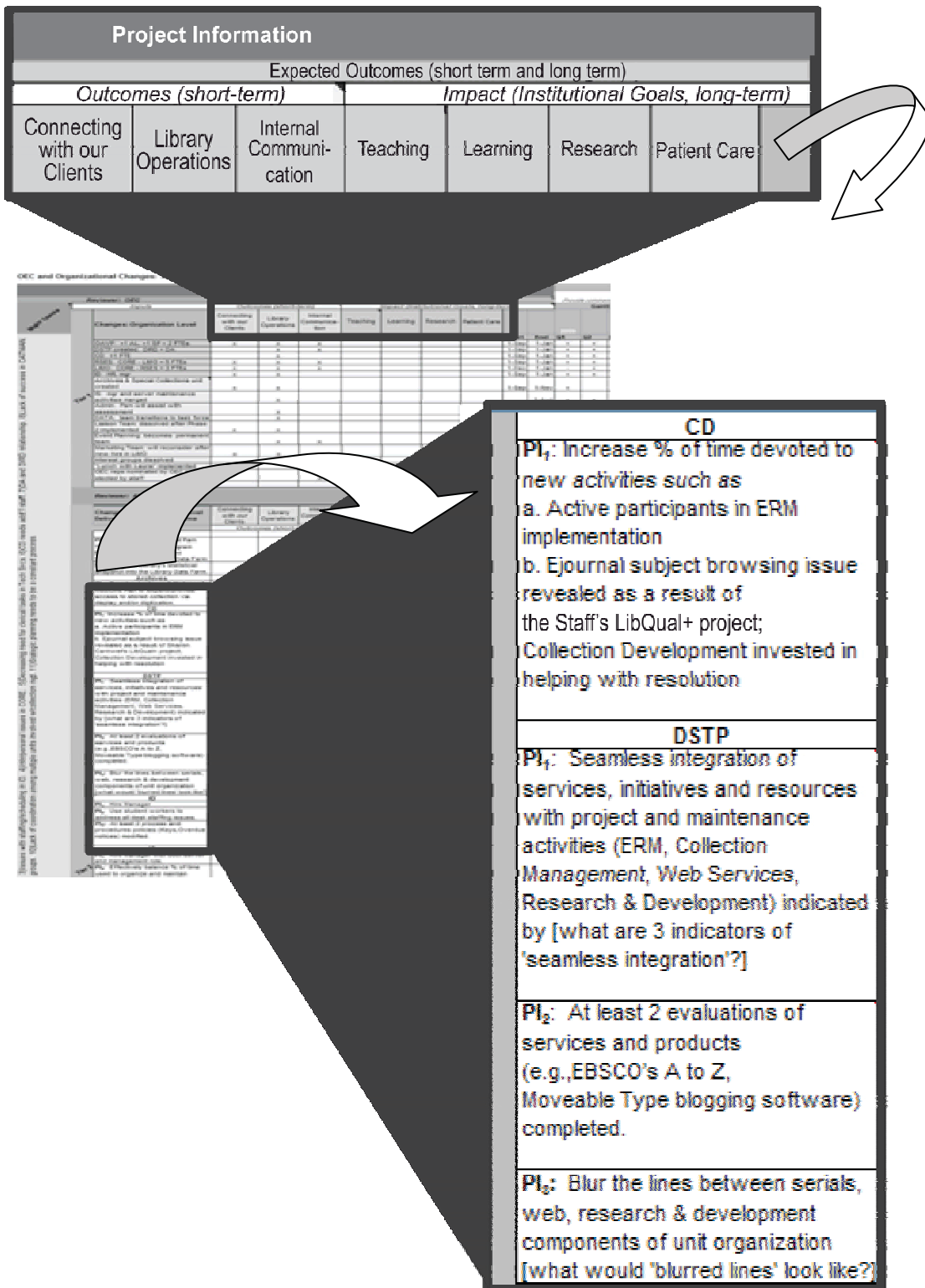
Measures and Tools

Developing the components of the evaluation plan was only part of the task. The AL also needed to develop a tool that was easy-to-use, visually appealing (i.e., displays all elements in a logical manner), and interactive (i.e., offers alternative ways of displaying data). Additionally, there was the potential that this

monitoring tool could be the lynch-pin of a performance “portal,” the first element of a true real-time dashboard of operational effectiveness.

After a couple of iterations and some discussion among the organizational advisory group members and OAVP, the Evaluation Plan was developed (Fig. 3).

Fig. 3. Evaluation Plan, instrument #2 (Excel spreadsheet)



The organizational level changes were grouped by department, team, or task force within the library. The short-term (intended) outcomes were derived from many sources, including the Library's vision statement and comments from previous organizational surveys, and can be grouped into three categories that match the three issue areas identified in the staff survey: connecting with our clients, library operations, and internal communication. The intended long-term impacts are the effect that the library has on larger institutional goals.

Each discrete organizational change is isolated and examined. At least two performance indicators (PIs), including metrics and targets, for each change are devised. The targets may include both a primary one (to indicate full success) and a secondary one (to indicate partial success). All PIs are mapped to intended short-term outcomes and, when possible, to long-term impacts. The intended short-term outcomes are the three issue areas (i.e., connecting with our clients, library operations, internal communication). The long-term impacts are the larger institutional goals (i.e., teaching, learning, research, patient care).

Of all the components, it was the performance measurement piece—identifying metrics and targets—that required the input of the Assistant

Vice President (AVP) for Library Services (AVP) and Deputy Director.

An extensive, comprehensive Excel spreadsheet was used initially for outcomes monitoring because it included all the essential elements of the organizational evaluation plan. However, the multi-dimensional nature of the evaluation plan, captured by the Excel spreadsheet, eventually proved to be problematic. An alternative monitoring tool was eventually developed. Simultaneously with the evolution of our culture of assessment was the improvement of the library's technology infrastructure. The library began using Microsoft SharePoint in late 2008 to provide a robust staff intranet for internal communication. By the time work began on the development of the Evaluation Plan, the library's Intranet was evolving into a sophisticated system.

As the person responsible for monitoring progress on each organizational change and its associated performance indicators, the Deputy Director explored the suitability of SharePoint as an outcomes monitoring tool. All elements of the Excel spreadsheet were transferred to a SharePoint site with the assistance of the library's technical staff. The monitoring tool has been in use for the past 18 months (Fig. 4).

Fig 4. Evaluation Plan Project Site, Instrument #3

Performance Indicators

Performance Indicator
 "Institutional Evidence" added to the Library Data Farm

At least 2 evaluations of services and products completed

At least 2 process and procedures policies (Keys, Overdue notices) modified

At least 4 digital media alternatives completed to provide assistance to frequently asked questions at the Information Desk

At least 4 process and procedure changed related to electronic resources implemented/modified

Blur the lines between serials, web, research & development components of unit organization

Build unit cohesion by organizing responsibilities, cross training and cross collaboration within unit in order to provide enhanced access to virtual library resources and services

Build unit cohesion by organizing responsibilities, cross training and cross collaboration within unit in order to provide enhanced support for virtual library

Continue to integrate Strategic Planning, Assessment and Organizational Efficacy Council by appropriate use of tools such as StaffWeb

Cross-train IS staff and enhance communication skills

Add new item

Org-Level Changes

Changes Title	FY and Quarter Begin
A & HHS: +1 = 2 FTEs	Q1 FY 2010
CD: +1 = 4 FTEs	Q1 FY 2010
DSTP: -3, +2, 1 vacancy = 7 FTEs	Q1 FY 2010

Org-Level Changes (Grouped)

Unit	Changes Title	Connected Unit PIs
<input type="checkbox"/> Unit : Admin	(1)	
<input type="checkbox"/> Unit : Archives & History	(2)	
<input type="checkbox"/> Unit : CD	(2)	
<input type="checkbox"/> Unit : DSTP	(2)	
<input type="checkbox"/> Unit : General	(4)	
<input type="checkbox"/> Unit : ID	(2)	
<input type="checkbox"/> Unit : IS	(2)	
<input type="checkbox"/> Unit : LIHO	(3)	
<input type="checkbox"/> Unit : MH	(2)	
<input type="checkbox"/> Unit : OAVP	(3)	

Results and Discussion

Although the initial evaluation tool included fields for performance indicators, the AL is not responsible for creating performance indicators (PIs). The AVP and the Deputy Director, in consultation with department managers, identify specific PIs, which are mapped to intended short-term outcomes. In fiscal year FY2009, there were 16 discrete organizational changes, and PIs were devised for 12 of those changes. Two of the 16 changes with PIs were also mapped to intended long-term impacts. The four changes without PIs related to the "internal communication" issue and involved the creation or dissolution of teams or task forces. In FY2010, there were 11 organizational changes, and PIs were devised for each change.

To better illustrate how the organizational evaluation plan has helped the library monitor the effectiveness of organizational changes, the outcomes of two specific changes are highlighted.

Example 1

For two consecutive years the Collection Development department has gained at least one new staff member (Fig. 5). PIs were written to specifically address how the larger unit would effectively change its workflow and accommodate new activities and responsibilities. These indicators related to the implementation of the Electronic Resource Management System (ERMS) and issues surrounding findability and access to electronic journals.

Fig. 5 Changes in the Collection Development (CD) unit

Performance Indicator

- OAC Site
- OAC Calendar
- Strategic Planning Site
- Strategic Planning Objectives
- Site Admin: Antoinette Turner

People and Groups

- Recycle Bin

"Institutional Evidence" added to the Library Data Farm

At least 2 evaluations of services and products completed

At least 2 process and procedures policies (Keys, Overdue notices) modified

At least 4 digital media alternatives completed to provide assistance to frequently asked questions at the Information Desk

At least 4 process and procedure changed related to electronic resources implemented/modified

Blur the lines between serials, web, research & development components of unit organization

Build unit cohesion by organizing responsibilities, cross training and cross collaboration within unit in order to provide enhanced access to virtual library resources and services

Build unit cohesion by organizing responsibilities, cross training and cross collaboration within unit in order to provide enhanced support for virtual library

Continue to integrate Strategic Planning, Assessment and Organizational Efficacy Council by appropriate use of tools such as StaffWeb

Cross-train IS staff and enhance communication skills

Add new item

Org-Level Changes (Grouped)

Changes Title	FY and Quarter Begin
A & HHS: +1 = 2 FTEs	Q1 FY 2010
CD: +1 = 4 FTEs	Q1 FY 2010

There are currently no active announcements. To add a new announcement, click "Add new announcement" below.

Org-Level Changes (Grouped)

New Actions

Unit	Changes Title	Connected Unit PIs
Unit : Admin (1)		
Unit : Archives & History (2)		
Unit : CD (2)		
CD	CD: +1 = 4 FTEs	Integrate electronic journal access management into unit activities and responsibilities
CD	CD: +1 FTE	Increase time devoted to new activities in CD
Unit : DSTP (2)		
Unit : General (4)		
Unit : ID (2)		
Unit : IS (2)		

Performance Indicators (PIs)

Developing PIs for each organizational level change is challenging. Each one is based on discussions held between the organizational advisory group and OAVP. A PI is reviewed and potentially changed two times: first by the Library Director, followed by the department manager. Each new PI consists of several components (e.g., metrics, targets, intended outcomes).

The organizational advisory group and OAVP determined that the organizational changes that have occurred over the past two years have been effective and supportive of the library's vision and strategic goals. In this case, new (or more precisely re-assigned) staff members provided or led to significant outcomes (i.e., improvements in library operations and better connections with clients) and significant impacts (i.e., demonstrable affects upon institutional goals such as research and patient care). The targets attached to several PIs were met at the "full success" level.

Example 2

The library's strategic plan includes the goal, "Provide clients with a more integrated, easier-to-use findability tool for the array of Library electronic resources." Admittedly, it is a difficult

one, but it is an important one that was carried over from the previous plan.

In FY2009 two departments with responsibility for developing, implementing, and managing new products for the library's web site were merged into the Digital Services & Technology Planning (DSTP) unit. This new unit was the most likely group to explore and develop recommendations on how to achieve the findability goal. The organizational change and its associated PIs were added to the Evaluation Plan Project Site. The performance indicator for 2009 was to "Blur the lines between serials, web, research, & development components of unit organization." Over time it became apparent that the PI as stated was not appropriate. Although the units had merged, their tasks remained disparate, and it was apparent that if the PI remained as stated, the effectiveness of this particular organizational change would become questionable.

In order to develop DSTP into the department that the library needed to move forward into the future, more organizational changes were implemented to focus the unit specifically on supporting the virtual library. The performance

indicator was revised to “Build unit cohesion by organizing responsibilities, cross training and cross collaboration within the unit in order to provide enhanced support for virtual library.” This PI was achieved and was considered a “full success” when each unit member was clearly responsible for specific projects and application support. Furthermore, the second performance indicator— “Develop and show progress on Strategic Objectives in support of Goal 1 (findability solutions)” —has six active objectives. Therefore, because there were no objectives associated with the findability goal in the previous strategic plan and the current plan includes six, these organizational changes are considered successful, based on the results associated with the performance indicators.

Conclusion

The key to having an informative tool is to only use outcomes data. Periodicity—determining the monitoring timeframe—need not default to monthly or quarterly. It can be “as needed.” What has been particularly effective is the type of data collected to meet the requirements of the evaluation plan. We now have substantially more objective documentation to refer to when organizational level issues arise.

The technology—in this case, SharePoint—has enabled us to collect a variety of data, thereby making it easier to spot trends based on intended short-term outcomes and long-term impacts related to specific departments, teams, or task forces. Unintended outcomes can also be spotted. All of the gathered data checks the organization’s vital signs and determines if we are succeeding in achieving our expected outcomes.

Organizational changes occur for a variety of reasons. Ultimately, however, these changes occur to enable the library to maximize its contributions to institutional goals. A good understanding of the practices, theories, and methods in performance management, strategic planning, and program evaluation—along with appropriate technology—has enabled our Library to identify, collect, and analyze a variety of data to help us assess organizational changes. Evidence-based decision making has evolved in a number of fields. We have tried to track and evaluate our library’s major organizational changes based upon specific data. Although our tool is still

developing—as is the entire field of evaluation and assessment—we think that it adds accountability to our leadership and management responsibilities and actions.

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Notes (see Table 1)

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Ethnography as an Assessment Tool: The ERIAL Project

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Abstract

The Ethnographic Research in Illinois Academic Libraries project was a two-year research study, funded by a Library Services and Technology Act grant through the Illinois State Library, which ethnographically examined how undergraduate students at five universities [Illinois Wesleyan University, University of Illinois Springfield, University of Illinois Chicago, Northeastern Illinois University, DePaul University] conduct academic research and utilize library services. The project was organized around three core goals: to gain a better understanding of undergraduates' research processes based on firsthand accounts of how they obtain, evaluate, and manage information for their assignments, to assess the role academic libraries and librarians play in these research processes, and finally, to adjust library services to more effectively address students' needs. Because of the complex processes involved in information literacy acquisition, and the diverse array of problems this study has observed in students' research practices, the problem of how to best measure the impact of library instruction continues to be a central issue. As an assessment tool at IWU, a general information literacy test appears to be effective for providing baseline data of students' knowledge, but ineffective for evaluating post-instruction improvements or for providing insight into students' application of this knowledge. By contrast, the qualitative interviews provided a rich data source for holistically understanding students' research processes and practices, as well as a fine-grained tool for analyzing the obstacles students encounter when conducting research. Findings from the ERIAL Project, as well as an outline of IWU's current efforts to develop and implement a standardized qualitative

interviewing method that can be used to make longitudinal comparisons of student's information literacy skills in conjunction with a general information literacy test, will be discussed.

Introduction

The Ethnographic Research in Illinois Academic Libraries (ERIAL) Project was a two-year research study, funded by a Library Services and Technology Act grant through the Illinois State Library, which ethnographically examined how undergraduate students at five universities¹ conduct academic research and utilize library services. The project was organized around three core goals: to gain a better understanding of undergraduates' research processes based on firsthand accounts of how they obtain, evaluate, and manage information for their assignments, to assess the role academic libraries and librarians play in these research processes, and finally, to adjust library services to more effectively address students' needs. Using a variety of anthropological data collection techniques,² this study built a holistic and user-centered portrait of student needs through an examination of what students actually do while completing their research assignments.

At Illinois Wesleyan University (IWU), the results of the ERIAL study have provided an especially rich data source for understanding how students approach academic research and use the library's resources, as well as the types of obstacles they encounter along the way. In all, nine methodologies were employed, resulting in 221 individual research contacts and the administration of 272 information literacy pre and post tests.³ This paper will focus on IWU's use of

three methods as tools in assessing information literacy for first year students: ethnographic interviews with students, research process interviews, and a paper-based information literacy pre and post test. Findings from the ERIAL Project, as well as an outline of IWU's current efforts to develop and implement a standardized qualitative interviewing method that can be used to make longitudinal comparisons of student's information literacy skills in conjunction with a general information literacy test, will be discussed.

Institution Information

Founded in 1850, IWU is a highly selective, private, residential, undergraduate liberal arts school of 2,100 students, offering a diverse curriculum in liberal arts, fine arts, and professional programs, as well as opportunities for interdisciplinary study and study abroad. A liberal arts education at Illinois Wesleyan is designed to foster creativity, critical thinking, effective communication, strength of character, a spirit of inquiry, and a comprehensive worldview.

Of the five institutions involved in the ERIAL Project, IWU enjoys the highest ACT scores, as well as retention and graduation rates (90% for first year students and 83%, respectively).⁴ It is the smallest in size, has no graduate students, the fewest transfer students, and highest proportion of international students; however, IWU is the least diverse in terms of minority students. In the academic year 2009-2010, 59% of IWU students were female and 41% male, with 6% international, 76% white and 24% ALANA.⁵

IWU requires all students to enroll in a writing course during their first year on campus, with the majority doing so in the fall semester. This "Gateway" course is a small, discussion-oriented class designed to develop students' critical thinking and writing skills. Although not required, many Gateway instructors include library instruction sessions as part of their course content. Library instruction sessions are also requested by instructors, in a variety of disciplines and for various courses, throughout a student's tenure at IWU. The Ames Library, as part of its increased information literacy efforts, would like for a library instruction component to become a mandatory part of all Gateways and for advanced instruction sessions to be strategically woven

throughout various points in the undergraduate curriculum.

Methodology

The IWU information literacy test was based on a modified version of the Information Competency Exam developed by the Bay Area Community Colleges Information Competency Assessment Project.⁶ In order to fit the institutionally specific needs of the IWU study, the research team shortened the overall length of the test and made minor changes to the format and wording of some of the original test questions.⁷ IWU's 26-question tests were designed to be completed in approximately 20-25 minutes, and to measure students' information literacy levels in four of the five standards developed by the Association of College and Research Libraries.⁸ In addition to the tests, the students were also asked to complete a short demographic survey.

The pre-test was administered during the first two weeks of the fall 2009 semester, while the post-test was administered during the final two weeks. The participation of Gateway courses in the information literacy study was at the discretion of the individual course instructor. Participation by the students was also voluntary. In total, 21 classes participated in the pre- and post-tests, representing roughly 2/3 of the 32 Gateway courses offered during the fall 2009 semester. Of these, 15 classes participated in library information sessions. 273 students participated in the pre-test, and 272 in the post-test, representing approximately 53% of IWU's 2009-2010 freshman enrollment.

In order to more fully contextualize the quantitative component of this study, the Gateway students who participated in the information literacy tests were also asked to participate in qualitative interviews. During the "research process interviews," students demonstrated how they gathered information for a research assignment while accompanied by the study's ethnographer, who asked the student to explain aloud their search process and documented the search on video. 19 first year students participated in the research process interviews, with each interview lasting approximately 30-45 minutes. These interviews built on ethnographic interviews conducted during the 2008-2009 academic year, which

focused on the processes and practices of students' research. 30 students participated in these interviews, including 8 first year students.

Summary of Findings for First Year Students

The mean score on the information literacy pre-test was 17.64 (67.8%), compared to 18.36 (70.6%) on the post-test. While this improvement is statistically significant (at $p < 0.05$), its effect size is also extremely small ($\eta^2 = 0.014$), suggesting that there is no meaningful difference between the average scores on the two tests. Furthermore, the test results showed no significant variation by gender, ethnicity, major, or the number of library information sessions the student attended during the semester.

Despite the clear difficulties with basic information literacy that these scores suggest, for

the most part, students believed their skills were slightly above average. When asked to rate their own skill in locating and evaluating information on a scale from 0-10,⁹ the majority of students rated themselves between 6 and 8 in both categories on both tests.¹⁰ Students were especially confident in their abilities to locate information on the post-test, with 81% rating themselves at 6 or better. These self-ratings were not, however, correlated with students' scores on either test.

While students' overall performance on the information literacy tests was for the most part lackluster, students consistently performed more poorly on questions addressing ACRL Standards 2 and 5, which evaluate, respectively, students' ability to appropriately and effectively access information, and students' understanding of the legal and ethical issues of information use

ACRL Standard	Pre-Test		Post-Test	
	Mean Score	Percent Correct	Mean Score	Percent Correct
1. Determining Need	4.5/6	75.7%	4.7/6	78.8%
2. Accessing Information	5.3/9	59.2%	5.6/9	61.7%
3. Evaluating Sources	3.9/5	78.9%	4.1/5	82.1%
5. Ethical use of Information	3.8/6	63.7%	4.0/6	66.0%

Taken together, these results imply two possible conclusions: either the student's information literacy skills did not significantly improve over the course of their first college semester, or the information literacy tests (and in particular the post-test) did not effectively measure improvements in students' learning outcomes. For example, when assessing Standard 2 (accessing information), it appears that written tests are an inadequate method for understanding students' abilities to search for and find sources, and revealed only a small part of students' widespread misunderstanding of how databases work and are effectively queried.

Likewise, although students performed reasonably well on Standard 3 (evaluating

sources), and rated themselves highly in this area, after viewing the recordings of students' research process interviews (discussed below), it was starkly apparent that they were not actually utilizing proper evaluation techniques in practice.

In the case of Standard 5 (ethical use of information), IWU librarians have limited time with students (typically only one class session, and occasionally two or three), necessitating an assignment-based focus in the sessions which often does not include specifically addressing copyright and ethical issues.

A question by question analysis of students' responses suggests several patterns in students'

information literacy deficiencies:

- Students are unable to correctly read citations and identify the type of source referenced. Furthermore, students do not exhibit an adequate understanding of why it is important to cite information, or when a citation is required. Of the four questions in the information literacy tests that asked students to indicate the type of source (journal article, book, or book chapter) described by a given citation, 42% of students answered 0 or 1 question correctly on the pre-test, compared to 37% on the post-test. Only 9.5% of students answered all four questions correctly on the pre-test and only 14.5% on the post-test.
 - Students do not fully understand issues surrounding the ethical use of information, especially with respect to the meaning and implications of copyright protection, and the practical actions required to correctly comply with copyright law.
 - Students exhibit difficulty in evaluating sources of information, and are particularly confused about the differences between primary and secondary sources.
 - Students do not adequately understand how information resources are organized, both in the library and elsewhere (e.g., on the Internet). For example, students exhibit difficulties understanding the difference between the library's catalog and on-line databases, the types of resources that can be found using these tools, and the differences between library subject-specific databases.
- **Selection of database:** Using an inappropriate or less useful database was common. Of the 19 interviews, 8 students searched in databases that a librarian would most likely never recommend for their topic. In addition, students who did not have a library instruction session exhibited substantial difficulty finding their way to any library database, let alone the best one for a topic. For example, one student tried the following areas on the library's website while looking for a journal article: ILLiad (used to request journal articles not owned by IWU), Digital Commons (institutional repository), Citation Linker (used to locate journal titles owned by the library), I-Share catalog (used to request books from other Illinois libraries) and Google, where she finally gave up without locating an article.
 - **Search strategy:** Students treated all search boxes as the equivalent of a Google search box. Of the 19 students, 16 conducted searches using "any word anywhere," "all fields," or an equivalent default search when it was not appropriate to do so. In total, 101 of the 117 observed sets of search terms used this approach.
 - **Citations:** An inability to accurately read citations lead to difficulty finding a specific source and/or selecting appropriate sources.
 - **Evaluation:** Evaluation of potential sources appeared cursory. Students typically made rapid appraisals of a source's usefulness, often based only on its title or a superficial scan of its abstract. Only rarely did a student actually look at the subject headings or keywords associated with the document, read the text itself, or locate the book to review the table of contents. Students also did not review citations past the first or second page of their results.
 - **Locating physical items:** Students often had difficulty locating books in the library stacks. When students sought help for locating a book at one of the three service points (all of which are staffed by student assistants) they were sometimes given incomplete or incorrect information.
 - **Technical:** Students encountered a variety of technical issues (e.g., dead links in the databases, slow databases, and incomplete information in an ILLiad request form) during

During the 19 research process interviews conducted with first year students for this study, the research team observed 70 unique searches.¹¹ 60 of these searches were for unknown items (e.g., when a student was attempting to discover sources related to a research question, rather than a specific book title or journal article).

These interviews provided a much more nuanced insight into students' research processes and information literacy levels. After reviewing and coding the videos of the research process interviews, only 3 out of 19 students conducted what a librarian might consider a reasonably well-executed search. 48 specific problems were identified, which can be grouped into the following six areas:

their searches. This often resulted in the student abandoning the source in question and beginning a search for different items. In general, students were very quick to give up on finding a source, so much so, that almost any obstacle they encountered would cause them to move on to another source or to change their research topic.

Further observations include:

- Although the majority of the students struggled with finding the correct database to use, their search terms, locating a known item, and/or technical problems, not one student sought the assistance of a librarian. However, students did ask for help at one of the three service points (all of which are staffed by student assistants) when they encountered difficulty finding a book in the stacks or a jammed printer.
- In general, students appeared to have a very strong preference for selecting sources that are available online in full-text. This often led to a student ignoring a potentially appropriate source, simply because it was not readily available.
- Conducting a successful search for scholarly sources is a complex process that requires numerous steps and considerable knowledge of the discipline and its particular jargon. Moreover, it is critical for students to understand how information is organized, how to evaluate sources, and how to use the “tools” of scholarship—online catalogs, databases, the Library of Congress Subject Headings, etc. If a student lacks sufficient knowledge in any one of these steps, the quality of their search results, and subsequently the sources on which they base their research, can be significantly diminished. For example, one student, while searching library databases for information about women in baseball, lamented the dearth of information on this topic and was seriously considering changing topics—all while her mouse was hovering over the subject heading “All-American girls professional baseball league.”
- Almost without exception, students exhibited a lack of understanding of search logic, how to build a search to narrow/expand results, how to use subject headings, and how various search engines (including Google) organize and display results. As one student mentioned, while conducting a search of library databases “Apparently you don’t have much on Rock and Roll,” obviously not realizing if she changed her search term (i.e., to rock music), she would have encountered excellent sources for her assignment.
- Students exhibited a lack of understanding of where the border is located between library resources and Internet resources. For example, when a student is instructed by a professor to find “non-Internet sources,” they are often unsure if the library databases, which are accessed via the internet, constitute appropriate sources. Likewise, if a student accesses library resources via Google Scholar, they are often unaware that these are, in fact, frequently made available through the library.
- Students who had participated in instruction sessions clearly knew more than those who had not done so. These students were better at locating databases, changing keywords, and using more of the library’s tools. As one student noted, the librarian “. . . gives us the most effective sources to use.” However, they often did not remember some basic or specific concepts, or apply them correctly.
- Students gave up on a search or changed a topic very easily. They also often searched to meet minimum expectations (e.g., three articles), not necessarily to find the most useful sources.

Based on the ERIAL study experience, we conclude that it is exceedingly difficult (if not impossible) to create a stand-alone quantitative assessment tool that can accurately measure students’ learning outcomes over the course of a semester. Furthermore, these types of tests reveal relatively little about students’ ability to apply information literacy concepts within the vagaries of real-world settings and assignments, skills they may not have even if they are able to select the best response on a multiple choice question. In fact, had scores on the post-test improved significantly (and had we not already planned to conduct qualitative assessment), the test results might have actually obscured our students’ very real problems. In all of these cases, the information literacy test results told only a fraction of the story, while the ethnographic interview results provided a much richer understanding of our students’ information

literacy in practice.

Ongoing Assessment

IWU's experience has led us to question the efficacy of a pre-test/post-test model of assessment, especially when used within the relatively short timeframe of a single semester. Instead, we propose a long-term commitment to a longitudinal mixed-methods approach that more adequately examines the complex processes involved in information literacy acquisition and the diverse array of deficiencies this study has observed in IWU students' research practices. The success of our initial study in uncovering the realities of student research has led us to develop an assessment model that uses the strengths of various techniques in unison to more completely explore information literacy acquisition and use of these skills.

At IWU, a general information literacy test appears to be most effective for providing baseline data of students' knowledge, but not effective for evaluating post-instruction improvements or for providing insight into students' application of this knowledge. Nevertheless, a general information literacy test does have the advantage of a large sample size that is statistically generalizable to a full cohort of students. An information literacy test also efficiently reveals broad deficiencies in students' knowledge base, thereby pointing out areas in need of additional study. For example, the information literacy test at IWU pointed out a systematic problem with correctly reading citations, an observation that helped explain the numerous failed known-item searches we observed during the research process interviews.

Ethnographic techniques, like those described

above, are especially useful for understanding why and how quantitative results occur, and the qualitative interviews conducted at IWU provided a rich data source for holistically understanding students' research processes and practices, as well as a fine-grained tool for analyzing the obstacles students encountered when conducting research. In short, these interviews vividly demonstrated what students are actually doing on real assignments in real time, as well as how students choose to handle various impediments along the way. A startling observation was the lack of understanding that students exhibited regarding how a librarian might assist them with their research. Based on both the observation and interview sessions with participants, it is clear that IWU students do not have an accurate perception of librarian's work, particularly with regards to how they might benefit from working with one. This specific observation, and how it plays itself out on a daily basis as students use library resources and services, would have been difficult to ascertain from the information literacy pre and post tests alone. Thus, the simultaneous use of both qualitative and quantitative methods can be a powerful and mutually supportive approach to examining information literacy.

While we believe the study described here provides an effective model for an initial information literacy study, and provided much needed empirical data, a critical component of information literacy assessment is also understanding how students' knowledge and skills develop over time, a question that requires a longitudinal approach to data collection. The library faculty at IWU are now fully committed to establishing a continuous data collection strategy, as follows:

Information Literacy Test	Research Process Interviews	Retrospective Interviews
<p>A representative sample of First Year Students</p> <p>A representative sample of Juniors</p>	<p>Sophomores and Juniors</p> <p>Alternating on a 2-year cycle with retrospective interviews: 10 in year 1, 5 in year 2.</p>	<p>Seniors</p> <p>Alternating on a 2-year cycle with research process interviews: 5 in year 1, 10 in year 2.</p>

This data collection strategy concentrates on collecting the most pertinent information from each group: baseline data for first and third year students, data on processes and practices for second and third year students, and interviews about an entire research project from seniors completing major papers. Over several years, this relatively modest level of ongoing data collection (only 15 interviews per year, plus the information literacy test) will build a significant longitudinal data set with multiple contacts within each cohort to make comparisons. Ideally, some of the same students would also participate in multiple interviews. IWU is currently developing a standardized interview protocol to further ensure that qualitative research results remain comparable over time.

Conclusions

Obtaining empirical evidence describing the research habits of IWU students has served a dual purpose. With an increased understanding of user needs, IWU librarians have begun to develop more effective models of service, tools of scholarship, relationships with teaching faculty, and instructional techniques. Secondly, as a direct result of the ERIAL Project, as well as sustained efforts by all the librarians at IWU, the Associate Dean of Curriculum, Writing Coordinator for General Education and the Writing Program Director are now actively engaged in conversations with the library faculty to address these concerns through faculty education, as well as possible curricular changes.

Because of the complex processes involved in information literacy acquisition, as well as the diverse array of problems this study has observed in students' research practices, the problem of how to best incorporate the teaching of and measurement of information literacy skills and the impact of library instruction will continue to be a central issue for IWU. Our goal is to build on the substantial data gathered in the last two years and to create a sustainable program—a key component in any assessment plan—long with “institutionalizing” the efforts to understand the needs of our users, teach information literacy, and assess our success.

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Notes

1. Illinois Wesleyan University, University of Illinois Springfield, University of Illinois Chicago, Northeastern Illinois University, and DePaul University. For additional information on the ERIAL projects see <http://www.erialproject.org>.
2. Techniques included videotaped interviews with librarians, faculty, and students and search sessions with students, cognitive mapping, photo journals, mapping diaries, web design workshops, retrospective interviews, research journals, and information literacy pre/post testing.
3. The authors would like to acknowledge the members of the IWU Research Team and their contributions to this project: Monica Moore, Sue Stroyan, and Suzanne Wilson.
4. National Center for Education Statistics—College Navigator (<http://nces.ed.gov>); for academic year 2009-2010.
5. African, Latino/a, Asian, and Native American.
6. See <http://www.topsy.org>.
7. A copy of the IWU test instrument and documentation of the test results is available at <http://www.erialproject.org/publications/presentations/>.
8. See <http://www.ala.org/ala/mgrps/divs/acrl/standards/informationliteracycompetency.cfm#stan>. The five standards are as follows: The information literate student (1) determines the nature and extent of the information needed; (2) accesses needed information effectively and efficiently; (3) evaluates information and its sources critically and incorporates selected information into his or her knowledge base and value system; (4) uses information effectively to accomplish a specific purpose; and (5) understands many of the economic, legal, and social issues surrounding the use of information and accesses and uses information ethically and legally. Standard 4 was not tested, as it was deemed outside of the scope of this study.

9. The questions were presented as follows:

On a scale of 0 to 10, with zero being poor and ten being excellent, how would you rate your library research skills in terms of being able to locate information? Circle your response:

0 1 2 3 4 5 6 7 8 9 10

On a scale of 0 to 10, with zero being poor and ten being excellent, how would you rate your library research skills in terms of being able to evaluate information? Circle your response:

0 1 2 3 4 5 6 7 8 9 10

10. On the pretest, 65% rated themselves between 6 and 8 in their ability to locate information, while 64.5% rated themselves between 6 and 8 in their ability to evaluate information. On the post-test, these percentages increased to 73.3% and 68.8% respectively.

11. For the purposes of our analysis, we defined a search as anytime a student opened a new resource to search for information. If the student changed their search terms within a resource, we did not count this as a new search. Therefore, we observed 70 searches encompassing 117 separate sets of search terms.

The Librarian-Student-Faculty Triangle: Conflicting Research Strategies?

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Abstract

Is there a fundamental conflict between the professional, library-school model of finding resources and the real-life practices of researchers? And, if so, what does that mean about the professional practices of librarians? These questions provide a practical focus for the interpretation of interviews of librarians, faculty members, and undergraduates at the University of Rochester. Beyond this, the paper uses the theoretical work of Jean Lave and Andrew Abbott to question what research is, and ask why that matters to the practice of librarians.

Introduction

In this paper, I argue that we can use empirical research on the work practices of scholars to describe a set of characteristic processes they use in conducting library research. Further, we can use an emerging body of theory to understand those processes and make decisions about library practice. I conclude that current library services and tools are excellent for meeting such needs as finding known items or doing last-minute work on a paper in which a student has no intrinsic interest; importantly, emerging library tools also support the tracing of networks of authors and their publications. However, we also see evidence in our research at the University of Rochester of a clash between the library-based research practices of productive scholars, on the one hand, and the services delivered at the reference desk or in bibliographic instruction, on the other. I explain what I mean by this “clash” and offer a way to address it.

The Practice of Library-Based Research

The library research process of students and faculty members has been discussed in reports on research at the University of Rochester,¹ as well as in the work of the sociologist Andrew Abbott.² By library research, I refer to the process theorized by

Abbott (summarized below) that is followed by those researchers who depend primarily on the library for their informational and theoretical resources. Much of the process occurs outside of the library, but the library is essential to the process, and the way the library is used and the way it is central differentiate the library research process from the research process in the sciences, which is characterized by the generation of data in the laboratory.

Key features of the library research process include:

- **Building up a knowledge** of key works and key authors as well as an informational and theoretical base in one’s discipline and especially in one’s area of specialization
- **Keeping up in one’s field**, however defined, through continuous scanning or browsing of new books and journals, conference schedules and abstracts, departmental talks (at one’s own department and other departments that are known to be strong), and conversation with colleagues in the same and related fields
- **Developing connections to others** who share one’s interests, from entering students to luminaries in the field, using a variety of means, including attending talks and conferences, corresponding or speaking in person, and otherwise participating in scholarly networks
- **Utilizing the world of sources and resources** wherever they may be and however they may be found and used, including materials in library stacks, electronic journals, archives and special collections, and “the Web”—and using whatever tools could possibly work to find and get hold of these sources and resources
- **Maintaining one’s own library** of resources, including print and electronic documents,

books, journals, papers, notes and correspondence, with some organizational scheme, or set of schemes, to enhance understanding on first reading and to support accretion and retrieval of information and the development and increasing complexity of one's own work

- **Producing one's own work**, incorporating one's own past work and the work of others, and then publishing or otherwise sharing manuscripts, books, reports, articles, presentations and so on

For a researcher, using a library catalog or database represents a small portion of a large number of tactics that might be employed to get resources for specific projects and generally to keep up in one's fields. This, of course, stands in opposition to the library view in which the central position is accorded to the OPAC—the online public access catalog – and databases—electronic indexes to bodies of literature, often journal and newspaper articles. It is no surprise that library technology looks different to different people. Each of us sees the world from a personal perspective, a perspective constrained by our interests and, especially, by our responsibilities. We would expect the people who are responsible for the library's finding aids and technologies and who use them as tools in their own work to place them front and center. However, there is an explanatory benefit in seeing research from the perspective of the researcher, that is, in imagining what the world looks like to library patrons who use the OPAC and databases and all the other resources, services and tools the library offers.

Scholars conducting library research are driven by questions and engaged in a network of scholars, their works, and a variety of artifacts that inform the research pursuit. This view of library-based research and the pursuits of researchers accords people and things equivalent agency in the network of science work.³ Such things as journal articles and their persuasive arguments may become, for a time, at least, inarguable truths ("black boxes"), acting as authorities as much as the authors—the people—in the network act as authorities.

In interviews for the eXtensible Catalog project,⁴ we see the enormous importance given to both kinds of authority—that of respected scholars and

that of classic works and discoveries. Both are used as points of departure in library research, and both are used a relatively large proportion of the time, according to our studies.⁵ Indeed, authors are very much the favored nodes in our interviewees' networks; when we ask how researchers found the works they are currently using, the answer was frequently that they found them through a personal contact (a conversation with a colleague, for example), or through a search for the author (already a known authority), or through a search of an authority's footnotes and bibliographies. Of course, this approach—through authors and authorities—requires a base of knowledge, one we might assume to belong only to advanced scholars. However, our research also shows that even undergraduates, when they are motivated and interested in their academic work, quickly begin to build up this kind of knowledge base, in which key authorities figure prominently. One of the surprising findings of research for eXtensible Catalog is that many of the undergraduates who are most successful at research have attended a scholarly conference at which they met some key people in their field. Indeed, there is some evidence in our research that a key moment in the intellectual development of undergraduate researchers is the realization that all those books and articles are written by people, and that they might meet and talk with those people, and perhaps study with them or become their colleagues one day.

Research Support at the Desk

When an undergraduate approaches a librarian at the desk, the librarian may respond in a variety of ways, since there is no single, uniform process or method of conducting a reference interview. When I questioned librarians at the University of Rochester about their training in library school and about standard or influential models of the reference interview, they averred that there is no consistency in training or practice, and that the same was true of bibliographic instruction. A limited search of the literature, conducted by two reference librarians and the author, supported this. Documents from the website of the American Library Association put forth standards of librarian behavior at the reference desk and in the classroom.⁶ These standards revolve mainly around helping patrons focus their questions and then using a variety of tools to locate appropriate items; they also provide guidance on such aspects

of public service as being approachable, demonstrating interest, and listening attentively. These documents do not present or consider the perspective or the practices of the researcher, other than to acknowledge that the researcher comes to the librarian with a question or an assignment, which serves as the starting point for the interaction. This starting point is implicit in other sources that our search identified. For example, we found many journal articles that focus on instructional strategies and updated approaches for reaching today's students⁷; most of this literature is practical and process oriented, sometimes presenting typologies⁸ or using psychological theories to understand and reach out to students.⁹

An interesting approach is used by Wang,¹⁰ who works within a Vygotskian framework *via* the work of Jean Lave to propose literacy-teaching activities based on a theory of learning in practice. Lave's work on "cognition in practice" presupposes that learning goes on everywhere, at all times, and that it is part of larger social processes whereby members of "communities of practice" move to the center (positions of expertise and leadership) from the periphery (a "legitimate" starting point for the novice¹¹). Wang suggests that librarians might harness the dynamics of peer-to-peer and peer-to-expert groups to activate the movement from novice toward expert in the area of information literacy. While Wang's work focuses on learning, not on research, it assumes that research is a social process; it is about the social context of inside-the-head development, the psychological side of Lave.

The sociological side of Lave is also useful for understanding what research is, that is, for contributing to a theory of library research and then illuminating the empirical research and helping us apply it to library practice. If learning is movement from periphery to center in a community of practice, we could say that different students are moving toward the center of different communities of practice; indeed, one student may be involved in research that engages multiple communities of practice. For example, we interviewed a student who is interested in underwater archaeology—he is currently pursuing an advanced degree in this area—and who wrote papers on a variety of topics, some central to his interests and others less compelling

to him, personally. When doing research for a paper related to his area of specialization, the student already knew some of the key authors and classic texts and had a substantial informational base. He even has some standing in the community of underwater archaeologists from past projects and conference attendance and thus was able to launch his research from a substantial base. In writing this paper, the student was working toward centrality in the community of underwater archaeologists; in other classes and on other papers, he may have been working toward centrality in a community with little or no relation to his academic and vocational interests. For example, he might in other courses be engaged with a community of students at his college who are on track to complete their degrees or who know something about science or humanities—communities, to be sure, but ones that do little to forward this student's engagement with the literature in his or any other field.

Students, engaged in many communities, may find that their research assignments help them move toward greater centrality in those communities in which they are working in additional ways to build relationships and gain information. That is, depending upon the assignment, one student may be engaged and informed because of past experience and ongoing interests, while another may simply be getting the job done. This is in contrast to senior scholars who tend to occupy central positions in their fields of research *across projects*. Put another way, when a student approaches a librarian, the student might or might not be informed and interested in the assignment, but when a faculty member approaches a library about his or her own research, that faculty member is almost certain to have advanced knowledge and be densely enmeshed in the associated scholarly networks.

Published guidelines for reference service and information literacy instruction, with their focus on the clarification of questions and the use of finding aids, are best suited either for students who have little grounding in the topic and are looking for items that will help them complete an assignment or for more advanced scholars who need help finding particular resources or want to trace through the work of other authors to find previously unknown works. However, these guidelines do not speak to the way that serious

scholars do their research by the process, glossed above, in which a sustained inquiry into a set of intellectual and informational problems drives the development of relations with other authors and researchers and their ideas and writings. In fact, they clash in practice and in theory, as I explain, below.

Librarians Are Researchers, Too

With regard to research, we most often see librarians acting as librarians in libraries, responding to requests for research help, and we see faculty members and students, likewise, in the academic setting, working on short- or long-term projects. What would happen, we wondered, if we watched librarians, faculty members and students do research on their own areas of academic specialization, or on non-academic topics? Would they follow a similar process to each other? And would that process resemble the library research process of scholars? As far as our preliminary results go, yes and yes. Across these three groups, the process of finding information on a topic close to one's heart, for which accurate, timely, and robust information is required, the question drives the process, the researcher builds up a base of knowledge through key works (books, pamphlets, websites) and authorities (known experts, friends, fellow fans, salespeople, respected organizations) and then works these connections for more information, using whatever tools are at his or her disposal, including Google, Wikipedia and Amazon, museum collections, local libraries, online literature, personal libraries, and the information offerings of hardware stores, sporting goods stores, garden centers and other retail establishments.

What follows are four examples in which librarians and faculty members recounted for us how they found information in non-academic areas that are of great personal interest to them.

A librarian talks about finding literature about a certain kind of antique textile, mainly on a used book site, and using the literature to identify gaps in her collection:

I had some books that had a bibliography in the back, and started looking that way. And then had people's last names. [Searches ABE Books for authors.]

If you look at the sources [referring, for example, to the catalog of a major collector]. These are collections that have great, big coffee table books. [. . .] So you can see the whole range of what's out there.

Another librarian describes a variety of tools she used in a process of seeking information about a health problem:

So, running injuries. OK. And how did I come up with the name of my problem? Plantar fasciitis [. . .]. I'm sure I Googled but I put in lots of words. I read a lot of articles that talk about, I mean, the way people search they'll just put in one word or they might just put in "heel pain" and put in "heel pain running de-dah-de-dah"—I put in a bunch of words to try to get something closer to the mark. I might actually go to somewhere like a medlineplus.gov [. . .] the right way to do it! [. . .] No—all we ever do is Google. [. . .] I went to YouTube and I searched YouTube. And there are a whole bunch of videos of exercises and what to do about the problem. [. . .] [M]y husband, he is always telling me oh, YouTube has videos on how to juggle and how to do this and how to- [. . .] Here's another one. A friend of mine from a theatre company said, oh, I had that problem and there's an article in Runner's World about strengthening your hips to fix your feet. [. . .] I never found that article. She had to send it to me. [. . .] I know it fixed her problem. I know she's a really dedicated runner.

A faculty member describes the process he used to do background research for a novel he is writing. Much of the action takes place in a suburb, G, of the city, M.

I'm writing a novel set in M. I know that there's a portion of the book that is set in this suburb of G. I didn't spend a lot of time in G when I was in M, and so something that I did do [conducting Google search on name of suburb.] So I actually ended up using this [information about contact person, listed on public website] to call her. And so I called her, and I explained, "I'm writing this book. You serve in the government of G, but you work in real estate; you're in the garden club." And I was telling her about this house, this large house that I imagined things being set in, and I thought she might have some advice about

what the grounds might look like, or what the garden club element might be. This led to a conversation that actually led to me then talking to somebody who led me to talk to somebody who led to somebody, and then when I went back to M recently, I met her. She drove me around and sort of showed me some of the developments and things.

Another faculty member talks about using the local library and building a small personal collection of information to find out about local Amish and Mennonite communities:

So, I visited a Shaker museum a few years ago, and then I wanted to read about them, and then utopian societies; things like that. For that, I always go to the library and get books. I'm reading right now a little bit about Amish and Mennonite societies, just because in this part of the world, we brush shoulders fairly frequently. [. . .] Yeah, so for those-. For that sort of interest, I always just go to the library and look on the shelves for books. And I've never actually ever looked it up on the Internet; I don't know why. [. . .] There's two—I would call them booklets—next to my bed, and I think they were both authored by someone named Hoffstetler, who is a member of a plain folk community, as he has described. But I read another great book from the library, and I don't remember who wrote it. [. . .] Those I own; my husband got them for me as a gift at the-. They're used. He found them at the little antique co-op downtown, because he knew I was interested, because I was reading this other book, which I had to keep checking out over and over and over because I read it so slowly; two or three pages a night.

Faculty members use similar processes whether conducting library research in their academic specialties or finding information about the things in their private lives that intrigue them. They put the question first and use libraries, personal connections, and other means to get the information they need. The building of a network of connections, with people and objects at the nodes, is quite clear as they describe what they did to get information for a particular project or need.

Librarians have an extraordinary skill in using online catalogs, databases and other finding aids

to get the information they want for personal reasons, and they use this skill and these tools for some of their research, but only for some. Like other researchers, when pursuing their own interests, librarians put the question first and use whatever tools will work, developing a base of knowledge through the accretion of classic or reliable information sources (people and objects). The clash is not between librarians, on the one hand, and faculty members and students, on the other. It is between librarians pursuing their own research interests and librarians in the professional setting.

Understanding Research

The sociologist Andrew Abbott provides a theory of library research, writing specifically of the advanced research of scholars who rely primarily or very heavily on academic libraries and similar collections for their data, as is the case in many disciplines in the humanities and social sciences, such as history and literature.¹² Contrasting library research to the “standard research” associated with science disciplines, Abbott points first to the difference in the organization of the data. While standard researchers organize their data themselves, library researchers work with complexly organized collections. Standard researchers measure their data while library researchers read and browse; in his computational framework, this means that the two use very different algorithms for finding, absorbing and using the data. Standard research is ordered and sequential, library research partial and recursive, and so on. One of Abbott's key insights is the artisanal nature of library research and the “multitasking” it requires; again, in the computational framework, Abbott experiences his brain working at many levels, some in the forefront—such as looking for information through a variety of sources—and some in the background—assessing those sources for reliability, for example. But perhaps the most striking of Abbott's characterizations of library research is that it requires its practitioners to be “prepared”—that is, to bring to the task of library research the foundation of information, experience and skill that is required for successful browsing and reading, searching and assessing. And as to the goals of library research, “the overall thing library researchers aim to optimize is not a ‘truth’ but a richness and plenitude of interpretations.”¹³

While Abbott writes from the point of view of the researcher, elucidating the scholar's process, he considers this process in its broader context. The context is another kind of network, one of people, ideas, books and articles, lab equipment and so on. This network looks different to the various students, librarians and faculty members who are bringing more or less richly developed neural networks to the task. The longer people work in a field, the more they know and see of this network. Those who have put in the most years, read a lot, met a lot of people, gone to conferences and so on, see the most.¹⁴

The more advanced scholars are familiar with the classic works and authors and they know many of the active researchers in their field, hear about their projects, read their articles, and understand the connections between the various scholars, labs, departments, books and articles, reports, and so on. Accordingly, our studies at the University of Rochester, Yale University, Ohio State University and Cornell University suggest that full-fledged researchers search for information through people. For example, many of the faculty members we studied Googled the names of people they knew, found their work on departmental web pages, and then networked from those people to others working on related problems.¹⁵ Faculty members and others who are accomplished researchers see big portions of research networks.

Students see a smaller portion - they see what pokes up on the small surface of what they know. They see mainly books and articles, although those with the interest and the opportunity, say, to attend a conference see some—but only some—of the connections.

Librarians at the University of Rochester say that when engaged in reference work, they themselves tend to have a professional view of books and articles as objects out there.¹⁶ They use specialized tools to find them, tools that are designed to find known objects or find objects related deep in their metadata or that cite or are cited by others. We are finding that this professional approach to finding is at odds not only with what faculty researchers do, it is at odds with what librarians themselves do when they are doing research on something that is within their own sphere of expertise. Nonetheless, it is the approach that they use with students, and it reinforces the fundamental

difference between the research practices of faculty members and the approach of many students, especially younger students or students researching topics in which they have little interest. The librarian conspires with students to search through this imagined field of books and articles scattered about, with the game being to find the right ones in the shortest amount of time. What I would like to suggest is that this approach is excellent for a last-minute assignment, a narrowly focused search, or tracking back through cited works, but that research is much more than this. And that librarians are already good at the other methods used by the serious researchers Abbott discusses, because in their own areas of interest, librarians *are* serious researchers.

Librarians can benefit from gaining empirical data about what research is so they can be more conscious of their own research processes and use that knowledge to develop tools for helping others do research, at the desk and in the classroom. Seeing themselves as researchers with a big bag of tricks, a good foundation of knowledge in their fields of interest, and connections to others who share those interests could help librarians encourage student to develop a more mature perspective, one more closely aligned with that of their professors. And it could help librarians develop strategies that are more likely to work because they are informed by theory and based on empirical data about real researchers in real situations.

Librarians have four years to work with undergraduates in a variety of situations, from last-minute crises to sustained projects of great interest, and they have many more years to build relationships with graduate students and faculty members. With students, there are opportunities to use a theory-based approach to help students recognize, use and build networks.¹⁷ With faculty members, there is a prospect of partnership in this regard, as well as opportunities to expand support from "searching" to "researching"—to the more sustained building of knowledge through library-based research and the browsing and reading and connecting it entails, researcher to researcher.

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Notes

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Persona Development and Use, or, How to Make Imaginary People Work for You

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Abstract

In the spring of 2009, the University of Washington (UW) Libraries User Experience (UX) Group embarked on a project to create personas, which are “detailed descriptions of imaginary people constructed out of well-understood, highly specified data about real people.”¹ Although the Libraries regularly conducts assessments of its online services and shares the results of those efforts with staff, the UX group felt that a widely-shared understanding of the characteristics and motivations of the “Libraries’ users” could be achieved through the development, marketing, and use of personas.

This paper will provide an overview of personas, describe how they were created at the UW, and provide examples of how they have been used to improve our online services.

Introduction

The University of Washington (UW) Libraries has long had a strong assessment program and in 2000 a User Experience (UX) group was added to the Information Technology Services department to focus specifically on evaluating the Libraries’ online efforts.²⁻³ To date, the UX group has primarily focused on improving sites currently in existence through the use of heuristic evaluations, surveys, focus groups, interviews, and usability tests. Most projects are initiated by the Libraries’ Public Web Operations Group, which coordinates activities across the Libraries, formulates policies, and provides strategic direction for the University Libraries public Web presence.

Regardless of the type of library a user frequents, all library users span a wide range of disciplines and skill levels, but share certain fundamental goals and needs. By focusing on these essential characteristics, the personas embody our users and can help us make decisions about what will

best serve the entire patron population. Personas have become a widely used design tool to help decision makers more clearly visualize their target user groups. These personas were developed by incorporating UW Libraries staff knowledge during a workshop, and validating that information against quantitative and qualitative research.

The inspiration for the UW Libraries persona project came from a presentation by Cornell University Library staff at the 2008 Libraries Assessment Conference, who had recently developed personas of their own.⁴ For the author, personas were a tool that was missing from our UX toolkit. With them, we can make informed decisions about what will work for a user *as* we develop our online services—no need to wait for the more costly usability tests to get all the answers.

The personas project lead was Kathryn Whintont. At the time she was a graduate student in the University of Washington’s iSchool working in the Libraries UX group on a .5 FTE appointment. She is now a User Experience Specialist for the Nielsen Norman Group.

Overview of Personas

In their book *The Persona Lifecycle: Keeping People in Mind Throughout the Design Process*, John Pruitt and Tamara Adlin describe personas as “detailed descriptions of imaginary people constructed out of well-understood, highly specified data about real people.”⁵ Kim Goodwin, Vice President of Design at Cooper “an archetype of a user that helps guide decisions about features, navigations, interactions, and visual design.”⁶

Why create personas?

By concretely representing the library user as a

real person rather than an abstract group, personas can help us see user needs more clearly as we make decisions about how to provide services. Usability testing is costly and doesn't help with the many decisions that go into the development of a service. The Libraries needed a tool that would help with the design/service building efforts, which was missing from our current toolbox. More importantly, we needed a way to create a *shared understanding of "Libraries users,"* as opposed to the view of "my users" that every library staff typically has. For many library web managers, creating a usable site is often a difficult task because staff have different views of "library users" and thus rarely agree on characteristics or motivations of the users for whom the site should be designed. Representations of "library users" are typically based on the *interactions* staff have with users, and as such doesn't include any information about the thousands of users they have never, and will never, personally interact with. Personas move us past "users" and "user-friendly" to thinking about designing the site for real people.

Personas can:

- *Guide decisions about features, navigation, and interactions*
Once created, personas can be referred to when faced with design challenges. Consistently looking at design options based on how well they serve specific defined personas helps eliminate moving targets and make discussions clearer and easier to evaluate.
- *Help stakeholders and designers keep the users in mind*
When you hear the name of someone you know, you automatically recall a whole host of details about them, including their characteristics and needs. By creating personas with a name and face that we can get to know, we'll be able to quickly recall and identify a particular set of user needs, and evaluate design questions based on how well they would satisfy that user.
- *Facilitate communication between stakeholders*
By ensuring that everyone has the same agreed-upon users and user goals in mind, conversations about design costs and benefits

become much simpler. Designers and stakeholders are better able to separate personal experiences and preferences, and make choices based on benefits to the identified users.

It's difficult to make an interface that is both simple enough for beginners and rich enough for expert researchers. When user needs conflict, personas can help support design choices by making the costs and benefits of different alternatives more apparent. Different user needs can be prioritized based on:

- The size of that user group
- The value of that particular feature to their goals
- The impact of their research goals on the University's mission

To be clear, personas do not not replace existing processes for gathering feedback or testing whether design decisions were the appropriate ones to make for a certain user segment. They help us structure user-centered thinking throughout the design and development process and are yet another tool in our toolbox.

Persona Development

We used the book *The Persona Lifecycle: Keeping People in Mind Throughout the Product Design* by Pruitt and Adlin as our primary guide for persona development.⁷ The author attended a workshop on persona development in 2009 taught by Adlin; materials from that workshop largely duplicated what had been published in the book. For our first foray into persona development, we opted to gather assumptions about our users via a workshop with library staff, create assumption personas based on that information, validate our assumptions with secondary data sources, then create our final personas based on assumptions *and* data. This is certainly not the only method to create personas, but is one that we felt would work in our environment for a few reasons:

- Our institution is on a quarter system, which provides some challenges with the timing of projects. We simply didn't have the time or resources to conduct additional focus groups or research specifically for this project.
- We already have *a lot* of data about our users. In addition to all of the assessment data we capture, we use QuestionPoint for our online

reference services and that is a treasure trove of information about user needs and demographics.

- An office on campus provides statistics and other demographic information about students and staff on an annual basis.

Most of the users with whom we have a direct interaction are those who come to us with a need. Yet, our web statistics show that we're serving tens of thousands of users online, the majority of whom we never come in contact with. Thus, building personas based on what we think we know about our users is only scratching the surface. We need more information about our users than we'll ever get based on a limited number of interactions.

Gathering assumption data

We all have assumptions of library users and these assumptions "almost always reflect some misinterpreted, poorly recalled, and improperly combined aspects of original data, but they do contain some data and they do reflect the ways your company has digested and understands information about your users."⁸ To start building the shared understanding of our Libraries user, we wanted to bring together staff from across the system in a brainstorming environment to share their assumptions of users with us.

To gather our assumption data, we invited all library staff to participate in a session that we tried to promote as a fun event. We told them that no preparatory work was required and that we wanted them to come and tell us what they knew about users. We asked participants to think about the following questions:

- Describe one or two "typical" patrons
- Name and describe a person you know who is most similar to our typical patrons
- When and where do people use the UW Libraries?
- Because they have to? Or like to?
- Do we want to attract new or different types of people to the libraries? What types of people?
- What (besides use libraries) do our users like to do?
- What do patrons struggle with? What do they find frustrating?

- What are patrons' goals? What do they want to accomplish?
- What roles or actions do they take to achieve their goals?
- What specific tasks or activities are associated with different roles? What motivates these tasks or roles? What are patrons' attitudes and feelings towards these activities?
- How do patrons interact with each other and with existing tools?

To scope the discussion, we decided to spend the majority of the time focused on our primary users: current undergraduates, graduate students, and faculty at the UW. We also gathered information about secondary user groups who have a stake in the library: alumni, researchers from other institutions, community college students, K-12 teachers/students, and the general public.

All told about 30 people from across the system participated in the workshop, which lasted two hours. Librarians, staff members and students from different areas of the library (public services, technical services, etc.) contributed their knowledge to the session.

We used one of our conference rooms, which was cleared of furniture, and lined the walls with large sheets of blank paper, each of which had a type of user listed at the top. The only equipment we used were dozens of post-it note pads and boxes of sharpies. We highly recommend the super sticky post-its so you can easily move the big sheets of paper and the individual notes around without losing any of them.

Workshop participants moved around the room and for each attribute or bit of information that they wanted to share about a user they wrote it on a post-it and placed on the paper under the appropriate user type. This was very much a "braindump" session—we wanted staff to share with us what they knew without overthinking the issue. From the perspective of wanting to create that shared understanding of the Libraries user, it was interesting to listen as staff realized that their specialized researcher had similar motivations and needs as a researcher in an entirely different domain.

Once the workshop was over, for each user population we identified, we clustered similar

attributes together and posted the resulting posters in our staff lounge. Near the posters we had additional sticky notes and pens available, with the hope that staff who were unable to participate in the workshop would add their input to the posters. Unfortunately, we gathered no additional information.

While it is possible to build personas based entirely on assumptions, these are mostly educated guesses based on real-world experience and domain knowledge. Additional information about our users can be gleaned from any number of data sources.

Looking to the data

In order to create personas that were as life-like as possible, we turned to qualitative and quantitative data sources to validate, fill in holes from our assumption-gathering process, and determine which characteristics best represent our users. The data sources we used came from a variety of sources, including assessment surveys conducted by the UW Libraries, ethnographic research conducted at other academic libraries, national research projects focused on information literacy among college students, persona projects at other academic libraries, and usability studies of library websites. All of these research sources were evaluated based on the similarity of their population sample to our users, and were used to identify key elements from the assumptions workshop content that accurately represent Libraries' users.

For this part of the process, project staff read about three dozen articles or Web sites and noted key facts about user behavior, habits, and preferences. Each discrete piece of information was noted on a sticky note along with the data source. This information was later transferred to a spreadsheet that also contained the assumption data. With this mass of assumption and research-driven data, we were able to perform a research analysis to determine the critical dimensions to understanding different types of Libraries users.

Analysis

The UW Libraries serves a broad and diverse population spanning many different disciplines and levels of expertise. Despite the individual differences between users, many share certain fundamental traits, needs, and goals. While we

can't build a website for each individual library user, we can design for a few representative personas who embody these essential characteristics. Broadly speaking our findings fell into three categories: discipline, technology use, and frequency of use.

Academic disciplines at the UW fall into 5 major groups: Humanities/Social Sciences/Arts, Professional, Health Sciences, Natural Science, and Engineering. Since Health Sciences users are currently the primary audience for a separate Libraries website, the personas developed in this project focused on the other four discipline groups. Many different research projects have confirmed significant differences in library use between patrons working in the natural sciences, who focus primarily on journals, and Humanities/Social Science patrons, who make use of both journals and other library materials.

According to the most recent user research conducted by the UW's Learning and Scholarly Technologies Group, a few technologies - email, course or project Web pages, and Word-processing software—are broadly used across all sets of users. Several other technologies—wikis, blogs, videoconferencing, RSS readers, etc.—were used considerably less.

For each of the potential user groups, we considered the frequency with which we can expect that type of person to use the Libraries website. In an ideal world, the libraries website could be both simple enough for infrequent users to understand easily, and still filled with rich resources that are easy for experienced researchers to access. These two contradictory goals must somehow be brought into balance with the following assumptions:

- Experienced researchers are somewhat familiar with library terminology and have some sense of what resources exist (e.g., catalog, databases, journals)
- Infrequent users will likely always have difficulty navigating the site
- Novice students who are just beginning their academic careers but can expect to become regular library users are both a numerous group and have much to gain from design elements that match their expectations and guide them to appropriate resources

The validated user characteristics were then analyzed to determine which characteristics could be grouped around unique goals and motivations to form the basis of personas. Each of these goals formed the core of a distinct patron persona. Skeleton personas were developed which outlined the goals, needs, tasks, and pain points of each persona.

We then fleshed out each of the personas with details and images to add realism. These details were validated by briefly interviewing users who fit the persona profile. One young faculty member, one former doctoral student, and an MBA student assisted with providing realistic individual habits and details. The resulting information and posters were then validated by key stakeholders and workshop participants to make sure they were correct, contained information that was useful, and presented in a clear manner.

Each of our persona posters features the name of the person, a clear picture, a real quote that this person has provided us in some interaction (survey, online chat, email, etc.), key facts about the person (e.g., work preferences), her goals and pain points, and how she uses the libraries' website. Also included on the posters are brief "life histories"—their age, department, area of specialty, modes of access, and anything else that will make these people more real. The posters can be found on the UW Libraries User Experience site.⁹

Our personas are as follows:

- **Brooke the Beginner**

quote: "I'd rather use an online article that 'kinda works' than go to the hassle of finding a book in the library."

key facts:

- new to the research process and academia
- working on several assignments in different disciplines, but not an expert in any of them
- will take the first thing that's good enough

- **Richard the Researcher**

quote: "Accessing full-text articles online is my primary use of the library and is central to my research . . . but I still go to the library for some

reference materials that aren't online."

key facts:

- dedicated full-time student with significant knowledge in his area of study
- working on a long term, in-depth project
- will pursue all avenues to obtain materials related to his research

- **Sharon the Scholar**

quote: "I have to stay current on my field and do the research work—get the grant money, do the work, publish, etc. Those are the priorities at a research institution."

key facts:

- expert knowledge in her research area
- ongoing, in-depth projects using primary sources
- long term user who has already learned existing systems

- **Paul the Professional**

quote: "I feel like there's information in all of these drawers, and I don't know which drawer to open."

key facts:

- returning to school after several years, still working full time outside of school
- some subject matter knowledge and strong technology skills
- very little time on campus, so all research work is done remotely

- **April the Alumna**

quote: "I have a library card, why can't I use the research databases?"

key facts:

- former UW student who has access to some (but not all) library services
- remembers extensive resources at the Libraries and would like to use them for a personal project
- asks for help via email and phone

Using Personas

As a result of clearly knowing the persona's goals, our questions have shifted from "will this work for undergrads" to the much more goal-oriented: "will this help Brooke complete her class assignments (which we identified as a supporting goal)? and graduate (end goal)"? It's a subtle shift but one that focuses us in a slightly different way than we were before.

To help estimate the users that each persona represents, the persona poster contains corresponding population information from the UW Factbook. This correspondence does not always apply, for some undergraduate students may be quite experienced researchers, while some scholars may behave more like beginners when looking for something outside their area of expertise. However it is useful as a rough way of thinking about our patrons.

For most design choices relating to the website, Brooke the Beginner will be the primary persona. Students like Brooke, who are just beginning their academic careers, are a fruitful area for us to focus our design efforts. Aside from being the most populous user group, they stand to suffer the most from unsupportive systems, since they lack subject experience to know what research materials exist, and have little prior familiarity with library systems. Since they will need to use the library more and more over the next few years, they also stand to gain a great deal from a system that matches their expectations and guides them to appropriate resources.

More experienced library users, such as Richard the Researcher and Sharon the Scholar, already have some idea of what research materials will be available; for them, using the Libraries is often simply a matter of locating items they already know about. They will be able to successfully use any reasonable interface, even if it does not entirely conform to their expectations.

The personas are most heavily used by staff and groups when dealing with Web services. Ideally, they will be extended and used by other groups throughout the library. Individual persona posters are mounted above the desks of key staff and are regularly used to inform decisions about interface changes. Another set of posters are mounted in a shared conference room, which has generated much interest and use by other teams including ResearchWorks (institutional repository, digital collections, journal publishing) and a GIS services group.

Use case: LibGuides

As we need to make decisions about a particular service, we choose the persona or personas that are representative the primary user of that service.

Depending on the project, we may choose more than one persona.

For example, as we need to make additional tweaks to LibGuides we often turn to Brooke the Beginner, our novice user. LibGuides is primarily designed for users like Brooke, so that's an appropriate choice and the majority of decisions are made based on her preferences and background. However, all of our other personas (Richard the Researcher, Sharon the Scholar, Paul the Professional, and even April the Alumna) can and do use LibGuides so we need to make sure that we don't "break" the interface for those users.

Next Steps

Next steps with the personas at UW include a review to make sure they're still correct. We have new survey data to use in these efforts and some of the reports we'd referenced in 2009 have been recently updated with new information. In the true spirit of the conference theme, we have not done assessment on the personas or calculated their return on investment, but we can definitely say that they have been an effective, sustainable, and practical tool.

Conclusion

Personas have been a very useful tool for making informed decisions about whether a particular feature or service should be explored or implemented for Libraries users. Personas have guided decisions about features, navigation, and interactions; helped stakeholders and designers keep the users in mind; and facilitated communication between stakeholders. We look forward to meeting the demands of Brooke, Richard, Sharon, Paul, and April and thus improving Libraries services for them, and their friends and colleagues.

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Notes

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The Value of Academic Libraries: Findings and Implications for the Profession

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Abstract

Over the past decade, the quality of higher education has become a major focus for national debate. Not only do stakeholders count on higher education institutions to achieve these goals, they also require them to *demonstrate evidence* that they have achieved them. As higher education administrators grapple with how to best demonstrate the value of the academic enterprise, librarians are increasingly called upon to document and articulate the value of academic and research libraries and their contribution to institutional mission and goals. The Value of Academic Libraries Initiative by the Association of College and Research Libraries seeks to respond to demands and to position academic librarians as contributors to campus conversations on accountability and impact. ACRL's *Value of Academic Libraries: A Comprehensive Review and Report* aims to aid librarians in this effort by identifying what research documenting library impact exists and where gaps occur in research about the performance of academic libraries. This paper highlights findings from the report and implications for the profession.

Introduction

Over the past decade, the quality of higher education has become a major focus for national debate. For example, government interest in the effectiveness of higher education is increasing as the contributions of knowledge workers in economic growth and national competitiveness become glaringly apparent. Nationwide,

employers view higher education institutions as producers of a commodity—student learning. Internal constituents also demand high quality postsecondary institutions; top academic faculty expect higher education institutions to support and promote cutting edge research. Parents and students expect higher education to enhance students' collegiate experience as well as propel their career placement and earning potential.

Not only do stakeholders count on higher education institutions to achieve these goals, they also require them to *demonstrate evidence* that they have achieved them. As higher education administrators grapple with how to best demonstrate the value of the academic enterprise, librarians are increasingly called upon to document and articulate the value of academic and research libraries and their contribution to institutional mission and goals.

The Value of Academic Libraries Initiative by the Association of College and Research Libraries seeks to respond to these demands and to position academic librarians as contributors to campus conversations on accountability and impact. ACRL's *Value of Academic Libraries: A Comprehensive Review and Report* aims to aid librarians in this effort by identifying what research documenting library impact exists and where gaps occur in research about the performance of academic libraries. This paper highlights findings from the report and implications for the profession.

Rationale for the Value of Academic Libraries Initiative

The Value of Academic Libraries Comprehensive Research Review and Report was commissioned to provide ACRL leaders and the broader academic community with 1) a view of the current state of the literature on value of libraries within an institutional context, 2) suggestions for immediate “Next Steps” in the demonstration of academic library value, and 3) a “Research Agenda” for articulating academic library value. The report is intended to help librarians understand, based on professional literature, the current answer to the question, “How does the library advance the mission of the institution?” This bears repeating - the report focuses on library value *within the context of overarching institutions*. It does not attempt to address methods for assessing library value within a library context. Therefore, the report does not emphasize measures of internal library processes, such as inputs and outputs. Nor does it focus on satisfaction or and service quality approaches. These measures are of great utility to librarians who seek to manage library services and resources, but they may not resonate with institutional decision makers as well as outcomes-based, mission-focused approaches.

In order to cast a wide net, the report includes significant higher education and academic library value research as well as other value literature focusing on other library types: school, public, and special. Using this literature as a basis, the report extrapolates recommendations for how academic libraries should move forward in demonstrating their value, identified potential surrogates for library value, and suggested possible areas of correlation to collectable library data. These recommendations, surrogates, and correlations are outlined in the “Next Steps” and “Research Agenda” sections of the report, which is available free online at <http://www.acrl.ala.org/value/>.

The findings from the Value of Academic Libraries Comprehensive Research Review and Report seek to inform local, regional, national, and international efforts to use statistics, research findings, and assessment data to promote sustainable progress. The report also forms the cornerstone of a multi-pronged initiative developed over time, an initiative that includes

the development of a toolkit, among other useful resources.

Selections from the Report—Findings

Detailed findings on library value relative to institutional outcomes are available in the full report online. What follows are excerpted examples related to academic libraries. The full report includes analysis of the literature related to school, public, and special libraries as well.

Student Retention

The literature reviewed in The Value of Academic Libraries: A Comprehensive Review and Report reveals that academic libraries can help higher education institutions retain and graduate students, a keystone part of institutional missions.¹ The challenge lies in determining how libraries can contribute and then documenting their contribution.² A variety of studies have attempted to do so.³ Early studies connected library use to retention,⁴ but a more active paradigm now calls for librarians to make conscious efforts to increase their contact with students,⁵ especially individualized research assistance and personal attention.⁶ Once greater student contact is established, librarians can conduct research that shows the impact of these interactions.⁷ According to Bell, higher education “administrators can help to involve the library by inviting and opening doors to librarian participation in campus social programs where more student-librarian interaction occurs.”⁸ Mezick states, “the more librarians interact with the university community, the greater their impact . . . on students’ lives.”⁹ Librarians can begin investigating potential impacts by creating local surveys. Bell suggests that surveys might ask, “How often do [students] come into contact with librarians? Have they received help from a librarian with research, and if so how has that helped their academic achievement? These surveys should target seniors and recent alumni to best ascertain in what ways the library contributed to their persistence to graduation.”¹⁰

Librarians can also increase their contact with students by collaborating with student affairs offices to become a part of campus strategic enrollment and recruitment plans.¹¹ One example is the admissions office. Retention research shows that new student orientations are a good starting point for integrating students into their

institutions.¹² Libraries have been included in orientation surveys with positive results.¹³ Orientations also provide librarians opportunities to connect with parents to support student success; parents are “the perfect target for library outreach efforts . . . [and] academic librarians can be enlisted to be accessible to parents who expect their child to receive personalized assistance and support.”¹⁴

Library instructional efforts may impact student retention, but more research is needed in this area. For example one study showed that “library orientations, workshops, or courses” have a weak connection to student retention; however, the item that explored this connection was the penultimate answer choice on the survey (#81 of 82 items) and grouped under “additional activities” instead of “learning assistance/academic support.”¹⁵ Thus, it is possible that study design may have impacted the results; replication of a redesigned study may show different results.

Finally, traditional input studies show that institutions in all Carnegie Classifications with libraries that spend more on materials and have more staff are correlated to greater retention rates.¹⁶ Library expenditures (as a part of academic support expenditures) also may be related to higher graduation rates in many institutions.¹⁷ Of course, these studies report correlations, which is not causation. Still, it is possible that cuts to library expenditures may have negative consequences for student retention and graduation;¹⁸ research indicates that institutions that have low graduation rates tend to spend less on library functions.¹⁹

Student Learning

Clearly, a major goal of postsecondary education is learning.²⁰ Therefore, to be successful contributors to their overarching institutions, academic libraries must maximize their contributions to student learning.²¹ Student learning forms a major focus of the Value of Academic Libraries Comprehensive Review and Report.

In the area of student learning, the literature reveals that academic libraries are in the middle of a paradigm shift. In the past, academic libraries functioned primarily as information repositories; now they are becoming learning enterprises.²²

This shift requires academic librarians to embed library services and resources in the teaching and learning activities of their institutions.²³ In the new paradigm, librarians focus on information skills, not information access;²⁴ they think like educators, not service providers.²⁵

Also, in the new paradigm, academic librarians increasingly take a role in articulating student learning outcomes.²⁶ By articulating outcomes, academic librarians can state exactly what their instructional goals are, why they are teaching the way they are,²⁷ and how they expect students to be impacted by instruction. The articulation of outcomes also moves libraries away from satisfaction measures and opinion surveys.²⁸ Keeling states, “if outcomes are the priority, and outcomes are achieved, students (and parents and other constituents) will have abundant reasons to be satisfied. But if there are no clear student outcomes . . . or if those outcomes are not produced, ultimately no one will be satisfied.”²⁹ Smith concurs, “if we cannot demonstrate the results of learning or even define them very clearly, it is hard to convince anyone that the results achieved, whatever they may be, are worth the price.”³⁰

After academic librarians articulate student learning outcomes, they can “think . . . differently about day-to-day activities, renew . . . relationships with colleagues and students, and adopt . . . the assumptions and values of a culture of assessment.”³¹ Knowing how to assess student learning outcomes is another challenge, but it is central to librarians’ ability to teach effectively.³² Because librarians, like other higher education professionals, have to be prepared to think and act in new ways, two steps are necessary. First, librarians require professional development “to increase their ability to write learning outcomes, create assessment plans, use assessment methods and tools, and prepare reports that document the work.”³³ Second, they need to change library “attitudes, perspectives, and working styles” in order to use assessment tools and techniques effectively.³⁴ Once adequately trained, librarians can not only articulate student learning outcomes, they can collect evidence, document successes, share results, and make improvements.³⁵ In sum, they can provide proof that libraries make differences in students’ lives.³⁶

For librarians, the main content area of student learning is information literacy; however, they are not alone in their interest in student information literacy skills.³⁷ The Boyer Commission notes that students often lack “a coherent body of knowledge or any inkling as to how one sort of information might relate to another.”³⁸ NCES named critical thinking skills (among them the ability to find and evaluate information) as a critical skill for college students to attain.³⁹ AAC&U includes information skills among key educational outcomes for college students.⁴⁰ The ACT National Curriculum Survey shows that information literacy ranks in importance between 6th and 9th (out of 26) 21st century skills taught by postsecondary instructors, according to both high school teachers and college faculty.⁴¹ Business communities also emphasize the need for critical thinking and analytical skills.⁴² And of course ALA believes that information literacy is “central to the practice of democracy.”⁴³

Not surprisingly, most academic library student learning outcomes focus on information literacy, a concept that has been described as the core literacy of the 21st century by some⁴⁴ and included as a key factor of other definitions of 21st century skills.⁴⁵ While there is no consensus on what general academic skills college students should learn,⁴⁶ 74% of institutions say their general learning outcomes include critical thinking, 59% include information literacy, and 51% included research skills.⁴⁷ Students who learn the most information literacy skills come from institutions that communicate the importance of information literacy.⁴⁸ Because students learn what assessments require of them,⁴⁹ it is logical to believe that institutions that assess information literacy outcomes might also produce students with greater information literacy skills.

Information literacy outcomes assessment offers the potential to demonstrate the value of academic libraries to student learning. According to one study, “if librarians could demonstrate gains in student learning and improved knowledge as a direct outcome of their instruction, they would be able to justify their programs and open a dialogue with faculty.”⁵⁰ Many librarians have contributed to the voluminous body of literature on information literacy assessment. In fact, the “sheer quantity of examples in the literature . . . can make it hard . . .

to find examples of best practice.”⁵¹ Traditionally, information literacy assessment has focused on satisfaction⁵² or self-report surveys rather than outcomes. More recent literature is outcomes-focused and emphasizes multiple choice tests like the Standardized Assessment of Information Literacy Skills (SAILS) as well as bibliography analysis.⁵³ However, most of the literature relates the details of case studies focused on one group of students, one class, or one semester.⁵⁴ In other words, most examples are “micro-level studies”⁵⁵ or “narrow and momentary glances” at impact of instructional efforts,⁵⁶ rather than the broader, more coherent demonstrations of value that librarians need to articulate the importance of information literacy learning in an institutional context. It is not that small scale local assessments are not valuable; indeed, useful assessments need not be large scale, and local results can be highly persuasive at individual institutions.⁵⁷ But, there are large gaps in the literature and a need for rigorous, larger-scale assessments that emphasize “changes in levels of student competence . . . changes in student behavior . . . effects of information literacy based changes in the curriculum . . . the comparative efficacy of different levels and types of information literacy interventions . . . [and] the overall value of library based information literacy work to the academic community.”⁵⁸ Some literature gaps can be closed by using assessment management systems to compile small scale institutional assessments into larger, more systematic investigations; others can be filled by organized, cooperative studies.

Large scale studies can correlate surrogates of student learning such as grades⁵⁹ with library-related interactions⁶⁰ and behaviors.⁶¹ They can also follow students over time. Longitudinal studies can assess the difference in learning outcome achievement between the time students begin college and graduation⁶² and then link that learning to student collegiate experiences.⁶³ The best way to assess library value longitudinally is to assess the same students at the beginning and end of their college careers; however, it can be challenging to maintain connections with the same students for extended periods of time.⁶⁴ Many assessments “make do” with cross-sectional longitudinal studies in which first-year students and senior students are assessed at the same time. However, seniors represent a more select group than first-year students by virtue of their

persistence through years of college,⁶⁵ and this influences results. In both scenarios, control groups of students who are not in college during the same years are typically not included.⁶⁶ Even among college-enrolled students, control group information literacy assessment studies are rare. At one community college, librarians investigated the impacts of an information literacy program, especially library workshops and courses. Using a control group design, they found that students who passed the course had higher GPAs, completed more semester hours, and were more likely to persist, even once self-selection bias was taken into account.⁶⁷ In the future, librarians can use similar study design to replicate or increase the scope of this study.

Selections from the Report—Implications for Practice

The literature of higher education and academic libraries spurs many ideas for new and improved professional practices. A selection of the implications for practice is found below; a complete list is available in the Value of Academic Libraries Comprehensive Review and Report.

Strategic Planning for Learning

To ensure that academic libraries contribute maximum value to the institutional outcome of student learning, community college, college, and university libraries can integrate information literacy learning into strategic planning processes and, if necessary, revise library missions, visions, outcomes, and activities to produce student learning.⁶⁸ Keeling advises, “rethink everything” and align everything with accountability for student outcomes. However Keeling acknowledges, “it is difficult to imagine how a department, division, or whole campus would reorient thought and action to address its accountability for educating and preparing the whole student without questioning existing organizational structures, the current allocation of resources, and established goals and priorities; and the process through which those questions are asked, answered, and linked to future commitments is exactly that of strategic planning.”⁶⁹ This approach presupposes that library leaders are “in fact committed to [student learning] purposes and willing to act on those commitments.”⁷⁰ If they are, then including student learning outcomes in library strategic planning processes is a good practice.

Assessing Individual Learning

According to Kantor, the university library “exists to benefit the students of the educational institution as *individuals*.”⁷¹ In contrast, academic libraries tend to assess learning outcomes using groups of students; a position that merits possible reconsideration. According to Doran and Lockwood, “a basic truism of learning implies that an *individual* student, not a student *group*, has increased in knowledge and skills during a specific period of time. As such, analytical models concerned with student learning should reasonably reflect this basic principal and consider individual students as the unit of analysis with their growth trajectories employed as outcomes.”⁷² If academic libraries collect data on students who participate in library instruction activities or demonstrate information literacy skills through classroom discussions, individual consultations, online tutorials, peer group discussions, artistic performances, project demonstrations, plans or rehearsals for projects,⁷³ they can use other institutional data sources to explore possible correlations with other forms of student data such as major, GPA, test scores, or time to graduation. According to Morest, “the student information system is the primary repository of institutional data that institutional researchers can translate into research and analysis. These systems contain the full range of records of student enrollment, course taking, financial aid, and family background . . . In order to begin to develop a culture of evidence, it is essential that . . . data [can be accessed] quickly and reliably.”⁷⁴ Yet, academic librarians have not collected individual student data or accessed institutional student information systems, despite the fact that these data sources could be used to demonstrate library value. (Note: No higher education professionals care more deeply about privacy and confidentiality, are more committed to using data ethically, or are more responsible about stripping personally identifying information from records than librarians. Therefore, once sufficient protections are in place, librarians can use individual student data to not only gain evidence of academic library value, but also find ways to increase that value.)

Participating in National Higher Education Assessments

Another way academic librarians can demonstrate value is to participate in national higher education

assessments of student learning. These include common reporting forms and initiatives like the AAC&U VALUE project.

For the last decade, higher education institutions have worked to produce common reporting forms to increase transparency, accountability, and improvements throughout higher education and enable state-by-state comparisons of student learning.⁷⁵ To this end, the National Forum on College Level Learning collected information from institutions such as licensure and graduate school admission tests.⁷⁶ (Initially, they also included student engagement surveys, but dropped them because they are indirect measures of learning and also because they are not revealing for comparisons between institutions.⁷⁷ NSSE variations between institutions are less than 10%; 95% of the variance occurs at the student level within institutions.⁷⁸) Despite these efforts to create common reporting forms, comparisons of student learning are still not possible because there are no real benchmarks for that learning.⁷⁹ There are a few exceptions; South Dakota has a mandatory exam of college juniors, the GRE assesses students pursuing graduate study, nursing students take licensure tests, and WorkKeys evaluates students in some vocational fields.⁸⁰ However, these options are limited and fall short of the goal of state-by-state student learning comparisons.

Now, efforts are focused on campus-level assessments such as the VSA, VFA, and U-CAN. Critics of these systems point out that they oversimplify student learning by comparing schools on limited indicators of learning, such as graduation rate, test scores (e.g., the Measure of Academic Proficiency and Progress (MAPP), the College Assessment of Academic Proficiency (CAAP), and the Collegiate Learning Assessment (CLA) tests), and satisfaction measures.⁸¹ Other authors register concern over the focus on tests.⁸² Rhodes acknowledges that the tests have worth, but also writes:

The initial reaction to the national accountability demands for indicators of student learning has resulted in calls to use tests that have some basic characteristics in common: they are in some way standardized, they result in a score or quantitative measurement that summarizes how well a group of students has performed; they test

only samples of students at a given institution; they require additional costs for students or institutions to administer; they reflect a snapshot picture at one point in time; they provide an institutional rather than an individual score; and they lack high stakes for students taking the exams. These approaches to accountability have been criticized for their expense, the lack of usefulness of the scores for faculty and others seeking to improve the curriculum and cocurriculum, the lack of useful information for students to refocus their own efforts, the limited number of outcomes addressed by the tests, and the problems of motivating students to perform well on the exams.⁸³

According to Keeling et al., “while each of these measures has some significance, neither individually nor in the aggregate do they effectively or meaningfully portray the breadth” of student learning.⁸⁴ Thus, many believe they are incomplete, don’t allow for real institutional comparisons, don’t highlight institutional differences,⁸⁵ and cannot be used to rank institutions or justify funding cuts.⁸⁶ According to Lederman, “if existing flaws are not resolved, the nation runs the risk of ending up in the worst of all worlds: the appearance of higher education accountability without the reality.”⁸⁷

One possible method for augmenting or supplanting test measures of student learning is the AAC&U VALUE project. The VALUE project is based on a set of rubrics that assess essential learning outcomes⁸⁸ using students authentic work, including research projects and papers, lab reports, creative products, internships, service learning activities, capstone projects, and e-portfolios. This approach offers several benefits, including the abilities to capitalize on existing rubric assessments and data sources,⁸⁹ to adapt rubrics locally to reflect individual campus cultures, to reinforce the skills institutions want students to learn,⁹⁰ and to draw internal and external comparisons.⁹¹ For these reasons, IMLS has recently awarded a grant (RAILS) to examine the potential of VALUE rubrics in demonstrating the contributions of academic libraries to student learning.

Assessment Management Systems

Higher education institutions can adopt new or “add-on” assessment methods, but they can save resources if they “generate data on actual student learning directly out of [their] regular program.”⁹² To do that, institutions require “electronic system[s] or structure[s] that knit these elements together as steps in a single and simple process, with information on all the necessary new elements of information flowing through the process. [Such] structure[s] focus on expected and actual outcomes with the same systematic precision that the enrollment-based systems keep track of student enrollment . . . and course grades.”⁹³ These structures are called “assessment management systems.”

Assessment management systems make assessment “easier, faster, less intrusive, more useful, and cost effective.”⁹⁴ Several assessment management systems exist, including WeaveONLINE, TracDat, eLumen, ILAT, Blackboard Learn’s assessment module, LiveText, Tk20, Waypoint Outcomes, and others.⁹⁵ Each assessment management system has a slightly different set of capabilities. Some guide outcomes creation, some develop rubrics, some score student work, or support student portfolios. All manage, maintain, and report assessment data.⁹⁶ However, institutions still need to identify course and program goals, evaluate student learning, and determine how to use assessment data to improve learning.⁹⁷

In addition to decreasing resource expenditures and increasing organizational efficiencies, assessment management systems allow higher education institutions to link outcomes vertically (within units) and horizontally (across divisions, colleges, departments, programs, and libraries).⁹⁸ In this way, assessment management systems recognize the reality that students do not gain knowledge, skills, or abilities from just one course, just in their major, or just in the classroom; rather they enable institutions to capture student learning through all their interactions with institutional units.⁹⁹ According to Shupe, “it is

[this] element—a learning outcomes information structure—that makes this process feasible. In fact, the academic process is dependent on the structure to work well, delivering everyone web-based access from his or her desktop/laptop and permitting everyone to play his or her authorized role(s). This provides a college or university with a new capacity to distribute information on expected outcomes across the institution and to generate data on actual student learning wherever and whenever it chooses to use this approach—capacities that are still unimagined by most colleges and universities. . . . the more consistently this process is applied, the more academic benefits begin to accrue.”¹⁰⁰ Furthermore, assessment management systems help institutions create and support horizontal structures (e.g., first-year programs, advising, service learning), structures that encourage students to transfer learning out of their general education or major courses into other areas. Supporting these horizontal structures using an assessment management system helps institutions “increase coherence between and among for-credit and not-for-credit learning activities; foster the development of a student body that collectively understands and supports the mission of the institution; generate a synthesis of institutional data sets that provides a more robust and multidimensional understanding of student experience; and produce a complex, yet clear, assessment portfolio.”¹⁰¹

Selections from the Report—Implications for Assessment & Research

There are numerous ways in which librarians can support student retention efforts; there are also numerous possibilities for correlating library activities and/or student behavior with student learning and retention. Below is an example of a possible research agenda for investigating academic library impact on student retention. Similar suggestions are available in the Research Agenda section of the Value of Academic Libraries Comprehensive Review and Report.

Surrogates of library impact on student retention	Possible Areas of Correlation
Fall-to-fall retention	<p>Are there correlations, relationships or linkages to individual student behavior in these areas? Note: These library user interactions must be captured in order to be correlated, related, or linked to surrogates of library value.</p> <ul style="list-style-type: none"> ✓ Circulation counts ✓ Tutorial logins ✓ Resources logins, including MyLibrary, MINES data, e-resources, etc. ✓ Resource login/logout surveys ✓ Self-reported usage ✓ Self-reported time saved ✓ Self-reported course material costs saved ✓ Swipe cards on building, library instruction classrooms ✓ Enrollment in courses identified as having high library collections and services usage ✓ Enrollment in for-credit library instruction course ✓ Cohort studies <p>Are there correlations, relationships, or linkages to these macro-level areas? Note: Macro-level areas are fertile territory for ROI calculations.</p> <ul style="list-style-type: none"> ✓ Library expenditures ✓ Collection value ✓ Collection use, physical and online, may divide by subject area or other criteria ✓ Space use ✓ Service use, including reference, ILL, reserves, etc. ✓ Service use, including instruction, integration of library resources and services into course syllabi, course Web sites, lectures, labs, reserve readings, etc. ✓ Library ranking ✓ Library awards ✓ Librarian staffing levels or ratio of user group to librarian ✓ Librarian skills or participation in professional development

Surrogates of library impact on student retention (<i>continued</i>)	Possible Areas of Correlation (<i>continued</i>)
Graduation rates (four-year, six-year, at institution of origin, at another institution)	<p>Are there correlations, relationships or linkages to individual student behavior in these areas? Note: These library user interactions must be captured in order to be correlated, related, or linked to surrogates of library value.</p> <ul style="list-style-type: none"> ✓ Circulation counts ✓ Tutorial logins ✓ Resources logins, including MyLibrary, MINES data, e-resources, etc. ✓ Resource login/logout surveys ✓ Self-reported usage ✓ Self-reported time saved ✓ Self-reported course material costs saved ✓ Swipe cards on building, library instruction classrooms ✓ Enrollment in courses identified as having high library collections and services usage ✓ Enrollment in for-credit library instruction course ✓ Cohort studies <p>Are there correlations, relationships, or linkages to these macro-level areas? Note: Macro-level areas are fertile territory for ROI calculations.</p> <ul style="list-style-type: none"> ✓ Library expenditures ✓ Collection value ✓ Collection use, physical and online, may divide by subject area or other criteria ✓ Space use ✓ Service use, including reference, ILL, reserves, etc. ✓ Service use, including instruction, integration of library resources and services into course syllabi, course Web sites, lectures, labs, reserve readings, etc. ✓ Library ranking ✓ Library awards ✓ Librarian staffing levels or ratio of user group to librarian ✓ Librarian skills or participation in professional development

What's Next for the ACRL Value of Academic Libraries (VAL) Initiative?

The findings of The Value of Academic Libraries: A Comprehensive Review and Report will inform the development of ACRL's next strategic plan,

through which the Board of Directors will identify specific follow-up projects based on the findings in this first phase of the Value of Academic Libraries Initiative. Among the next steps, are three major foci. First, ACRL will begin creating

more professional development opportunities so that academic librarians can develop the assessment and research skills they need. Second, ACRL will examine opportunities for securing funds to extend the research agenda within this report. Finally, ACRL plans to seek out partners as appropriate. The website for the initiative (<http://www.acrl.ala.org/value/>) offers a blog for tracking how the initiative develops.

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What Impact Do Academic Libraries Have on Teaching and Learning? A Review of the Literature and Preliminary Taxonomy of Standards

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Abstract

In recent years a darkening financial horizon has intensified the focus on accountability for academic institutions of and their libraries.¹⁻² Increasingly, funders are seeking evidence of the financial return on these investments, or, in its absence, proof of non-monetary “value.” Identifying these “elusive”³ models for measuring the effectiveness of library resources and service is of concern to practitioners and the organizations that represent them. The Association of Research Libraries’ (ARL) commitment to identifying varied indicators of quality is evident in the New Measures Initiative and the development of instruments like LibQUAL+®,⁴ and the ACRL’s 2006-7⁵ and 2009-10⁶ presidents identified assessing and improving communication of academic library value as the primary focus of their administrations. Although researchers have made significant progress in identifying models for quantifying return on investing in library resources in the form of funds from successful grant applications⁷ and percentages of faculty salaries as a reflection of time saved through use of library resources,⁸ there have been fewer assessments of academic libraries’ contributions to teaching and learning. The Holy Grail of value-related assessment—empirical proof that the library can improve the results of teaching and learning—has been harder to come by.

The goal of this project is to lay the groundwork for future studies of the value of library resources and services to the teaching mission of the university. In order to accomplish this, we reviewed the standards of the six regional accrediting agencies for commonalities, which we then compared with the Association of College and Research Libraries’ Standards for Libraries in Higher Education. After identifying themes from those documents, we reviewed the LIS literature

related to assessment of academic library contributions to teaching and learning for potential models for demonstrating value and/or Return on Investment in the academic library.

Introduction and Purpose of Research

In recent years a darkening financial horizon has intensified the focus on accountability for academic institutions of and their libraries.⁹⁻¹⁰ Increasingly, funders are seeking evidence of the financial return on these investments, or, in its absence, proof of non-monetary “value.” Identifying these “elusive”¹¹ models for measuring the effectiveness of library resources and service is of concern to practitioners and the organizations that represent them. The Association of Research Libraries’ (ARL) commitment to identifying varied indicators of quality is evident in ongoing efforts like the e-Metrics Project,¹² New Measures Initiative, and the development of instruments like LibQUAL+®.¹³ The 2006-7¹⁴ and 2009-10¹⁵ presidents of the Association of College & Research Libraries (ACRL) both identified assessing and improving communication of academic library value as the primary focus of their administrations, and ACRL has recently released a comprehensive review of the research associated with demonstrating the value of libraries.¹⁶ The project described in this paper is part of the Institute of Museum and Library Services (IMLS)-funded three-year project entitled “Value, Outcomes, and Return on Investment of Academic Libraries (Lib-Value),” one of the goals of the project is providing “evidence and a set of tested methodologies and tools to help academic librarians demonstrate how the academic library provides value to its constituents and ROI to its funders.”¹⁷

To date, researchers have made significant progress in identifying models for quantifying return on investing in library resources in the form of funds from successful grant applications¹⁸ and percentages of faculty salaries as a reflection of time saved through use of library resources,¹⁹ but assessments of academic libraries' contributions to teaching and learning have developed less readily. Traditionally, libraries have relied on and reported input and output measures,²⁰ such as materials expenditures and circulation statistics, as proxies for effectiveness. Over the past several years, however, higher education administrators and funders have shifted their focus toward assessing *outcomes*, defined by Fraser, et al., as "a clearly identified result or end product that occurs as a consequence of individual or combined activities from units at the institution. It is a preferred or desired state and ideally clarifies specific expectations of what *should* be products from the institution."²¹

While academic libraries recognize this new emphasis in higher education assessment have acknowledged the advisability of making accordant adjustments to their approach at measuring success, true change has been slow in coming. This is somewhat understandable; the very nature of the academic library's main mission—providing *support* for research, teaching and learning—makes it difficult to demonstrate libraries' direct impact on those processes. Although recent studies have drawn connections between research library expenditures²² or number of library staff²³ and student retention, and others have analyzed the relationship between library expenditures and university reputation (specifically as it relates to student recruitment),²⁴ and student use of library services, library quality, and student success,²⁵ these projects have only established a correlative relationship between the library's efforts and positive teaching and learning-related outcomes in the larger institution. The Holy Grail of value-related assessment—empirical proof that the library can improve the results of teaching and learning—has been harder to come by.

Part of the difficulty of tying academic libraries' services and resources to students' academic success has undoubtedly stemmed from the gap between academic libraries' standards of success and those at the institutional level as mandated by

regional accreditation agencies. Rather than meeting a common set of guidelines at the national level, four-year academic institutions in the U.S. seek accreditation from one of six agencies depending on geographic location.²⁶ While the six regional agencies' standards do share many common guidelines and goals for teaching and learning, the documents themselves are structured and phrased differently and with varying levels of specificity. Regional accrediting agencies also do not revise and release updated standards on the same schedule; each seems to do so according to its own needs and guidelines. These circumstances make forming a cohesive picture of the overall scope and concerns of regional accreditation difficult.

Nevertheless, much of the non-empirical discussion regarding the future of academic library assessment emphasizes the urgency of adjusting library success measures to more closely align with regional accreditation standards. Although LIS scholars have made significant contributions to librarians' ability to understand and address accrediting agencies' expectations,²⁷⁻²⁸ most evaluative studies that consider accreditation standards have focused on statements in the standards that address the library directly, such as guidelines for providing access to information resources or student information literacy instruction. However, this focus ignores accrediting agencies' requirements for teaching and learning at the institutional level, which is problematic as the language in accreditation standards has been gradually shifting from providing prescriptive guidelines for libraries to emphasizing a more holistic model for assessing student learning outcomes at the institutional level.²⁹ While the six agencies' standards do still include statements that mention the library specifically, if this trend toward more general statements continues in future revisions it is conceivable that academic librarians could find themselves having to demonstrate their contribution to the university without specific mandates in the accreditation standards to ensure the longevity of the academic library as institution. In this event academic librarians must be prepared to point to specific ways in which the library provides essential support for teaching and learning, whether within the library or without. A broader understanding of the teaching and learning-related statements in accreditation

standards might provide a gateway for academic librarians to reach a position of greater strength on campus.

It is the main goal of this project to help build a foundation for such an undertaking, specifically by outlining a schematic model of the academic library's roles in its institution's educational mission. We approached this task from three perspectives simultaneously. First, we collected and condensed the six regional accrediting agencies' standards and outcomes related to teaching and learning, which we then reviewed for themes shared among the six sets of standards. Next, we reviewed the Association of College and Research Libraries' (ACRL) Standards for Libraries in Higher Education³⁰ in order to determine the extent to which the standards of the main professional organization for academic librarians reflects the standards of the accrediting agencies. Finally, we reviewed the LIS literature to identify existing examples of research designed to provide demonstrable evidence of having achieved outcomes related to the predominant themes evident in the standards. In reviewing the LIS literature related to academic libraries' support of institutional objectives, we were also able to identify areas for which research has not yet adequately demonstrated academic libraries' contributions. We hope that establishing this "lay of the land" might provide a foundation for future research by clarifying terminology and empirical relationships in projects designed to measure the impact of library resources and services on teaching and learning.

Organization of Findings

While we consulted a large volume of literature for this project, three studies provided especially helpful guidance. First, the authors used Eileen Abels, Keith Cogdill, & Lisl Zach's *Preliminary Taxonomy of the Value of Library and Information Services (LIS) in Hospitals and Academic Health Sciences Centers*³¹ as a template for conceptualizing academic libraries' contributions to teaching and learning. Although Abels and her collaborators do not provide a definition for "taxonomy," we are using Bailey's identification of a taxonomy as a "classification of empirical entities"³² related to a specific concept or term. Taxonomic mapping of a concept's dimensions or qualities improves understanding of its empirical—rather than colloquial—

significance, facilitating theory-building and operationalization in research.

Because contribution to educational efforts is only one area of LIS service codified in Abels, et al.'s *Taxonomy*, we also referred to projects that explored the relationship between accrediting standards and the academic library. Laura Saunders analyzed the six regional accrediting agencies' written standards discussion of *Information Literacy* (either as a phrase or in "equivalent language"),³³ then reviewed the LIS literature for discussions of accreditation. Saunders noted that despite the fact that all but one set of standards identified information literacy (specifically by name or as a set of skills)³⁴ as a desirable educational outcome, there was comparably little discussion in the LIS literature of the library's role in accreditation.³⁵ She suggested that academic librarians should attempt to expand their involvement in accreditation efforts at the institutional level. Oswald Ratteray also focused on specific discussion of Information Literacy, confining his analysis to the Middle States Commissions' guidelines.³⁶ Ratteray observes that relying on inputs and outputs as proxies for library effectiveness would no longer prove effective in an accrediting environment that he described as increasingly centered on student learning. In addition to identifying passages in the standards that discussed IL specifically, Ratteray suggests models for assessing IL and presents ideas for evidence that libraries might provide in order to demonstrate their contribution to teaching and learning at the institutional level. Debbie Malone and William Neal Morrison also looked at the Middle State's standards in the context of the ACRL Standards.³⁷

Bonnie Gratch-Lindauer completed extensive reviews of accrediting agencies' standards and their relationships to library services. The resulting publications, published in 1998³⁸ and 2002,³⁹ respectively, provide a thorough description of the concepts of outcomes-based assessment and student learning outcomes as well as an overview of the accrediting agencies' library and information literacy-related standards that were in place at the time of writing. Gratch-Lindauer also highlights larger trends in accreditation standards, providing librarians with a helpful look at their evolution over time and suggested strategies for understanding and

addressing them within the library context. Gary B. Thompson⁴⁰ and Hannelore Rader⁴¹ also make strong recommendations to academic librarians on the basis of shifting standards for assessment at the institutional and accrediting agency levels. Echoing Gratch-Lindauer's assessment, both authors suggest that academic librarians make stronger attempts at influencing future revisions of accrediting documentation to increase language related to the library and information literacy. All authors suggest that librarians collaborate closely with teaching faculty to improve students' information literacy and make the greatest possible impact on student learning.

Review of Teaching and Learning-Related Accreditation Standards: Common Themes

To begin our project, we compiled and coded the standards used by six regional agencies that accredit four-year institutions in the United States. Once coding was complete, we reviewed them for themes related to teaching and learning as separate activities as well as "teaching and learning" as a joint enterprise. Several common themes emerged through review of the agencies' accreditation standards related to the university's educational mission and the roles and responsibilities ascribed to students, instructors, and the institution. While this summary should not be considered comprehensive, it does identify several common priorities that academic libraries should be aware of.

As already discussed, each of the six agencies establishes positive *student learning outcomes* as a priority for accredited institutions, and each describes the role of students, faculty, the larger institution, and, in some cases, individual support units such as the library, in achieving them. Although most of the implied expectations for students themselves suggest an *ex post facto* demonstration of learning outcomes, the responsibilities with which faculty and administrators are entrusted are more pervasive and reflective of the educational process in its entirety. While some of the agencies explicitly address the importance of identifying and admitting students who can be expected to succeed specifically at the admitting institution (as opposed to being capable of success at "an" institution, generally), the learning process described in most agencies' begins after

matriculation. At the institutional level, accrediting agencies expect colleges and universities to provide the *structural support* necessary to create a learning environment that is both effective collectively and responsive to individual students. They are to identify and *communicate goals and objectives* for student learning, *provide facilities, technology, and information resources* to facilitate research and learning, and *offer programs and activities* to support student learning. As noted by Gratch-Lindauer and others, collectively the standards place a strong emphasis on maintaining uniformity of instructional quality for all students by *providing resources and support for distributed or off-site students* as well as those who come to campus.

In order to facilitate student learning, agencies also charge institutions with identifying and hiring faculty *who possess—and will maintain—the qualifications* necessary for facilitating student achievement. In turn, faculty are expected to share responsibility with administrators for *identifying and communicating student learning objectives* and *designing curricula*. Accrediting agencies expect faculty to ensure that the *instructional methods* they employ *are optimal for communicating content and meeting standards* within their respective disciplines. Some, but not all, accrediting agencies also suggest that institutions should present students with a variety of instructors in order to ensure they are exposed to varied approaches to the material.

Reflecting awareness of the tenets of the Scholarship of Teaching and Learning, each of the six sets of standards emphasizes the *desirability of interweaving research and scholarship with the practice and evaluation of teaching and learning*. While all agencies make clear that the primary responsibility for doing so rests with instructors, most also prescribe institutional support for scholarly inquiry into teaching and learning *through provision of facilities, resources, and professional development opportunities* as well as administrative consideration of SoTL-related work in the tenure and promotion process. Furthermore, most of the standards call for *taking* scholarly inquiry into teaching and learning to the logical conclusion by *applying findings* from such projects *to assessment and adjustment of teaching and learning practices* at the institutional level.

Each of the agencies emphasizes the importance of colleges and universities *cultivating a "culture of assessment"* in all of its practices. Wendy Weiner identifies fifteen characteristics of an educational institution with a culture of assessment: clear general education goals, common use of assessment-related terms, faculty ownership of assessment programs, ongoing professional development, administrative encouragement of assessment, practical assessment plans, systematic assessment, the setting of student learning outcomes for all courses and programs, comprehensive program review, assessment of co-curricular activities, assessment of overall institutional effectiveness, informational forums about assessment, inclusion of assessment in plans and budgets, celebration of successes, and, responsiveness to proposals for new endeavors related to assessment.⁴² While each of the agencies' standards refer to these characteristics directly or indirectly, several also stipulate the requirement that results of both assessment activities and the actions taken as a result of those findings be *documented* and *disseminated* widely, an obligation that reflects an overarching concern with institutional transparency.

The Association of College and Research Libraries (ACRL) Standards for Libraries in Higher

Education, approved by the ACRL Board of Directors in 2004,⁴³ were written to "provide a comprehensive outline to methodically examine and analyze all library operations, services, and outcomes in the context of accreditation."⁴⁴ A key element of this achieving this goal is for help libraries to make the shift from assessing effectiveness exclusively on the basis of inputs (as reflected in earlier ACRL Standards) to utilizing broader models that would also take into account output measures and outcomes.⁴⁵ After condensing the regional accreditation agencies' standards, we reviewed the ACRL Standards to evaluate how well ACRL's document "embrace[s] key principles that will continue to be espoused by regional accrediting associations as critical elements or core requirements"⁴⁶ as criteria with which libraries must comply.

The following table represents a summary of these activities; regional accreditation standards of interest have been divided into three broad conceptual categories, phrased as statements: "The Institution is Focused on Student Achievement," "Teaching and Learning is a Clear Institutional Priority," and "The Institution Promotes a 'Culture of Assessment.'" Each theme is discussed in greater detail in the paper's subsequent sections.

TABLE I
REGIONAL ACCREDITATION AND ACRL STANDARDS—COMMON THEMES

I. The Institution is Focused on Student Achievement	
<i>Institution supports learners</i>	
Accreditation Standards: e.g.	“The organization provides an environment that supports all learners and respects the diversity they bring.” ⁴⁷
ACRL Standard?	Instruction: “As an academic or instructional unit within the institution, the library should facilitate student success”
<i>Institution promotes a life of learning/development of lifelong learners</i>	
Accreditation Standards: e.g.	“The organization promotes a life of learning for its faculty, administration, staff, and students by fostering and supporting inquiry, creativity, practice, and social responsibility in ways consistent with its mission.” ⁴⁸
ACRL Standard?	Instruction: “As an academic or instructional unit within the institution, the library should facilitate student success, as well as encourage lifelong learning.”
<i>Faculty qualified to facilitate and accountable for student success</i>	
Accreditation Standards: e.g.	“Responsibilities of teaching faculty include instruction and the systematic understanding of effective teaching/learning processes and outcomes in courses and programs for which they share responsibility” ⁴⁹
ACRL Standard?	Instruction: “In addition, librarians should collaborate frequently with classroom faculty; they should participate in curriculum planning and information literacy instruction as well as educational outcomes assessment.” Staff: “Librarians should have a graduate degree from an ALA-accredited program. All library professionals should be responsible for and participate in professional activities.” Resources: “The library should provide varied, authoritative and up-to-date resources that support its mission and the needs of its users.”
<i>Institution maintains uniform educational offerings for all students</i>	
Accreditation Standards: e.g.	“The institution provides programs, wherever offered and however delivered, with appropriate content and rigor that are consistent with its mission; culminate in achievement of clearly identified student learning outcomes; and lead to collegiate-level degrees or certificates with designators consistent with program content in recognized fields of study.” ⁵⁰
ACRL Standard?	Resources: “Furthermore, distance learning programs should be supported by equivalent means such as remote electronic access to collections, the provision of reliable network connections, and electronic transmission or courier delivery of library materials to remote users.”

II. Teaching and Learning is a Clear Institutional Priority	
<i>Institution provides adequate support and resources for teaching and learning</i>	
Accreditation Standards: e.g.	“Budgeting priorities reflect that improvement in teaching and learning is a core value of the organization.” ⁵¹
ACRL Standard?	<p>Services: “Hours of access to the library should be reasonable and convenient for its users.”</p> <p>Staff: “The staff should be sufficient in size and quality to meet the programmatic and service needs of its primary users.</p> <p>Facilities: “The library facility and its branches should be well planned; it should provide secure and adequate space, conducive to study and research with suitable environmental conditions for its services, personnel, resources and collections.</p> <p>The library's equipment should be adequate and functional.”</p> <p>Budget: “The budget should meet the reasonable expectations of library users when balanced against other institutional needs.”</p>
<i>Institution Recognizes and Promotes the Scholarship of Teaching and Learning (SoTL)</i>	
Accreditation Standards: e.g.	“The institution, with significant faculty involvement, engages in ongoing inquiry into the processes of teaching and learning, as well as the conditions and practices that promote the kinds and levels of learning intended by the institution.” ⁵²
ACRL Standard?	<p>Instruction: “By combining new techniques and technologies with the best of traditional sources, librarians should assist primary users and others . . .”</p> <p>Resources (indirect): “The library should provide varied, authoritative and up-to-date resources that support its mission and the needs of its users.”</p>

III. Institution Promotes a “Culture of Assessment”	
<i>Assessment efforts are consistent, thorough, and well-documented; standards, tools, and findings are shared</i>	
Accreditation Standards: e.g.	“Leadership at all levels is committed to improvement based on the results of the inquiry, evaluation and assessment that is used throughout the institution.” ⁵³ “An accredited institution is expected to possess or demonstrate the following attributes or activities: . . . a documented, organized, and sustained assessment process to evaluate and improve student learning. . . evidence that student learning assessment information is shared and discussed with appropriate constituents” ⁵⁴
ACRL Standard?	Outcomes Assessment: “Outcomes assessment will increasingly measure and affect how library goals and objectives are achieved. It will address the accountability of institutions of higher education for student achievement and cost effectiveness.” Instruction: “Librarians should participate in. . . educational outcomes assessment” Resources: “Policies regarding access should be appropriately disseminated to library users.” Outcomes Assessment (indirect): “The instrument should be valid, and the way it is used should be appropriate for the task. Colleagues at peer institutions may render invaluable assistance by suggesting assessment questions and sample sizes, by sharing lessons learned, and suggesting alternative methods for measuring outcomes.”
<i>Assessment findings are employed to improve student success/evidence-informed pedagogy</i>	
Accreditation Standards: e.g.,	“The faculty takes responsibility for evaluating the effectiveness of the teaching and learning process and uses the results for improvement.” ⁵⁵
ACRL Standard?	Outcomes Assessment: “. . . can be an active mechanism for improving current library practices.”

Demonstrating Academic Libraries’ Value to Teaching and Learning: Existing and Proposed Models

How best for academic libraries to provide evidence of their response to these priorities? While the Association of College and Research Libraries’ (ACRL) Standards for Libraries in Higher Education echo many of the statements in those the regional agencies’ respective standards, they offer little guidance for specifically assessing performance in each standard. In order to identify models, we reviewed the LIS literature for studies assessing academic libraries’ contributions to teaching and/or learning. Although significant

progress has been made in developing tools for assessing the value and impact of library resources and services on teaching and learning, the LIS literature reflects that academic librarians are still “not sufficiently strategic or externally focused when determining which measures to use as evidence of how the library affects educational outcomes,”⁵⁶ as Bonnie Gratch-Lindauer lamented in 1998. Our review of the literature did uncover significant gaps between some of the accrediting agencies’ priorities and extant research demonstrating the value or contribution of academic libraries’ efforts at achieving those goals; it is our suggestion that these areas be considered a priority for conducting research to

demonstrate the library's contribution to their achievement.

This paper is not an attempt to present a comprehensive review of LIS research related to evaluation and assessment of contributions to teaching and learning. There are a number of excellent reviews of that type already available.⁵⁷ Rather, the resources identified here met one or more of the following criteria:

- a) Presentation of a model for establishing value or Return on Investment in library teaching and learning resources or services
- b) Presentation of a study that could be adapted, expanded, or combined with other models to assess value and/or ROI for teaching and/or learning
- c) Providing an important review of issues or concepts related to measuring value, return on investment, or other aspects of the relationship between the library and the university's teaching and learning mission.

Of the themes identified in the accreditation standards, those related to working with directly with students have the strongest base of existing models for designing assessment of library programs for the purpose of determining value. In fact, the sheer number of articles related to instruction and information literacy can be "overwhelming."⁵⁸ Despite the volume of research that has been conducted in this area, very few of the studies that profess to demonstrate the superior outcomes of a particular approach to enhancing students' learning *actually do so*. More accurately, the vast majority of articles in the LIS literature related to instruction and student learning describe the implementation of a particular program or improvement without providing evidence of its efficacy. However, models for demonstrating—at least in part—the impact of library resources and services on student success do exist, although most should be considered more as providing a basis for designing a study to demonstrate value than a "ready for prime-time" template. Although space does not permit extensive discussion of all studies presented we have attempted to convey the essential elements of each.

Theme I. Institutional Focus on Student Achievement

Library Instruction and Student Learning

The most compelling models for demonstrating the value of library instruction to the teaching and learning enterprise involve instruction delivered over a longer period of time and go beyond cognitive changes to examine other potential outcomes of instruction, such as changes to students' confidence in their own research skills and reduction in library anxiety.⁵⁹ Descriptions of research design and the specific tools used to assess library impact can be valuable as well. While it is certainly true that "the best way to assess library value longitudinally is to assess the same students at the beginning and end of their college careers,"⁶⁰ this is frequently impractical. Approaches to assessing students' development of information literacy skills within the context of library instruction have evolved beyond pre- and post-session skills testing; while not as persuasive as a controlled, extended longitudinal study of information literacy skills development, evaluation of student work—such as portfolios and bibliographies—pre- and post-instruction can demonstrate positive outcomes on a smaller scale.⁶¹ Studies that present data collected from a variety of sources, such as pre- and post-tests, assessment of behavioral changes, and student statements of opinion and/or assessment of the value of instruction can also present a compelling picture of the value of information literacy instruction in the pursuit of student success.⁶² Librarians are also assessing approaches to instruction that are still relatively recent, such as "embedding" a librarian within the context of a specific class. Even in cases in which skills did not improve significantly this approach seems to reduce students' library anxiety,⁶³ which could be important for "lifelong learning."

Despite doubts about the efficacy of the "one-shot" 60-minute instruction session for a) influencing a student's development as a lifelong learner or b) conducting any meaningful assessment of that development,⁶⁴ this approach still constitutes the bulk of library instruction,⁶⁵ and its contribution to teaching and learning must be assessed, if only to provide data for making adjustments.⁶⁶

Instruction outside the Information Literacy Classroom

The convergence of increased demand and constricting budgets has led many libraries to focus instructional efforts in nontraditional settings, and efforts are being made to assess library support for learning outside the library instruction classroom. Frequently, students learn information literacy skills through online tutorials; researchers report that students who completed a tutorial scored significantly higher on a post-test than before taking the tutorial.⁶⁷ Other studies report similar pre- and post-test findings, as well students reporting improved confidence in their research abilities.⁶⁸ Other studies focus on assessing outcomes of learning in the context of the reference interview, both face-to-face⁶⁹ and online.⁷⁰

Value?

Direct discussions of monetary or other returns on investment in information literacy instruction are rare, likely due to the inherent difficulty in assigning a monetary value to the acquisition of knowledge. There are examples, however: Debbie Orr and Jackie Cribb asked if Information Literacy was “Worth the Investment?”⁷¹ and presented the costs per student of a workbook-based IL instruction program at their institution. While the authors shy away from answering their own question, saying that placing a dollar figure on learning would be “inappropriate,”⁷² the article does provide specific information about the costs of administering an information literacy program that could be helpful for conducting a more thorough and focused assessment. In their study of the efficacy of “embedding” information literacy librarians in history courses, Meagan Bowler and Kori Street make a brief reference to academic departments involved in the study “buying” the time of the embedded librarians;⁷³ this situation represents an unusual prospect for assessing the financial value of library instruction.

Faculty are Qualified to Facilitate and Are Accountable for Student Success

In addition to supporting the activities of teaching faculty, many academic librarians perform instruction themselves. Efforts are underway to assess librarians’ qualifications for serving as instructors through review of American Library Association (ALA)-Accredited Master’s programs’ curricula to determine the extent to which

students were being prepared to serve as instructors,⁷⁴ while others lay the groundwork for future evaluation by establishing “best practices” for preparation.⁷⁵ We identified relatively few studies of librarians’ efficacy as information literacy instructors; this seems to be an understudied area.

Theme II. Institution provides adequate support and resources for teaching and learning

While demonstrating the positive impact that library resources and infrastructure can have on teaching and learning is arguably even more difficult than providing evidence of the positive outcomes of library instruction, it is clear that the support provided by mechanisms such as interlibrary loan,⁷⁶ laptop borrowing programs,⁷⁷ and products that ensure the ready accessibility of electronic scholarly resources⁷⁸⁻⁷⁹ deserves investigation. Attempts at understanding the contributions made by the library’s physical space to teaching and learning are still relatively recent, but early findings indicate that both students and faculty value the library’s provision of “learning space” and a “positive learning environment.”⁸⁰ Of current interest is the importance of the library or information commons in the learning enterprise.⁸¹⁻⁸² Addressing the contributions of infrastructure and the library’s physical plant is essential in consideration of the significant investments of financial and other resources that these services represent.

Library Support for Teaching and the Scholarship of Teaching and Learning (SoTL)

While discussions of ways in which librarians might strive to improve student learning are extremely common in the LIS literature, discussions of library support for *teaching* are largely absent. Rather, LIS researchers tend to focus on ways in which the library supports faculty research, or on faculty-librarian partnerships for information literacy instruction. Regional accreditation standards, on the other hand, offer a very clear outline of expectations for instructors and corresponding responsibilities of the larger institution, much of which is couched in the terminology of the *Scholarship of Teaching and Learning* (SoTL). A comment made by Ernest Boyer in *Scholarship Reconsidered*, his 1990 treatise university faculty life, planted the seed of the SoTL movement. In it, Boyer pointed out that

faculty are rarely afforded the same respect for excellence in teaching as they are for successful research.⁸³ As a remedy, he called for abandoning “the old ‘teaching versus research’ debate” in favor of acknowledging the scholarly aspects of teaching by giving “the familiar and honourable term ‘scholarship’ a broader, more capacious meaning, one that brings legitimacy to the full scope of academic work.”⁸⁴⁻⁸⁵ Although Eileen Bender acknowledges that Boyer did provide the initial definition for SoTL, albeit “sketchily,” she credits Lee Shulman with expanding and clarifying the dimensions of the concept.⁸⁶

As it has evolved, SoTL has come to encourage faculty to go beyond simply pursuing excellence in teaching. Rather, SoTL advocates “empirical examination of teaching in relation to student learning”⁸⁷ through application of research practice to teaching-related problems, and sharing the results through the modes of scholarly communication appropriate to one’s discipline as one would any other research project. Similarly, SoTL calls for a transparent and continuous approach to assessing and improving one’s teaching through regular evaluation, reflection, and revision of instructional efforts. Over the years, scholars from a number of disciplines have adopted and adapted SoTL to reflect their modes of teaching and scholarly communication. While improving student learning is the ultimate goal of engagement in SoTL, Bender⁸⁸ and others cite additional benefits for the instructor. As outlined by the Carnegie Academy for the Scholarship of Teaching and Learning (CASTL), SoTL should enhance both instructors’ experience of teaching and the recognition and rewards afforded excellent teachers. Although instructors who engage with SoTL theory and practice do report improved engagement in and satisfaction with the teaching process, these are rarely identified (in accreditation standards or elsewhere) as desirable outcomes of the educational process. Nevertheless, these are worthwhile goals.

Although Monica Vezzosi suggests that instruction librarians engage in action-oriented evaluation and reflection while instruction is in progress,⁸⁹ specific discussion of SoTL in library-related literature is thin on the ground. We agree with Cara Bradley’s assertion that SoTL provides excellent opportunities for librarians⁹⁰ to both collaborate with faculty for the purpose of

identifying and providing resources and services to help improve their teaching, but also for librarians to engage in reflective practice themselves. That the regional accreditation standards allude to SoTL so clearly and consistently reinforces its importance to academic libraries in the future.

Theme III. The Campus Culture of Assessment

The third theme, which is strongly evident in the standards of all six regional accrediting agencies and—to a lesser extent—the ACRL Standards, refers to the importance of approaching all aspects of the enterprise of higher education from the mindset of a “culture of assessment.” While academic libraries make consistent and concerted efforts at conducting assessment on a regular basis, the approaches to doing so are still largely rooted in input-and-output-based models. Although libraries have been very effective at measuring, aggregating, and reporting data representing inputs and outputs to the library system, they have been less successful at developing an understanding of the ways in which those services and resources support teaching and learning. We know how many books were checked out and which articles were downloaded, but not what was done with the information in them. We have counts of the number of students who entered the library by the hour, but we don’t know what they did once inside. We keep records of how many instruction sessions were conducted and how many students attended, but we don’t know how effective the librarian’s pedagogical approach was, what they learned, or how it helped them. Libraries have always preferred this approach to demonstrating library efficacy; unfortunately, inputs and outputs do little to demonstrate the effects, impact, or value of a service or resource.

Not particularly known for being nimble institutions, making the shift to a culture of assessment will not be a painless process for academic libraries. This is, however, the change in mindset that academic libraries must make in order to prove the value they add to the teaching and learning process, and ensure continued relevance in the enterprise of higher education.

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Data Farms or a Field of Dreams? Libraries Can Build Infrastructure for Collaborative Assessment

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Abstract

In 2008, the University of Pennsylvania Libraries' launched a new Decision Support or DSS initiative to address its many assessment and decision-support needs. Dubbed MetriDoc, the project advances Penn's Data Farm program by situating Data Farm in a broader, generalizable technology framework, which can be adapted to different library settings in order to create decision-support environments. MetriDoc is an orchestrated, distributed set of open-source technologies that can be configured to:

- recognize diverse transactional data sources, from a proxy server log to a database table in a course registration system,
- transform data sources into an extensible XML schema, and
- store the schema results in a data repository where they are available for analysis and dissemination in various presentation and publication formats.

A more rigorous phase of Data Farm development, MetriDoc leverages knowledge Penn has gained since 2000, addressing many issues of sustainability and scalability, and provides a more durable setting for Data Farm. It will increase the range of event-related data made available through Data Farm. Using modular, largely self-executing data management methods, MetriDoc will enhance Data Farm's adaption to evolving systems, new data streams, and workflows. And the system will enable the widest possible distribution of decision-support data, so the use of evidence can become a routine and continuous facet of organizational culture and management.

MetriDoc provides a natural complement to assessment methodologies that have gained significant attention, including LibQual, and MINES. By following an extensible, event-based data model, MetriDoc will supplement survey

findings with highly descriptive transactional information, and offer an effective means of implementing data collection protocols, such as the READ Scale.

This paper will pick up where Penn's preliminary description of MetriDoc left off in 2008, when it was presented at the Library Assessment Conference in Seattle and elsewhere. The objective is to:

- Describe the MetriDoc methodology and modular framework,
- Explore the advantages of MetriDoc's open-source code base for collaborative development and use, and
- Frame a wider discussion of MIS technology and its relationship to other assessment tools developing within assessment's community of practice.

The Business Intelligence Environment in the Academic Library

Since the late 1990s, the academic library community has held a wide-ranging discussion on library metrics for the digital age. Beginning in 1998,¹ this conversation took on formal dimensions with two noteworthy developments: first, the guidelines for measuring the use of electronic resources, issued by the International Coalition of Library Consortia (ICOLC), and second, the emergence in Europe of Equinox,² a project to create performance indicators for the "hybrid" library. Soon after, the Association of Research Libraries (ARL) identified electronic use statistics as a key priority for its Statistics Program,³ and launched the E-Metrics Project.

The ARL effort eventually broadened into a search for a wide range of new measures that could improve the capacity of the ARL statistics to describe and track the value of library services in the 21st century. It has long been recognized that

the traditional ARL statistical corpus—holdings, expenditure, and staff size—can't adequately represent library contributions to academic outcomes, or engagement with the strategic interests of the academic community, such as library support for collaborative methods of teaching and learning; e-science and e-research; and the globalization of higher education.

Even as the search for more relevant metrics has unfolded, academic libraries have been buffeted by paradigm-altering events. They have seen their purchasing power erode, their budgets constrict, and their audiences shift to powerful new commercial information services, such as Google and Amazon. In their planning, libraries have had to tackle difficult questions about their very nature and purpose in the academy. To quote one study: "Unless libraries take action . . . they risk being left with responsibility for low-margin services that no one else (including the commercial world) wants to provide."⁴

Academic libraries, regardless of Carnegie designation, share a common mission to support the teaching and learning enterprise, and the fulfillment of that mission amid today's pressures is increasingly linked to intelligence about resource consumption, service quality, and the library's impact on teaching and learning. Clearly, libraries have entered a period where measurement and mission are inextricably linked, where effective management is evidence-based management.⁵

The challenges of the past decade have sparked a keen interest in assessment and an even sharper focus on accountability and the elusive questions of what to measure and how.⁶ ARL's commendable reevaluation of the statistical canon notwithstanding, only nominal progress has been made on new metrics or on the critical problem of assembling data for effective, cost-efficient, and sustainable assessment. Further, some of the most promising work has originated outside the ARL community, for example, in the Los Alamos Digital Library's MESUR initiative and Project COUNTER.⁷

ARL has had notable success at building a nascent community of practice around library assessment, elevating quantitative methods employed within the community through LibQUAL+® and other initiatives. But if libraries are effectively to link

evidence to management and planning, the assessment effort will require additional focus, leadership, and tools. The thrust toward evidence-based management has been particularly hobbled by the problem of gathering and mining information from data—vast amounts of data arising from service and user interaction with librarians. Until data can be quickly and routinely harvested and made ready for study, the evolving community of practice, along with effective leadership in assessment, will struggle to coalesce.

This situation seems paradoxical given that nearly every library service leaves some kind of data trail to mine, from circulation records to e-journal logs to emails about research questions. Enormous in size and potential, these trails of evidence are as inaccessible as they are ubiquitous; they're locked up in silos that bar retrieval and thwart investigation; and they're expensive and complicated to render usable. At the present time, assessment's most critical assets are, in effect, the detritus of library systems—traces in the clickstream captured by some log or millions of transaction records stored in an esoteric database table.

Libraries are not wanting for analytical methods, even if the data they need are hard to reach. A variety of protocols has been developed in recent years including: a means to analyze the depth of reference services,⁸ to measure the impact of networked electronic resources,⁹ and to estimate return on investment (ROI) in academic libraries.¹⁰ But in each case, the commodity most critical to sustained, productive use of these methods, is also the hardest resource to muster. Liberating an institution's data and converting them into knowledge which informs budgetary decisions, staff allocations, new service models, and a sophisticated understanding of research output and scholarly workflows is fundamentally important to evidence-based practice and, by extension, to the course of libraries and the universities they serve.¹¹

Meaning and Scope of a Decision Support System

As an enterprise approach to systematic decision support, Penn is developing MetriDoc to provide an IT infrastructure that facilitates the collection and transport of data. As such, our goal is to address the assessment challenge cited above, specifically to unlock the vast and rich data

reserves that libraries possess and to tap them for planning and decision making.

MetriDoc constitutes several layers of a tiered Decision Support System (DSS). In the literature, the concept of DSS has many connotations which encompass technology, but speak also to the non-technical facets of data administration and evidence-based management. For the purposes of this proposal, we follow Turban, McLean, and Wetherbe in describing a DSS as:

“a computer-based information system that combines models and data in an attempt to solve semi-structured and some unstructured problems with extensive user involvement.”¹²⁻¹³

Again, in concert with Turban, et al., the DSS should possess these features:

- 1) **Data Management Layer:** the range of data that originate from disparate sources and are targeted for harvest into a database or repository layer of the DSS. (As Turban points out, extract into a database is not a prerequisite of the DSS, but that is the method we employ with MetriDoc.)
- 2) **Model Management and Data Governance:** structural components of data that form the building blocks of DSS applications and require continuous coordination with the production systems that generate transactional data.
- 3) **Data Warehouse:** repository of refined, normalized data from raw sources.
- 4) **User Interface Layer:** a discovery interface that aids users in identifying and isolating relevant data, performs basic aggregation and analysis, and outputs results to dashboards, feeds (RSS and/or Atom), structured reports, or even integrates with third-party applications such as Excel, SAS, R¹⁴ or Software Environment for the Advancement of Scholarly Research SEASR.¹⁵

As Lakos and Phipps have noted,¹⁶ the management of library services employs multiple data sources that often have overlapping relationships, such as the linkages between expenditure and use, or the more complex interconnections between user populations and resource consumption. For this reason, a single, integrated DSS should be developed that supports sophisticated use of both descriptive and inferential statistics. The DSS should make quantitative information readily available and

easy to access by all levels of staff. Data should be routinely harvested, modeled, updated, and archived. A management structure should be in place with sufficient staffing and executive support to deal with data governance issues and manage the flow of quantitative information throughout the organization.

Options for Developing DSS Capabilities

The case for developing decision support systems for libraries dates back to at least the 1980s.¹⁷ By the late 1990s, the idea had found a prolific champion in Amos Lakos, whose work with Shelley Phipps gives a prominent place to the DSS in furthering what is commonly termed the culture of assessment in libraries.¹⁸

Though the need for such systems is well established in the literature, there has been little institutional investment in their creation. Lakos cites automated DSS systems in some stage of development at only a handful of universities, including Penn’s Data Farm project, which we discuss in more detail below.

The rarity of DSS projects in the academic library community, particularly given the need to redefine mission, optimize finances, and cultivate new management methods, testifies to the difficulty and expense of the endeavor.

For the majority of library administrators, keeping pace with mission-critical technologies, such as their Integrated Library Systems (ILS) and web applications, absorbs most of the staff and technical expertise available to them. As a result, the appeal of vendor support in this realm is especially strong.

All ILS vendors provide some level of report writing, but these capabilities are deeply integrated into the architecture of proprietary systems and thus fail to provide the flexibility or richness of data analysis that libraries need. OCLC’s WorldCat Collection Analysis tool is yet another of these “blackbox” solutions.¹⁹ And regardless of their strengths or flaws, both the ILS and OCLC provide business intelligence primarily about print collections; gathering and processing data on other aspects of library services would involve a multiplicity of systems, which works against the need for economy and integration in a DSS solution.

Whether the commercial sphere²⁰ is prepared to engage with libraries and the complicated mix of data sources they handle is unclear. Libraries need to integrate budgetary data, bibliographic measures, web analytics, personnel information, courseware measures, and a wide range of usage data from local and licensed sources. While so-called ETL (for Extract, Transform, Load) systems are appearing from vendors, they require substantial collaboration with a range of library staff to implement. The ongoing costs for a commercial solution are uncertain, but clearly, libraries will have no control or proprietary stake in the products they are helping vendors to design and market. In the end, a proprietary solution will struggle to satisfy the scope of library needs, but it will add extraordinary new costs and slow deployment of DSS technology. The commercial option is also apt to inhibit prospects for multi-institutional collaboration around metrics, just as the commercial ILS inhibits cooperative efforts by hardening the silos around data and systems architecture.

A development role in DSS, under an open or community source model, would be advantageous to the library community, specifically enabling:

- maximization of local data reserves,
- effective use and development of domain expertise,
- financial and functional sustainability, and
- infrastructure required for collaborative research and development.

Community-sourcing does not exclude commercial interests, but changes the fundamental dynamics of the library market, allowing vendors and libraries to forge new relationships around the support of software and the extension of that IP for the best interests of the community. Open development of a metrics framework insulates libraries from a destabilizing reliance on vendors for product development and support, while also building a knowledge base that strengthens intra- and inter-institutional cooperation around strategic problems. Open development can also spur competency-building within the library community, encouraging the acquisition of statistical and skills and creating professional opportunities around data modeling, metadata design, data governance, as well as statistical analysis and presentation.

MetriDoc: A System Overview

MetriDoc is a means of “lighting up” an array of data sources to build a comprehensive repository of quantitative information about services and user behavior. A data source can be a database, text file, XML or any binary object that contains data that has business value. MetriDoc aims to provide simple tools to extract useful information from various data sources, transform, resolve and consolidate it, and finally store it in a repository. The repository will be comprised of various storage mechanisms to make it easy to extract data for reports and statistical processes. With this in mind, Penn is designing MetriDoc to meet the following requirements:

- create a simple framework that handles the complexities of extracting, resolving and storing data
- provide hooks into the framework so non-enterprise programmers can use MetriDoc with a combination of scripting languages, XML and project schemas
- create reusable solutions specific to the library space, such as extracting data from popular ILS systems, handling COUNTER data, resolving EZproxy logs, etc.
- follow best practices when storing data in the repository to enable the widest possible distribution of decision-support information so that data analysis can become a routine and continuous facet of organizational administration and culture.

MetriDoc must be understood within the context of the Penn Libraries’ Data Farm initiative.²¹ A program that began in 2000, Data Farm represents a substantial institutional investment in assessment. In brief, Data Farm²²⁻²³ is a “collection” of DDS functions that run on a common Oracle instance and output to the web or Excel. The underlying data come from a variety of sources, for example: the Voyager ILS system, Apache logs, a local database that powers segments of the Penn Libraries website for metrics on e-resource use, COUNTER data from vendors (this includes a Penn-designed SUSHI harvester which we will deploy in MetriDoc), and input from public services staff who consult with students and do bibliographic instruction. Data Farm is also the reporting utility for the BorrowDirect and EZ-Borrow programs (two large scale resource sharing cooperatives in the Northeast). Data Farm is used heavily by more than 70 members of these cooperatives, as well as Penn bibliographers,

public service managers, and the Penn Libraries' Strategic Planning Team. But in certain fundamental respects it is still a prototype for study and experimentation.

MetriDoc represents a more rigorous phase of Data Farm development, and leverages the knowledge Penn has gained since 2000. The key points of distinction between Data Farm and MetriDoc are represented in the following table.

Data Farm Structural Features	MetriDoc Structural Features
Builds a specific extraction and ingestion tool for each type of data source.	Abstracts the ingestion process and delegates specific extraction to small pieces of code.
Builds source-specific data structures in an Oracle tablespace.	Generalizes each log transaction into an abstract representation of an "event."
Resolves identity and bibliographic data after ingestion.	Resolves identity data on the fly from a rich and diverse set of resolution sources.
Exposes a single discovery interface, tightly coupled with the end-user tool.	Isolates discovery of datasets and provides workflow tools to combine, refine, analyze, and augment data, and then expose it through a multifaceted delivery service layer.
Comprises a single technology stack.	Composed of loosely coupled service layers consisting of four distinct services that are integrated through easy-to-use, RESTful interfaces.

The four service layers comprising MetriDoc support the following functions: 1) Extraction of raw data sources. Routines within MetriDoc are designed to "recognize" specific data structures and extract what's of primary interest to measurement, for example, relevant information from a log or database. 2) Transformation of the raw extract into normalized, decoded information (such as the resolving of ISSN numbers into a serial title, or an sfx object identifier into citation elements). Transformation is a complex but critical process that sets the stage for function 3) Loading of normalized and anonymized data into a query-able data repository. The fourth MetriDoc tier sits above the ETL service layers and allows for the integration of the data repository with statistical analysis and visualization tools, or the distribution of flat files for use with statistical programs. A flexible messaging channel orchestrates the flow of data through MetriDoc's services layers.

The MetriDoc service layers are illustrated in the appended diagram and described in fuller detail here:

1. Extraction Service – The extraction API can be accessed directly with code, with a combination of scripts, XML and templates, or for the most common data sources, directly with XML. This process maps the elements of a raw data source, such as a log file, into a MetriDoc document. The MetriDoc document can be XML, json or a coded data structure. Despite the flexibility in

representation, the document is meant to have a strict format to encourage consistency and make validation possible. After the document is successfully constructed, it is placed on the message channel for further processing.

2. Resolution Service – Data elements within a log stream often include encoded or identity information. Encoded data must be resolved to capture the meaningful information for analysis and reporting. For example, Digital Object Identifiers (DOI) or ISSN numbers are commonly used to identify specific instances of articles or journal titles. Identity information provides useful demographic class descriptions about a user's department, status, and rank. The MetriDoc Resolution Service consists of processes that tap external data sources, such as national bibliographic utilities or the university data warehouse, and query for matching content from these sources. Once deployed, these resolvers can be linked in order to resolve data points iteratively within a log or other data source. The MetriDoc document is returned to the messaging channel with enriched data about the bibliographic and demographic components of service events.

3. MetriStore Service – MetriDoc provides a data store service that houses MetriDoc event data processed from source files and exposes that data for user query and retrieval. This service abstracts the actual data store to provide scalability and flexibility—the data store can be a wide variety of

repositories, from relational databases such as Oracle or MySQL, to repository systems such as Fedora or Dataverse, to a mere file system. Additionally, data store abstraction allows storage to be distributed across physical locations for improved resiliency and fault tolerance. Once data is deposited into MetriStore it is indexed to support discovery and extraction. MetriStore exposes a RESTful²⁴ search and browse query interface that accepts query documents from the message channel. Queries utilize the indexes to support dataset discovery and subset identification. Dataset results are formatted by the MetriStore retrieval service as a results document and returned to the message channel.

4. Data Farm Service Layer – This service provides an environment for user interaction with the MetriStore repository, supporting analysis, aggregation, and data transformation services. This service produces a results document or data set to match a user's requested format. Formats are extensible through transformation services and can deliver a wide variety of documents to the end-user or requestor including XHTML, XML, Open Office XML (spreadsheet import), RSS or Atom for syndication services and, of course, MetriDocs as a transport between MetriDoc installations. Other formats such as PDF or SVG graphs could also be delivered. Additionally, the Data Farm Service provides an extensible repository of analysis and aggregation services based on a statistical language such as R or SAS. This service can provide consistent analysis tools that can be shared across domains to assist in comparison, reporting, and analysis.

The four MetriDoc service layers are an orchestrated chain of services that ingest, resolve, normalize, store, index, query, deliver and transform event data regardless of their native structures. It is designed to provide flexibility, extensibility, and consistency to dataflows. The technologies used are common in enterprise applications including Spring, Hibernate, and Java.

Conclusion

The purpose of MetriDoc is to make available vast, unutilized quantitative information in support of library strategic planning and decision-making. Success in this endeavor opens a range of partnership opportunities. Deployed in a

collective environment, a MetriDoc-like framework can:

- provide libraries a tool for conducting the foundational research leading to new performance metrics;
- aid cross-institutional study of collections, which advances collaborative collection development;
- be deployed in resource-sharing initiatives which will help partners identify best practices and optimize the distribution of physical materials;
- increase an institution's knowledge of local research interests and patterns through the demographic analysis of transaction records;
- expose metadata based on resource use to discovery systems for improved resource access and research intelligence;
- enable the integration of usage and expenditure data to identify cost efficiencies and help libraries apportion budgets more effectively across communities;
- gather electronic use data on both locally created and licensed digital resources; and
- provide a platform for relating usage information to customer satisfaction and other parametric measures of quality.

Powerful new tools for visualizing and distributing data are available to the assessment community. Measurement standards for library performance and the potential for creating a robust canon of library metrics are also within reach. The challenge remaining is posed by the data; by the complex and ornery problem of harvesting, structuring, and storing the vast troves of data resting dormant in the systems libraries all use to conduct business. MetriDoc, and ETL solutions generally, provide an answer to this problem. If libraries take a hand in their development and deployment, then a collaborative infrastructure for data warehousing, measurement, assessment, and benchmarking is within reach as well. As a community effort, such collaboration can expedite innovation and instigate new relationships between academic and commercial sectors. (The example of rSmart in the Sakai and Quali spheres illustrates the point.) Gradually, a well integrated network infrastructure for assessment—one involving libraries in critical software design, with commercial companies as genuine collaborators—

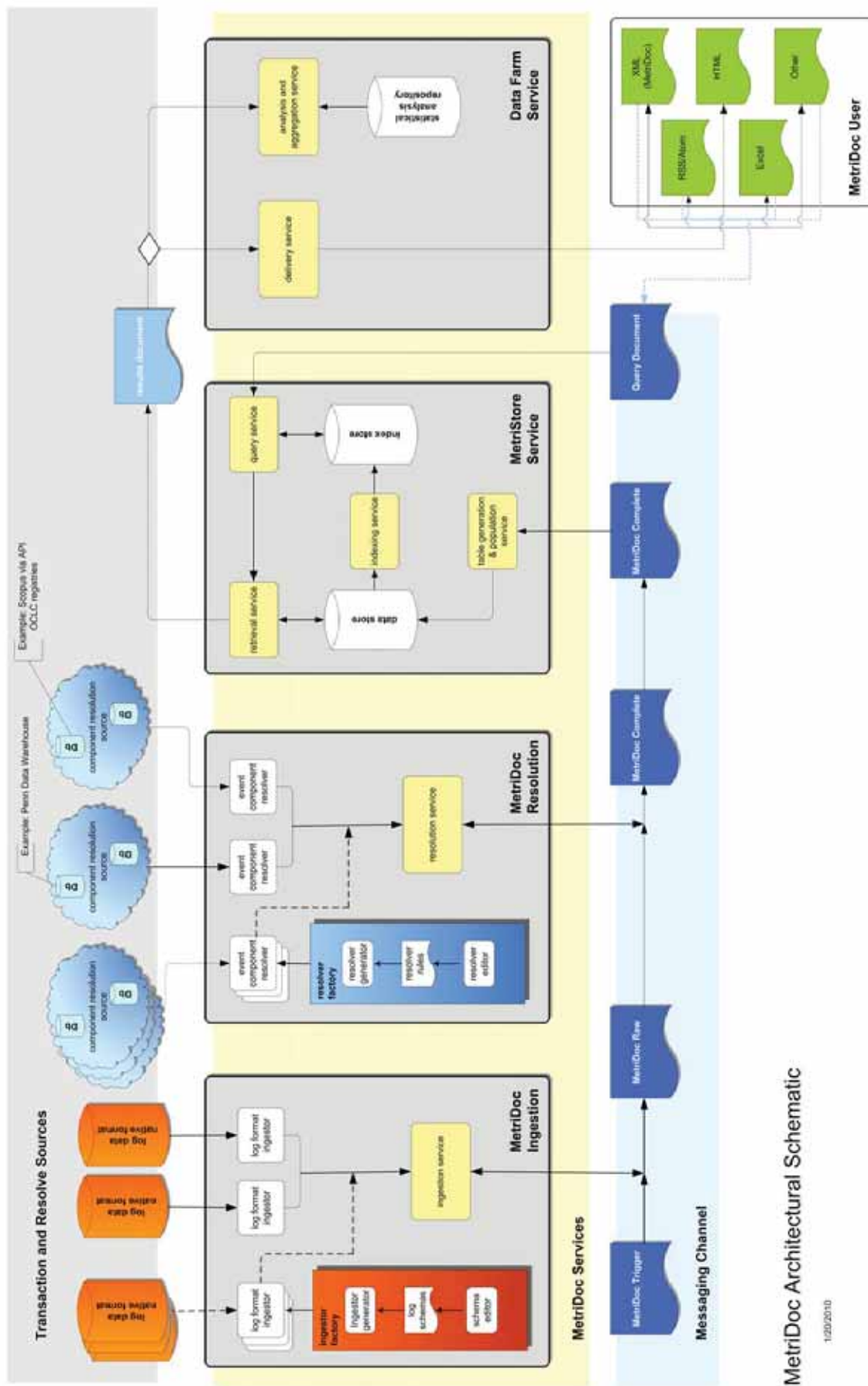
could coalesce and bridge a key obstacle to evidence-based management of library service.

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Notes

1. International Coalition of Library Consortia, <http://www.library.yale.edu/consortia/webstats.html>.
2. EQUINOX, <http://equinox.dcu.ie/index.html>.
3. Association of Research Libraries' E-Metrics: Measures for Electronic Resources, <http://www.arl.org/stats/initiatives/emetrics/index.shtml>.
4. Charles Henry et al. *No Brief Candle: Reconceiving Research Libraries for the 21st Century* (Washington, DC: Council on Library and Information Resources, 2008), 4, <http://www.clir.org/pubs/reports/pub142/pub142.pdf>.
5. Betsy Wilson, "Accelerating Relevance," In *Proceedings of the 2008 Library Assessment Conference, Seattle, Washington, August 4-7, 2008*, eds. Steven Hiller et al. (Washington, DC: Association of Research Libraries, 2008), 14, <http://libraryassessment.org/bm~doc/proceedings-lac-2008.pdf>.
6. Rick Luce, "Raising the Assessment Bar: A Challenge to Our Community," In *Proceedings of the 2008 Library Assessment Conference, Seattle, Washington, August 4-7, 2008*, eds. Steven Hiller et al. (Washington, DC: Association of Research Libraries, 2008), 14, <http://libraryassessment.org/bm~doc/proceedings-lac-2008.pdf>.
7. Although ARL is a COUNTER member, it has been silent on the direction of COUNTER codes and in the research that COUNTER has undertaken with national consortia in the UK, particularly JISC and the UKSG. Indeed outside of LibQUAL+®, ARL has done little to advance the work on new metrics its membership has advocated for a decade.
8. READ Scale, <http://www.dom.edu/library/READ/index.html>.
9. Brinley Franklin and Terry Plum, "Assessing the Value and Impact of Digital Content," *Journal of Library Administration* 48, 1 (2008): 41-47, DOI: 10.1080/01930820802029334.
10. Paula T. Kaufman, "University Investment in the Library: What's the Return? A Case Study at the University of Illinois at Urbana-Champaign," 2008, <http://hdl.handle.net/2142/3587>.
11. James J. Duderstadt, "Possible Futures for the Research Library in the 21st Century," *Journal of Library Administration* 49 (2009): 217-225, 220. Duderstadt argues that the evolution of the library in the digital age prefigures the evolution of the university: "In a sense the university library may be the most important observation post for studying how students really learn. If the core competency of the university is the capacity to build collaborative spaces, both real and intellectual, then the changing nature of the library may be a paradigm for the changing nature of the university itself." This reasoning underscores the critical need for an improved understanding of how scholars interact with and use the services that libraries provide.
12. Efraim Turban, *Information Technology for Management: Transforming Organizations in the Digital Economy* (Hoboken, NJ: J. Wiley, 2004), 550.
13. Critical to the design of DSS are the analysts and managers who have an applied interest in statistical information—the human actors involved in decision-making—as well as the feedback processes through which evidence informs the content and structure of future data collection, analysis, and planning. While Penn recognizes the role of the analyst and organizational feedback loops in a fully realized DSS, we do not include them within the scope of Metridoc or our use of "Decision Support System" as a product of the Metridoc initiative. The focus here is on the computer-centered elements listed in points 1-4 that follow the note on page 5.
14. R Project for Statistical Computing, <http://www.r-project.org/>.

15. Software Environment for the Advancement of Scholarly Research, <http://seasr.org/>.
16. Amos Lakos and Shelley Phipps, "Creating a Culture of Assessment: A Catalyst for Organizational Change," *portal: Libraries & the Academy* 4, 3 (2004): 345-361, http://muse.jhu.edu/journals/portal_libraries_and_the_academy/v004/4.3lakos.html.
17. Charles McClure, *Information for Academic Library Decision Making: The Case for Organizational Information Management* (Westport, CT: Greenwood Press, 1980).
18. Amos Lakos, "Building a Culture of Assessment in Academic Libraries: Obstacles and Possibilities," In *Proceedings of Living the Future II, Tucson, AZ, 1998*.
19. At Penn, where OCLC's WorldCat Collection Analysis (WCA) service has had extensive testing to develop cooperative collecting scenarios, the service has worked with uneven success. The full holdings of target libraries are not entirely represented in the WorldCat database, due to unique or legacy cataloging schema, licensing restrictions, and cataloging backlogs. Moreover, OCLC's algorithm used to match institutional records to master records is known to have inaccuracies. Therefore, total numbers of titles, especially the numbers of unique and shared titles at cooperating libraries may in reality vary from the data found in WCA reports. The degree of variance is not calculable. While WCA data may serve as guideposts, human processing and verification remains a costly, time consuming, and ultimately inhibiting necessity of cooperative collecting.
20. The DSS space is also occupied by commercial firms active in the university market. Here the need is for enterprise level data warehousing to provide metrics related to admissions, student performance, retention, and the like. Firms in data warehousing have not made a foothold in libraries due to the expense of implementation and support.
21. See <http://datafarm.library.upenn.edu/>. The Data Farm website has authentication controls, but this page suggests features available to staff. That said, a number of Data Farm functions deliver data on schedules directly to managers and do not required interaction with the web. In addition, the Penn Libraries Management Information Services provide considerable ad hoc analyses from Data Farm sources.
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MetriDoc Architectural Schematic

1/20/2010

Measuring the Value of Library Resources and Student Academic Performance through Relational Datasets

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Abstract

In a period of economic turmoil, resource scarcity, and increased competitiveness in the attraction and retention of students, the ability to demonstrate the value gained by utilising library resources is becoming increasingly important. Students have unprecedented choice over where they will study, what they will study, and importantly the source, content, and format of learning materials they use; and can effectively bypass the Library. These wide-ranging choices have in effect repositioned the student from being an active though still highly dependent learner, into a consumer of information. This shift in behaviour comes with a learning cost, and it has become a battle that is fought daily in tutorial classes and lectures, as academics and librarians try to encourage students to make better use of high quality sources of information, acquired or subscribed to by the library (at considerable cost). For these reasons, it is more important than ever for libraries to demonstrate to students and stakeholders the value of using the library's resources and services. The challenge, however, is that the value delivered by libraries is often considered to be of a social, educational, or cultural value; values which are difficult to measure.

As an academic library, the focus is on the transformative power of information; and the question to be answered is: does a student's academic performance improve as a result of using information resources made available by the library? The University of Wollongong (UWL) has commenced a project designed to produce the information it needs to unambiguously demonstrate the contribution it is making to institutional learning, teaching, and research goals. It is anticipated that data obtained from the project will demonstrate that those students who do not use the UWL information resources are at an academic disadvantage. The project centres on

the integration and interrogation of a series of discrete datasets, e.g., student performance, student attrition, student demographic data, and borrowing and electronic resources usage data. The project will allow UWL to identify whether a correlation exists between usage of Library resources and academic performance.

Introduction

When the University of Wollongong Library (UWL) first commenced its quality journey in 1994 there was a paucity of measures within the library and information sector to guide the evaluation of quality and effectiveness, to supplement the data demonstrating efficiency. Performance indicators and measures primarily consisted of those mandated by government agencies or professional associations. The emphasis, typically, was on inputs and outputs. This situation is somewhat different now. A Quality and Service Excellence program (QSE), conceived in 1994, provided the catalyst to critically review and evaluate UWL's capacity to deliver services of value to its clients and stakeholders. The QSE encapsulated the improvement goals of the Library; an emerging commitment to total quality management and a recognised need for an overall planning and management framework to replace the well-intentioned, but somewhat fragmented improvement efforts of the past.

To complement the QSE program, UWL adopted the Australian Business Excellence Framework (ABEF) as a change management model.¹ The ABEF provides descriptions of the essential features, characteristics, and approaches of organisational systems that promote sustainable and excellent performance, with emphasis on determining and evaluating customer needs, expectations and perceptions of excellent service. The 'customer focus' category of the ABEF

encourages organisations to assess their ability to understand the needs and expectations of its customers, how customer relationships are managed, and customer perception of *value*. At UWL, the term client is used to describe the individuals seeking to and/or utilising services and resources.

Early forays into assessment indicated that clients' perceptions of Library services were mostly favourable, however, success was difficult to measure and promote due to the lack of robust performance indicators and measures. To address this deficit, the collection, and interpretation of information and data was essential to facilitate and sustain the vision for transformational change. A Performance Indicator Framework (PIF), mapped to stakeholders' needs and expectations was developed, providing a foundation for the systematic review of services and processes using quantitative and qualitative measures. Through the reporting mechanisms embedded in the PIF, it became possible to systematically measure and evaluate performance (i.e., how effectively and efficiently we manage and improve processes) and to assess clients' satisfaction with services and resources. This represented a significant shift in the way that data and information was viewed and used; the emphasis was starting to change from inputs and outputs to measures of outcomes.

The introduction of a new element within the ABEF revealed an area addressed less rigorously by UWL was *customer perception of value*, that is, how clients perceived UWL's competency in meeting their value goals or whether clients believed they received fair value for the 'investment' or cost of engaging with a service. While surveys and feedback systems provide data and information on a range of service elements, they are limited in their capacity to provide information and insight into the perceived value gained by engaging with the library, i.e., the return on the client's effort for using services and resources.

Measuring the Value of Using Library Resources

While the processes for evaluating expectations, performance, and satisfaction with available resources are robust and sustainable; measures of impact or affect are less well addressed. For UWL

the critical impact question is: *what is the value to the student when they use library information resources?* This question cannot be answered adequately through satisfaction indices, or by de-identified usage rates of resources.

Typically, information resources funds represent a significant proportion of the total allocation to libraries. In academic libraries, millions of dollars are committed annually to the acquisition of and subscription to information resources to meet the research, teaching and learning needs of their clientele. Conversely, anecdotal evidence and local research² data shows that many students bypass the Library and almost exclusively use commercial browsers or resources (such as Google, Wikipedia) to fulfil their information needs.

The challenge for this Library (and others) is to maintain visibility and relevance as a reputable interface for coursework and research resources in the context of an expanding information market. What is needed is a credible hook to show the value of engaging with Library resources. We need to produce evidence that shows by using Library resources students can improve academic performance; that students who use the Library get better grades.

The approach chosen to measure the impact or value of library information resources, differs from more traditional approaches to measuring return on investment (ROI). ROI can be defined as income received as a percent of the amount invested in an asset.³ A positive ROI indicates that more benefit than cost has been generated by the process/investment/result; a negative ROI indicates less benefit was generated than the resource provided.⁴ The approach chosen at UWL has focussed not purely on monetary return or loss. Rather, we have sought a way to unambiguously demonstrate to students why using Library resources is worth their time and effort.⁵

It turns out that there is a lot of useful information already being collected that can potentially speak to the value generated by the Library. This information is managed by the Library, and by other units on campus. Internally, we have our Library Management System (LMS). This system, like all LMSs, contains a large amount of

information about our clients, both borrowing and demographic data. There are also other systems on campus used to manage students' university experience; systems that contain information collected before, during and after student enrolment. These systems include information managed by the recruitment arm of the university, information managed by campus Administration, and information managed by the campus IT department; and includes details on enrolment, academic performance, demographics, attrition, equity, alumni, and usage of the Library's resources. Each of these information silos are useful to the Library; they have allowed us to make more informed decisions about the services and resources we provide, and the communication styles we have adopted. However, the real power of this information can only be unlocked by joining these data silos together. Separated, these information silos tell a small and fragmented story about one facet of the student experience. Together, the joined datasets tell a richer story.⁶ Without a joined dataset, for example, we can only know the demographic composition of the overall student population. However, if, for example, the student demographic data was joined to data on relating to usage of our resources, then we would be in a position to know both the demographic profile of Library users, and be able to compare this profile to the demographic profile of non-Library users.

The project we have embarked on involves joining as many datasets as that is ethically, politically, and technically possible to join; with the aim of producing data that will allow the Library to:

- identify the value it contributes to the university
- improve usage through targeted promotions
- provide more outcome focussed KPIs
- drive deeper improvements

The main requirement for joining any two datasets together is that that each dataset must contain a common unique identifier. All of the systems mentioned above do contain a unique personal identifier, the student number. The political, ethical, and technical accessibility of the datasets varies from system to system. As an absolute minimum, we needed to be able to join information about the usage of our resources to student demographic and academic performance. Anything less would not deliver a worthwhile

return on effort. The joined datasets are encapsulated in a "cube,"⁷ and managed via Business Intelligence software.

The University Performance Indicator Project Team has built a cube for the Library that links usage of Library resources to student demographic data, and student academic performance (the "Library Cube"). Other cubes that will be linked later in the year to the Library Cube include course and subject, and student attrition. Later plans include linking to the student satisfaction, equity, and recruitment and admission cubes. The Library Cube is currently still under development, and should be completed by the end of 2010.

Converting data about usage of our resources into a usable form proved to be one of the more challenging aspects of the project. Information about usage of our resources is held in two places. Information about anything that is borrowed from our physical collection is held in the LMS. Unfortunately, the information contained in the LMS is locked inside a black box that for the most part only allows access to aggregated data, or individual records. We can, however, export a flat file containing a snapshot of all the current clients, and the books they have borrowed to date. This is not as much information as we need, but it is information we can use. We export this 'snapshot' each week, and the difference between two snapshots represents the amount borrowed by each client over the period between the snapshots.

Like most libraries, demand for our physical collection is diminishing, while demand for our electronic resources is rising. Consequently, the long term success of the project hinges upon being able to access information about usage of our electronic resources. Fortunately, this information is captured in logs as part of the authentication process. The log does not contain all the information we need, but it does contain information we can use.

Each time a user accesses our electronic resources a record is written to our ezproxy log. This log contains the student's unique ID, the electronic resource they accessed, and the time they accessed the resource. The number of log entries generated depends upon the content and code of the website that contains the resource the client is accessing.

Consequently, the number of log entries is arbitrary; so there is no value in counting the number of entries. However, we do know which database platform they used, and in many cases the actual database. So, in the spirit of pragmatism, i.e., take what you can use, we decided to convert the logs into meaningful data as follows:

- The day is divided into 144 ten minute periods.
- If a user accessed a database during a ten minute period, then the name of that database is captured.
- Any further accesses made to the same database during the ten minute period are not recorded. The user either accessed a given database during a ten minute period, or they did not.

Using these rules, we will be able to identify how many different electronic resources a user accessed during the day, and for how many ten minute periods they accessed these databases. The number of ten minute periods can be converted into a score (count), with a maximum score of 144 for a day for a given database. This method will provide a proxy measure for sessions—which despite its limitations should give a reasonably reliable and valid indication of the depth and scope usage.

Aside from the technical challenges, there were also ethical, legal and political issues to resolve.

Privacy

The primary ethical and legal was privacy. The University of Wollongong's *Privacy Information Sheet* outlines the 12 principles to which the University must comply regarding the collection, storage, access, use and disclose of personal information.⁸ Fortunately, there are no legal barriers, as UOW has consent to use personal information for the project, via its Privacy Policy to which students must agree as part of their enrolment.

At an ethical level, the additional privacy risks potentially posed by the project have been eliminated by the way the personal information will be managed. Privacy is only an issue to the extent that it involves the use, disclosure, etc., of *personal* information. Information is only personal if it is possible to uniquely identify an

individual from the information in question. The project will result in the construction of a cube built by joining several datasets, all of which will contain personal information. However, the Library will not be able to use the cube to drill down to see a specific individual's personal information. In other words, the data that the Library can view in the cube will always be aggregated, which means we will not be able to identify a specific individual's usage, except in the highly unlikely situation where a very small number of individual belong to the variable contained within a dimension in the cube (e.g., hypothetically, if we only have 5 students from Botswana, then it may be possible to identify those individuals from the manipulating various aggregated views filtered to citizenship).⁹ In all cases, the personally identifiable data that could be gleaned from the cube is significantly less than that which can already be ethically and legally obtained by the Library from its LMS, logs, and access to student management systems. Moreover, access to the cube will be even more restricted than is the case for the other systems that contain the same information.

Executive Support

The project involves doing something that is quite different for a Library, and it requires the support of other units, and their executives. Consequently, it is only healthy and expected that the project should encounter resistive inertia in some places. The Library Senior Executive provided full and enthusiastic support for the project from the beginning. Without this support, the project could not have succeeded.

The Library has been very fortunate in the sense that the campus Vice-Principal (Administration), has been and continues to be a major force behind improving performance measures at the University, notably through the creation of the Performance Indicators Project Team (PIP). Our goal to improve our ability to measure our performance sits very well with the Vice-Principal's vision.¹⁰ Through carefully planned communication and demonstrated goal alignment, we were easily able to obtain the external senior executive support we needed for the project to succeed.

Other libraries considering pursuing a similar project may not be as fortunate as we have been in

obtaining support, and may benefit from reading Lombardo and Eichinger's writings on Political Savvy and Organisational Agility.¹¹ From a practical point of view, anyone considering such a project should allow their Library Executive at least month to absorb, understand, and commit to undertaking such a project; and allow at least six months to obtain support from all the necessary units. Most importantly, undertaking such a project is only feasible if most of your student data is housed in OLAP cubes, or managed by other business intelligence software with similar functionality. Our project could not have got off the ground without PIP; they *are* the team that built the Library Cube.

There are three broad uses for which the Library plans to use the information: to improve accountability; to support process improvement; and to support marketing.

Accountability

UOW makes a significant investment in its Library. In 2009, the Library had a budget of over \$12M AUD, representing 4% of the campus budget.¹² The campus expects, and is entitled to know, the return it is obtaining from investing in the Library. It is highly unlikely that the Library will ever be able to provide a hard answer to this question, given that many of our activities generate real but largely unquantifiable value. For example, what value could be placed on rekindling an individual's interest in learning? How much of that value can be attributed to the Library? Nevertheless, the project will allow us to provide better performance data than we have in the past.

We actually have seen a positive correlation between borrowing activity and academic performance for the data we have put into the cube so far. But we have not yet put in all the desired data elements (e.g. eresources use) for that correlation to have much meaning. Most importantly, the Library understands and recognises that it cannot claim *all* the credit for increased academic performance. Clearly, students would not perform nearly as well without the guidance, support, research and teaching activities of academic staff. But it is also equally true that a student could fail their degree if they do not read anything. This point cannot be overemphasised. Academic learning is about

exploration and intellectual growth, and there are many paths to this destination.¹³ However, despite all the technological changes, the best way to grow academically is still by reading from and engaging with the body of knowledge generated by scholarly enquiry.¹⁴ Students read from many places, and we hope to show that students are better off reading material from our collection.

The data we obtain from this project will allow us to demonstrate that those students that do not use our resources are at a disadvantage academically, and we will be able to quantify the degree of disadvantage. We will be able to quantify this disadvantage in the both in terms of lower academic performance, and higher attrition rates.

Process Improvement

The Library Cube will provide the information we need to further support continuous improvement in three areas: collection development; academic relationships; and marketing.

The Library spends a significant proportion of its budget subscribing to electronic databases. We are able to obtain information on the number of downloads associated with subscriptions, and we combine this with cost data, to create rough indices, such as cost per download. The Library uses this information, in consultation with academic staff, to continually improve and develop its collection. There are, however, two major limitations of this data: it is not linked to academic performance; and it takes far too long to get the data.

The Library Cube will be updated weekly, which will allow us to view in a much more timely fashion how our electronic resources are being used. We will also be able to see at the end of each session, which resources had a significant impact on academic performance, and which resources did not. We will be able to use this information to make more informed decisions about electronic resource collection development and to identify and replicate the processes that led to specific resources facilitating higher academic performance.

On this last point, we hope and expect that the Cube will provide information that will support the Library in taking a more holistic systems-based approach to improving the contribution the

Library makes to academic learning. For example, we will have enough information to be able to differentiate between those courses that have a higher proportion of Library users, and those that don't. We will know which academics run those courses; so we will be in a position to be able to begin to investigate what specifically some academics are doing differently that results in their students being more likely to use the Library. This will allow us to identify what behaviours and practices support greater Library usage; which in turn will provide the information we need to champion and support the rollout of best practice across the campus.

Marketing

The Library Cube will also allow us to integrate marketing more closely with our core business activities, and to do so with surgical precision. For example, we will be able to provide academics with the evidence they need to effectively promote the Library to their students. We will also be able to draw on this information in our own teaching activities, to convincingly demonstrate the research behaviours that led to academic success. We will know which specific group we should target to improve take-up. Most importantly, we will know almost immediately whether our marketing efforts succeeded, which in turn will help us to make informed decisions about whether to change tack, or continue with more of the same.

Conclusion

The ability to demonstrate the value of libraries and their collections is becoming all the more important and undeniably challenging in a period of generational change embodied in a fundamental shift in students' attitudes to using information. Not only do we need to convince the university executive and faculty of the value of libraries; our most challenging audience is increasingly that of the student body. We needed to garner evidence that would unequivocally demonstrate that academic performance can improve by using a library's information resources.

To address this problem, a multidimensional approach to systems design was implemented, requiring not inconsiderable collaboration and cooperation between the Library, University Administration, PIP, and ITS. The project centred

on the integration and interrogation of a series of discrete datasets, e.g., student performance, student attrition, student demographic data, and borrowing and electronic resources usage data. Although the time required to establish the problem statement, business rules and reporting requirements has been lengthy, the genesis of the Library Cube is proving worthwhile. While initial reports are rudimentary, and do not yet incorporate data on eresource usage (e.g., online journals), results are favourable in demonstrating the value of using Library information resources in coursework. Based on the data generated to date, students who borrow Library resources, *do* outperform students who don't. Early trends show up to a 12 point difference in grades.¹⁵ Such improved performance could influence: a student's decision to stay at University or leave; the overall quality of the learning experience; the capacity to produce students who embody the University's Graduate Qualities, notably that of being an independent learner; who values scholarly information resources. Importantly, the Library Cube will help to identify those students who use the Library's resources infrequently, or not at all. Through this knowledge, highly tailored and tightly focussed promotion and marketing strategies can be deployed, with immediate feedback on the effectiveness of chosen strategies.

The Library Cube signals a new milestone in the UWL's quality journey. Well established measures of effectiveness and efficiency will be further complemented by measures of impact and value, allowing us to step even closer to the goal of having *effective and valued partnerships with the University community to realise teaching, learning, research and internationalisation goals.*

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Notes

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Cutting the Knot: A Holistic and Pragmatic Framework for Public Services Measures

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Abstract

Collecting public services output measures, such as number of reference transactions, has been with the library profession for a long time. Keeping track of these basic indicators of operational activity has allowed us to understand trends in user behavior and how library functions adjust to changing needs. At Cornell University Library, for example, the categories of reference and instruction are further codified by the existence of two separate data collections systems producing the unintended consequence of inconsistent definitions and collection practices among unit libraries when it comes to recording our diverse operations.

It became evident that a holistic review of public services reporting needs was in order to produce a new framework. Our approach was to sidestep as many definition debates as possible by designing a series of easy questions for public services practitioners to answer describing their transactions with users. The paper will share details of the framework such as the logic of the questions asked and the proposed user interface.

Problem

Collecting public services output measures, such as number of reference transactions, has been with the library profession for a long time. Keeping track of these basic indicators of operational activity has allowed us to understand trends in user behavior and how library functions adjust to changing needs. Unfortunately, organizational silos such as reference and instruction, around which these measures tend to be defined, reflect traditional service models and usage patterns that do not always accurately describe a transaction. Such rigid operational categorization makes it difficult to accurately collect transaction data related to newer service models such as embedded librarianship, outreach,

and consultations.

At Cornell University Library, for example, the traditional categories of reference and instruction are drivers of measurement, and each is further codified by the existence of two separate data collection systems with separate committees overseeing the two functions and two systems. In an era of merged job descriptions and patron contacts that take place off-desk, off-site, and off-campus through a variety of communication channels, the unintended assessment consequence of such traditional and rigid categories is inconsistent definitions and collection practices among unit libraries. This situation has led to both undercounts and overcounts as well as prolonged, passionate, but fruitless debates on how different operational transactions should be classified using the existing categorical standards.

Such debates are often fueled by conflicting needs. Central library operations have an important need for data that is based on consistent definitions and practices so that system-wide counts can be meaningful. For example, if one unit starts counting consultations as reference transactions while another counts them as instruction sessions, that will cause misleading results along the lines of what we saw last year at Cornell: unit A increased the number of instruction sessions by about 12% and the number of participants by over 25%, while unit B increased the number of instruction sessions by over 70% but the number of attendees dropped by almost 60% to an average of only 2.3 participants per session. Such results are based on different definitions and are in nobody's best interest as they throw off any attempt at trending, internal comparisons or external benchmarking. However, unit libraries also have a very legitimate need in recording data in a way that the results will be helpful for supporting decisions based on their

unique service models. For example, although directional questions are not being collected centrally, individual units and service points might have an interest in such numbers for making staffing decisions. Or in some units traditional, over-the-reference-desk transactions might be outweighed in importance by informal information contacts that might happen in the lunch line or at the water cooler—tracking these is going to be more important for small, embedded units, than large libraries. Yet another conflicting need might come from managers or front line librarians, whose interest is in demonstrating how much effort certain transactions might take. At Cornell, for example, the fact that one could record preparation time in the instruction tracking system but not in the reference system might have influenced some views about where to record a specific measure that seemed borderline.

One need that is uniformly shared by all stakeholders is an interest in measures that more accurately portray current operations and an approach that is flexible enough to allow for real time querying based on a custom set of variables. Concentrating on this shared need is what led to the framework we developed as a solution.

Approach and framework

It became evident that a holistic review of public services reporting needs was in order to produce a new framework that would transcend the traditional categorization of every transaction as either reference or instruction. Thinking through our institutional history of debating definitions, we realized that most of them came from trying to figure out whether something was more like reference or more like instruction, when in a sense there was no good resemblance to either category. Some librarians' view that one of these categories was more prestigious or better rewarded also played into some of the confusion. We reasoned that if we could only get away from having to apply controversial definitions up front, we would solve most of the data collection inconsistencies plaguing assessment. We envisioned a single reporting system (i.e. get away from the need to answer the reference or instruction question up front) that, instead of forcing librarians to categorize user interactions, stepped them through a number of easy questions to describe the interaction. Could sidestepping the controversies combined with flexible querying

capabilities net us a better result than debating the fine points of specific definitions up front? In other words, could we move the application of definitions based on the specific needs of the moment to the query end of the system, as opposed to the input end? Such a flexible approach, if workable, would support both consistent central reporting and local decision-making nuance by allowing reporting based on the most relevant combination of variables. The biggest challenge would be to keep the process lightweight enough for busy practitioners to be able to record the transaction information without undue burden.

To identify what information was important to gather about patron transactions for decision-making and descriptive purposes and to identify a logical flow of the questions, a working group developed the following list of key questions:

Key Questions

- How many people did you interact with?
- Where were you when the interaction took place?
- Did the interaction involve the knowledge, use, recommendation, interpretation, or instruction of information sources or systems?
- Question/topic: _____
- Patron status
- Was this a presentation, no or yes. If yes, what type
 - If "course related session" or "your own credit bearing course," enter course number.
 - If "your own credit bearing course" or "multi-session class (not for credit)," enter number of sessions.
- What was the duration of direct contact with patron?
- Did it relate to a) info content, b) software/systems, or c) equipment
- What was the initial communication channel

Optional Questions

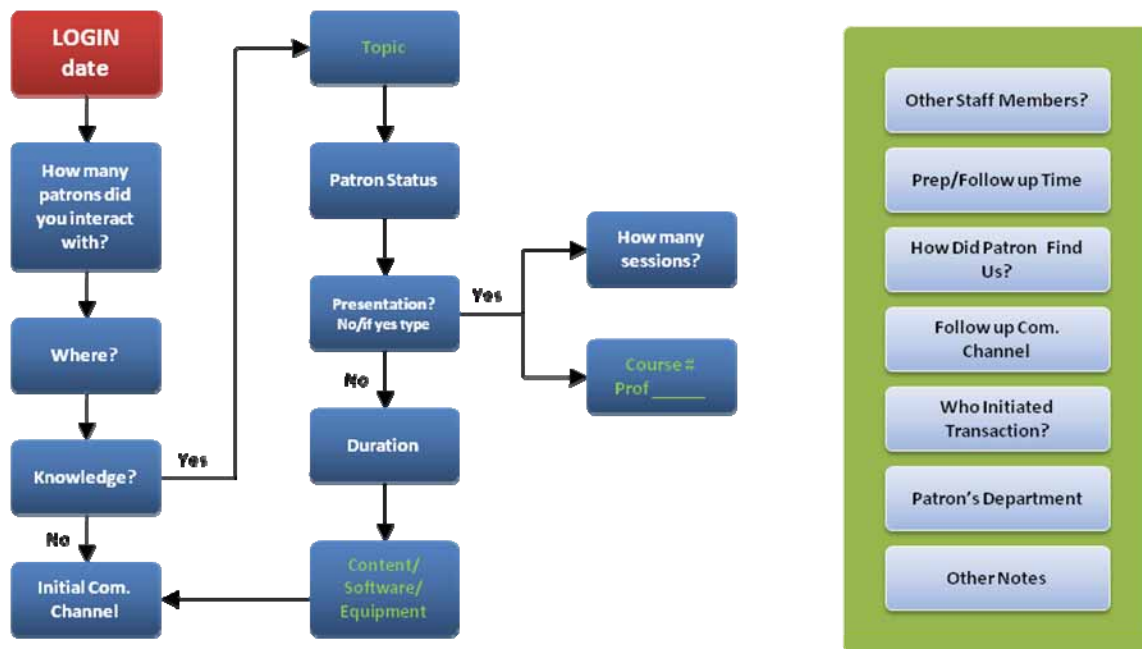
- Did this transaction involve any other library staff members? Who? .
- Follow-up communication channel
- Prep/Research time
- Was transaction initiated by patron or librarian?
- How did they hear about us?

- General notes

Notice that the third question in the bulleted list above refers to an ARL definition¹ of what reference is. This was one judgment call that we could not figure out how to eliminate from the process of reporting transactions. Obviously, interpreting this question is far less straightforward than stating how many patrons one helped and where. However, this is a key question not just for making sure we are meeting the outside reporting requirements to ARL and NCES, but also for classifying the intellectual level of the transaction. A quick review of less than 2 months' worth of data collected at the time of

writing this paper seems to show varying practices of what qualifies for a "yes" in response to this knowledge question, foreshadowing ongoing conversation about these practices in the future.

The following chart illustrates the logical sequencing of the questions. The working group used this flow chart to see how different transactions would "travel through" the sequence of questions and to test the framework on some of the situations that proved our earlier system broken. The framework passed these test cases with flying colors.



As already mentioned, the amount of time it would take for librarians to record transaction information was a concern for the project from day one. Although the conceptual flow chart above might suggest otherwise, the solution the group was looking for did not include multiple screens, in fact, we wanted to see just one screen per transactions with lots of prefilled default selections that favored the most frequent and busiest situations, as well as "sticky" information gleaned from the login and carried over to multiple screens throughout the session (white lettering in the above chart refers to presence of

default or "sticky" information, green lettering shows a need for actual response/input). We envisioned most desk transactions to take no more than 15 seconds to report, with options for going back and editing entries later if needed. Library-wide discussions made it clear that the system we were planning needed to accommodate both NetID based personal logins and desk logins for student staff and some other situations.

Beyond the data collection piece, the working group also discussed and concept tested reporting

requirements. Our test cases included the following among others:

- For external reporting of reference questions all non-presentation interactions would be pulled that involved “knowledge”
- For external reporting of presentations all presentations would be pulled that involved more than one patron
- For scheduling decisions at a particular service desk at a particular skill level all equipment issues handled at desk A could be pulled
- To show our various aspects of the library’s “reach” of its user communities we could pull a variety of combinations of a variety of variables such as:
 - Number of people we interacted with
 - Number of interactions that took place outside of the library initiated by the librarian
 - Number of faculty interactions lasting longer than X minutes

We held a series of discussions to introduce public services practitioners as well as administrators to the approach. The discussions netted some constructive criticism, yet revealed nearly unanimous support to proceed with the approach—a feat that no previous discussions of definitions or attempts at standardizing collection practices had achieved. It was decided to create a system based on the framework.

Implementation

With a solid framework established, we organized implementation into four phases: engaging internal stakeholders; building and testing of the new system; training public service practitioners; and finally, benchmarking performance outcomes to continuously monitor, evaluate and improve the new system.

Given the significant change the new approach would bring to our operating model, the group identified several factors critical to managing the upcoming transition:

- Aligning technical, public services, and assessment structures into one integrated operating model, which supports the established framework, has strong sponsorship from senior management, and is within the library’s ability to implement.

- Investigating and assessing possible in-house and outsourced approaches; understanding ideas and drawing conclusions from similar-size organizations.
- Effectively engaging key stakeholders early in the process and maintaining engagement throughout the implementation stage.
- Building strong central coordination with alignment across individual library units and key functional groups.
- Ensuring sufficient operational and long-term functional support.

In-house development

A complex system for measuring public services can be costly to develop and challenging to maintain. Therefore, factors such as cost, maintenance, support, and security were at the top of our list to find a development solution for a sustainable Web-based system. The implementation team explored and evaluated numerous in-house and outsourcing options used by libraries nationwide. We felt it was particularly important to establish baseline data to make meaningful comparisons and analyze the existing options. While most commercial vendors offered a low-cost development and long-term maintenance alternative, our biggest challenge was finding a platform that allowed sidestepping the use of definitions upfront. Given our need for a system that does not rely on definitions as well as the importance of editing and reporting on any combination of relevant input variables, we chose to develop the new system in-house, using the internal resources available at Cornell University Library.

Count It

The new application for counting public services transactions, dubbed Count It, was developed in PHP using jQuery for database connection. The system was built from scratch to provide maximum flexibility in addressing the needs and specifications of the existing framework.

In an effort to align the developing system with the library’s mission, our pre-defined framework, and user requirements, we chose to engage our key stakeholders early in the development process. The implementation group worked with senior management to identify and recruit key practitioners to evaluate the new system and test usability for all target audiences. We established a

two-way electronic communication process for collecting user feedback and held several in-person feedback sessions to gather and analyze testers' input.

Continuous involvement from various public services, instruction, and circulation groups triggered further customization of the new interface. Additional features, such the quick entry form for busy public desks were developed to support and accommodate individual groups and service models. This ongoing collaboration also paved the way for a smooth transition in the final stages of the implementation process.

As custom requirements for individual units became more complex, it became crucial to establish collaborative working relationships with public service practitioners in diverse settings in order to develop best practice guidelines and integrative models for custom use of the new system. We worked to strike a balance between having a system that would meet everyone's general needs while keeping it streamlined and succinct for fast data entry.

Training

Given the natural constraints of implementation resources, the group needed an efficient, cost and time-effective way to provide training to staff across the Cornell library system. Individualized training approaches were developed to meet the needs of public service practitioners and respond to specific requests assessed during the development and research stage of this initiative. Our training group offered a combination of in-person and virtual sessions to train practitioners in the use of the new system. The training modules included a number of sessions offered to unit library representatives. Applying a train-the-trainer approach, these sessions offered information to support the internal training program and helped disseminate the use of the new system.

The second program targeted varied groups of professionals across the library system, responding to specific sets of needs from Cornell selectors, instruction coordinators, access services group, etc. The reporting considerations for these service clusters helped determine policies for counting certain types of transactions. Furthermore, our discussions with cross-unit

practitioners helped assess the value and validity for capturing certain types of information, such as time spent on various collections, cross-unit outreach efforts, and individual interactions with the university faculty and staff. Having evaluated broader issues, such as patron privacy, some service groups chose to establish supplemental workflows to better address internal service models and information needs.

Several factors, such as the functional role and organizational structure of the service group affected the content and format of these training sessions. The format of our presentations ranged from lecture style to interactive and informal discussion. This approach allowed for optimum levels of learning to occur while sharing knowledge and establishing best practices. The trainers' flexibility allowed us to adapt content and meaningfully reach the many professionals who were expected to use the new system in a wide variety of settings. As a result, participants gained examples that were most relevant to their work environment. It also gave our trainers control and autonomy in molding the material to a structure and format that was most effective to meet the needs of particular groups and units.

New workflow, reporting, and documentation

As the implementation of the new system evolved, we became more aware of the connections between our central data requirements and the internal reporting needs for cross-library service groups. Having bypassed the need to apply definitions upfront has allowed us to capture a much broader range of public services interactions as well as improve our measures to reflect the realities of reference, instruction, and outreach across all library units.

The improved speed and usability of the data entry process encouraged several unit libraries to change their existing data collection model. While some libraries continue to rely on pre-scheduled sampling weeks to calculate annual volumes of public services transactions, more units are switching to recording all user interactions throughout the fiscal year.

On the reporting end, our new system provided a comprehensive framework for organizing and collecting data in one central place. Our work with individual library units and service groups

revealed the need for displaying select measures in a dashboard format, where both the senior management team and public service practitioners could instantly see the rate of progression for their departments as well as run queries across the entire system. The new reporting feature allows users to pull, display and export data in a variety of different formats to accommodate both internal and central reporting needs.

This newly established flexibility of applying definitions on the reporting end of the data collection process required strong documentation support. Aside from providing information to support the process of entering data, we needed to ensure overall transparency by disclosing how transactions are being tracked and what performance measures are being used for the Library's central reporting needs. Extensive documentation in addition to detailed specifications for ARL information contact counts was provided to our users in a convenient FAQ format. Users of the system are also encouraged to share their thoughts and provide feedback via an online suggestions box available through the main interface of the new system.

Promoting the strategic significance for recording and measuring volume of our public services helped ensure active user engagement and accountability throughout the implementation process.

Ongoing development

Understanding that the implementation of the central data-gathering system for public services cannot be considered a one-time project, we worked to transfer long-term ownership to the

key service groups in the library. To ensure the new system evolves through a continuous cycle of ongoing development, monitoring, and improvement, we scheduled ongoing evaluations of its progress and identified several future milestones for user adoption, training, and usability. We hope this continuous self-assessment process will help us keep up with the needs of public service practitioners as well as respond to the continuous change in patron requirements.

Conclusion

Stepping away from the need for public services practitioners to categorize transactions into our traditional operational silos has the promise to better represent our diverse operations. It also allows an easier consensus on what measures to collect by allowing for a more flexible framework and for data rich enough to support both national and institutional reporting and local decision-making needs. The result is a system with increased system-wide buy-in, improved consistency of data collection, and a flexible reporting feature that facilitates consistent assessment. Ongoing monitoring of the results will prompt continuous improvements to both the system and the process.

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Note

1. Definitions of Reference from Reference and User Services Association (RUSA): <http://www.ala.org/ala/mgrps/divs/rusa/resources/guidelines/definitionsreference.cfm>.

Academic Library Administrators' Uses and Perceptions of Performance Measurement Information in the Strategic Development of Services and Competitive Responses

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Abstract

The purpose of the study is to examine academic library administrators' uses and perceptions of performance measurement information as it applies to the collection, use, and application of performance measurement information in developing new services and competitive/strategic responses, retention of leadership, and the overall competitiveness of the library. A mixed methods design and survey instrument was incorporated into the research study and will be implemented online to gather data from the intended research population. Interviews with key informants (members of the study population identified by their peers as being especially knowledgeable or experienced with organizational performance measurement data/information) will follow up the online survey to clarify and explore the survey results.

The research population includes the head library administrators (directors, deans, etc.) of the seventeen state university libraries, fifty-eight community/junior colleges, and over 50 private academic libraries within the state of North Carolina. Data related to the use and perceptions of performance measurement information by head library administrators themselves and in how they use performance measurement information to develop new services and competitive/strategic responses, retention of leadership, and the overall competitiveness of the library. The researcher hopes to be able to generate grounded theory that describes the use of performance measurement and other competitive data/information by academic library administrators from the data analysis. The results of the study data analysis will be used to develop and implement learning resources to support and enhance professional and continuing education

resources in administrative information use in strategic decision making, assessing organizational performance, and effective use of performance measurement data and results in the strategic decision making process.

Introduction

Today's competitive service environment (defined by the author as the geographical and digital service provision space of an organization which is accessible by or has a direct impact on service delivered to organizational stakeholders) for academic libraries includes a variety of strategic factors. These competitive service factors include increased accountability, economic pressures, leadership retention challenges, and educational delivery and technology changes that impact the ability of the academic library to compete for strategic resources, retain effective leadership and staff, and impact customers in an effective and continuous manner. The economic pressures include increased accountability; reduced access to and reduced amounts of resources; reduced hours of operation and staffing; repurposing/restructuring or even closures of service outlets; and for-profit companies providing direct competition for or outsourcing of selected components of the library's traditional information resources and services. While these strategic pressures have always been a part of the library's service environment, the cumulative long term impact of these strategic factors in the current economic and accountability driven service environment is creating a strategic situation where academic libraries need to effectively compete and develop new services and strategic responses in order to maintain (or improve) their status within their service environment.

In responding to these strategic factors impacting the academic library service environment, library administrators and leaders need to identify and implement new effective, innovative strategic responses and services to strategically counter the competitive service factors (i.e., increased accountability, economic pressures, leadership retention challenges, and educational delivery and technology changes) in their service environment. One of the most important strategic counter responses to these competitive service environment pressures requires increased effectiveness of the organization's leadership and staff. Retaining effective organizational leaders (at all levels of the organization) improves organizational knowledge and learning abilities that enable many of the other types of necessary strategic counter response development (i.e. development of new services, innovation of service delivery, increased effectiveness in resource use, and other competitive strategies).

In order for the library's leaders and administrators to effectively develop strategic responses and counter responses, library administrators must be able to make effective strategic decisions based on evidence. Making effective decisions requires that library administrators can use, analyze, and interpret strategic information (i.e., performance measurement data information) effectively. As the library organization and its service environment increases in scope, mission, and complexity while being impacted by strategic factors (i.e., increased accountability, economic pressures, leadership retention challenges, and educational delivery and technology changes), using strategic data/information effectively in decision making and in developing strategic competitive responses will become a more critical skill for library administrators to possess and use effectively. However, the current use of strategic information (i.e., performance measurement data/information and other types of competitive information) by academic library administrators is not well documented or assessed. Do academic library administrators use or perceive a value in using performance measurement information to make strategic decisions and develop new services and competitive responses?

Research Question

The overarching research question for this study is how do academic library administrators use performance measurement data/information? Additional sub-questions developed to address specific areas of focus in the research design include:

- Sub-question 1: How are performance measurement data/information collected by library administrators?
- Sub-question 2: How do library administrators use the collected performance measurement data/information?
- Sub-question 3: What are library administrators' perceptions of using performance measurement data/information?
- Sub-question 4: How is performance measurement data/information used in developing new services and strategic responses?
- Sub-question 5: Does the competitiveness of the head administrator impact their use of strategic or competitive data/information within the library organization?
- Sub-question 6: Do library retention policies and practices affect the library organization's ability to use performance data/information to develop services or competitive responses?

The collected data and analysis of the study findings will be used to address the six sub-questions, with each sub-question providing some evidence for an aspect of the overarching question. By documenting and analyzing the responses to these questions, the author hopes to generate theories/models of performance measurement data/information use by library administrators in the strategic response process.

Overview of Methodology

The study of academic library administrators' use of performance measurement information (and other strategic/competitive information) is a variation and repetition of the author's 2001 dissertation study of performance measurement use by public library administrators in Florida public libraries.¹ The academic library study will vary from the author's previous study in that it uses a different (academic library) library administrator type for the study population than

the first (public library) and uses a wider study population scope. The current academic library administrator study will generally repeat the methodology and design of the author's previous public library study in order to benefit from the effectiveness, reliability and validity of the survey instruments, processes, and data collection/analysis tools developed previously.

The academic library administrators' research study population includes the head library administrators from North Carolina's academic libraries. The study population includes the head administrators from the seventeen (17) State University System Libraries, fifty-eight (58) Community Colleges Resource Centers, and the estimated fifty (50) private academic institutional libraries.

In order to address the research question and utilize both the qualitative and quantitative data available to study the overarching research question, a mixed methods design in three component stages incorporating both qualitative and quantitative tools was selected to maximize the benefits of the potentially rich data sources of data available, increase the opportunities to establish baselines of information use by library administrators, and to identify any possible grounded theory of library administrator performance measurement information use (see Table 1 Data Source Foci - Question Alignment Table below data source alignment to the research questions). The three component stages of the study will include in sequence:

- Online survey instrument
- Key informant interviews
- Group interviews of organizational administrators

Table 1 Data Source Foci - Question Alignment Table

	Survey	Interview – Key Informant	Group Interview – Organizational Administrators
Sub-question 1: How are performance measurement data/information collected by library administrators?	X	X	
Sub-question 2: How do library administrators use the collected performance measurement data/information?	X	X	X
Sub-question 3: What are library administrators' perceptions of using performance measurement data/information?	X	X	
Sub-question 4: How is performance measurement data/information used in developing new services and strategic responses?	X	X	X
Sub-question 5: Does the competitiveness of the head administrator impact their use of strategic or competitive data/information within the library organization?	X	X	X
Sub-question 6: Do library retention policies and practices affect the library organization's ability to use performance information to develop services or competitive responses?	X	X	X

In order to best access this study population, an online survey instrument was identified as the most effective way to maximize participant access and ease of use in gathering the necessary data. The academic library administrator study only survey instrument is based on the author's previously used and tested public library administrator survey instrument. The academic survey instruments will collect quantitative data (i.e. demographics, library outputs, PM use and frequencies, and resources allocated) and qualitative data (i.e., perceptions of value and use, key informant interviews, strategic management styles, competitiveness descriptions, and PM use

and value) will be collected and analyzed. The survey instrument will be disseminated using Qualtrix© for distribution, data storage, and analysis as it is offered by East Carolina University in support of faculty research and meets all of the technical requirements to disseminate the survey for the study. The complete data collection includes the following:

- Qualitative methods/data for analysis:
 - interviews of key stakeholders, library administrators, and the supervisors of the library administrators, i.e. local government officials, college/university

- officials, etc., (interviews will be conducted by telephone and email)
- review of the library professional literature
- examination of library long range/strategic plans for evidence of performance measurement use
- case studies of libraries with effective performance measurement practices (as identified by key stakeholders and willing to participate in the study)
- Quantitative methods/data for analysis:
 - survey of library administrators' use and perceptions of the use of performance measurement information including data collection methods used
 - types of performance measurement information collected
 - resource allocations in support of performance measurement
 - how performance measurement information is used by the library administrator
 - how library administrator's experience, education, and knowledge skills and abilities (KSA) with performance measurement information may affect use and perceptions of performance measurement information

During the research study, study population members will be asked to identify eight to twelve key informants (members of the study population identified by their peers as being especially knowledgeable or experienced with organizational performance measurement data/information) which will be interviewed by the researcher at the conclusion of the survey. Key informants will be interviewed using participant observation methods regarding their strategic and

performance measurement data/information use and perceptions along with their perceptions of the study population's strategic and performance measurement data/information use and perceptions. Additionally as part of each interview, each key informant will be asked to clarify unusual survey responses; confirm initial findings of the survey results; and explore future research needs. The key informant interviews will be conducted in a partially structured format with all results being coded and reported in ways that do not identify individual library administrators or individual libraries.

Lastly, the researcher will use a combination of the results of the online survey and key informant interviews to identify between four and eight libraries to conduct group interviews of the libraries' administrators focusing on sub-questions 2, 4, 5, and 6. These sub-questions were chosen as a focus for the group interviews as they would provide the most strategic opportunities to directly observe, document and describe the most strategic aspects of the information use and explore outliers and study results in ways that would not be possible in the online surveys or key informant interviews formats. The group interviews will be conducted in a combination of unstructured interview/focus group formats with all results being coded and reported in ways that do not identify individual library administrators or individual libraries.

Timetable of events

The operationalization of the academic library administrators' study begins in 2011. The anticipated timeline of events for the study are described in Table 2. Study Timeline below.

	Fall 2010	Spring 2011	Summer 2011
Survey design, IRB review and approval, survey uploaded to Qualtrix software for dissemination	XX		
Online survey, key informant interviews, group interviews		XX	
Analysis and results disseminated			XX

Results

The research design will be operationalized January 2011 with the resulting data and analysis made available in late spring—early summer 2011. Anticipated results include analysis and description of the current practices, perceived values of effectiveness, and information use patterns of head academic library administrators in the areas of competitive practices, leadership retention and performance measurement. The researcher will then attempt to develop applicable grounded theory to explain the results of the study and determine the next steps of research inquiry.

The results of the study data analysis will be used to develop and implement learning resources to support and enhance professional and continuing education resources in administrative information use in strategic decision making, assessing organizational performance, and effective use of performance measurement data and results in the strategic decision making process. Results from the North Carolina academic library will be used in combination with a similar public library study developed by the researcher using the same research methodology and design for future grounded theory development, instrument and internal validity assessment, and for the creation of a research design addressing the same types of research questions in a wider scale study.

Limitations

The limitations of the study include a limited geographic focus (study population limited to the State of North Carolina); nine year gap between uses of the research instrument may have affected instrument reliability and validity; changes in the service environment during the nine year gap in the use of the research instrument will have affected library administrators' perceptions, values and information use/needs; and the use of the research instrument in a different type of library environment (academic instead of public) from its original design. Lastly the success of the study is highly dependent on a strong response rate and degree of participation from the study population. If the study populations' levels of interest in the subject, time availability and/or willingness of participation are not high, the

validity and reliability of the study will be limited.

Implications

The potential practical implications of the study could include the development of:

- improved models, best practices, theories to understand of the use of performance measurement information in decision making in libraries
- more effective strategic responses
- educational resources to address the needs of library administrators in the areas of performance measurement collection, analysis and use of results
- competitive skills and practices that could build and benefit libraries
- improved recruitment and retention of staffing
- improved overall competitive performance of libraries

The study results are potentially significant as the results will:

- describe previously undocumented administrative competitive, retention, and performance measurement information behaviors
- lead to more effective strategic responses from libraries will increase/improve libraries' benefit, value and impact
- lead to possible models of effective use of performance and strategic data/information by library administrators
- support the creation of educational resources to address the needs of library administrators in the areas of performance measurement collection, analysis and use
- identify competitive skills and practices that could build and benefit libraries and their administrators
- improve recruitment and retention of staff and leadership within libraries
- improve overall competitive performance of libraries in addressing strategic needs of customers and their service environment
- improve evidenced based decision making by library administrators

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Note

1. Larry Nash White, *Does Counting Count: An Evaluative Study of the Perceptions and Uses of Performance Measurement in Florida Public Libraries* (Ph.D. Diss., Florida State University, 2002).

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Engaging Library Websites Users through Usability Testing and Inquiries Using Morae

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Abstract

Libraries put a lot of human and financial resources in the acquisition and design of various products for their patrons only to become increasingly frustrated when the usage statistics of these products fall far below expectations. Few libraries, however, put financial, human, and technical resources to analyze underused web services and resources. One approach in resolving this issue requires patrons' involvement in the processes that lead to the acquisition or development of new products, specifically the design of a library website. This paper stresses the importance of usability study in the acquisition or development of library products, and emphasizes the impact of usability testing on library website design. When conducted during the life cycle of the website design, usability study can not only improve users' information seeking experience, but also provide qualitative and quantitative data metrics for an effective assessment of the return of investments made on various costly library resources.

Introduction

This study assesses and documents architectural and functional issues of the James E. Walker library website and collects quantitative and qualitative data from students, faculty, and staff. TechSmith Morae usability software enabled the gathering of both qualitative and quantitative data that can be used to assess the value of the James E. Walker library website, and therefore the return on investment made on various library resources. The testing process is ongoing and applicable to products and services prior to, during, and after their acquisition. The researcher strives to show that successful access to resources by students, faculty, and staff through the library website provides various value metrics about the library as a research support unit within the university. These metrics, including time on tasks,

the number of mouse clicks, and the number of web pages changes which are rooted in the architecture of the website, can be used as benchmarks in assessing the return on investment made by the library. Usability testing helps to explore how successful patrons are in completing tasks; it also serves as a means to measure emotional, aesthetic, and other key functions of a website. A review of recordings and inquiries of students, staff, and faculty using the library website allow the discovery of website elements that facilitate or hamper access to library resources and services, and therefore, reduces or increases the return on investments made on these resources and services. The data collected will also inform a user-centered redesign of the website. The comments and suggestions from test participants will be used as input in the new website prototype design iterations.

Literature review

With decreasing resources and increasing calls for accountability, academic libraries face the challenge of using measurable metrics to demonstrate and quantify their value to their funders and stakeholders. In other words, show the return on the investments made.¹ Return on Investment (ROI) studies help to quantify and demonstrate the library's economic value to the institution. Tenopir's research findings show that "the time invested by faculty in finding and using scholarly literature is an indication of the value of collections to both teaching and research."² Tenopir points out that comments by faculty demonstrate the importance of electronic access to the core function of the faculty and the institution and those ROI calculations should include the value of all key library products and services that support the mission of the institution. Usability study plays an important role in assessing the value of all key library products and services. It

helps design products with the input of target users and maximizes effective access to these products and services; usability ensures the visibility of the products and services. Usability testing has become established as an important aspect of product design and how experiments and interviews can help identify important attributes to potential users. There is large body of literature along with qualitative and quantitative data stressing the importance of usability study prior to, during, and after product design and acquisition and its impact on both user experience and return on investment. Usability helps in assessing information discovery;³ the think aloud protocol is key in locating users' point of frustration during the information seeking experience.⁴

Background of the library website

The James E. Walker Library website was launched in January of 2007. There is no record of user-centered and participatory usability testing during the design of the website; however, after the website was launched, a few questions were handed out to students and faculty members in an effort to assess some of the functionalities of the site. This confirms Joan Stein's⁵ remark that "Most libraries conduct usability testing on their library new home pages after a prototype page has already been designed . . . During the usability testing phase, students usually react to an already designed product and libraries usually receive feedback on how well the page they present to testers functions, rather than new ideas for inclusion in the design of the web page."

A website life cycle goes through different stages during its existence. Oftentimes, website changes are dictated by the desires and needs of the designers, the users, and other stakeholders. All three groups of major players (designers, users, and stakeholders) have given support and expressed the need and desire for a user-centered redesign of the MTSU Library website and have participated in various capacities to the usability testing process of the current website.

Methodology

TechSmith's Morae software was used to record patron information seeking behavior and interaction with the website. The data collection begins with task completion and task logging,

followed by extensive debriefing, and small focus groups of two to three participants' discussion of the website with the entire process being recorded. This is followed by data analysis using Morae Manager. Tasks to be completed range from basic information search such as "find the library operation hours" to complex research information such as "locate a peer-reviewed journal," or "locate an article citation." Debriefing inquiries include general questions about the website architecture, user impression, input, along with comments and suggestions for website prototype iterations.

The target population includes students, faculty, staff and librarians. Twenty participants were involved in the pre-testing and testing for the usability study of the current James E. Walker Library website during 2009. The participants completed twenty tasks of varying difficulty. Participants used the website to access information about the library and to complete research oriented tasks.

A separate online survey was sent to faculty, undergraduate and graduate students, and librarians to collect additional information about strengths/weaknesses and needs of the current library website.

Findings

Initial Observations

An initial review of the home page (see fig. 1 & 2 below) revealed major labeling, architectural, and navigational issues.

Labeling: there is no clear label or graphic for users to refer to as "Home," "Library Home," Architecture: half of the real estate of the home page is a space for "Library News" and for a footer with information hardly needed by the users for research purposes. In addition, fig. 2 shows that critical links are hidden and only display on the screen when the users poise the mouse on some of the links.

Functionality: important links are hidden and when the users find them, they are not intuitive.

To avoid a redesign of the website based on anecdotal observations and opinions, it was necessary to conduct a comprehensive usability testing. The goal was to engage the users and redesign the library website with their input.

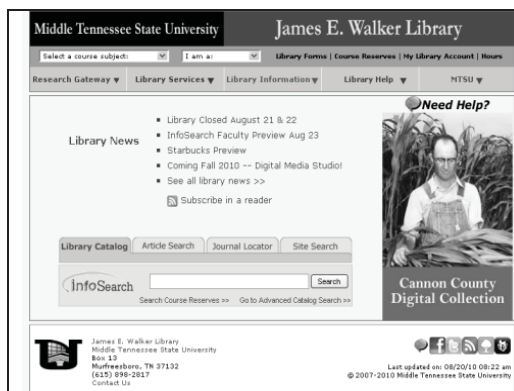


Fig.1

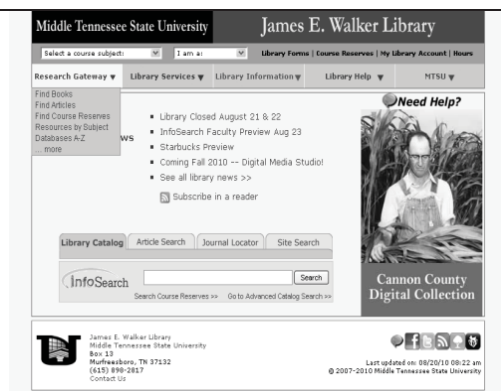


Fig. 2

Usability Study

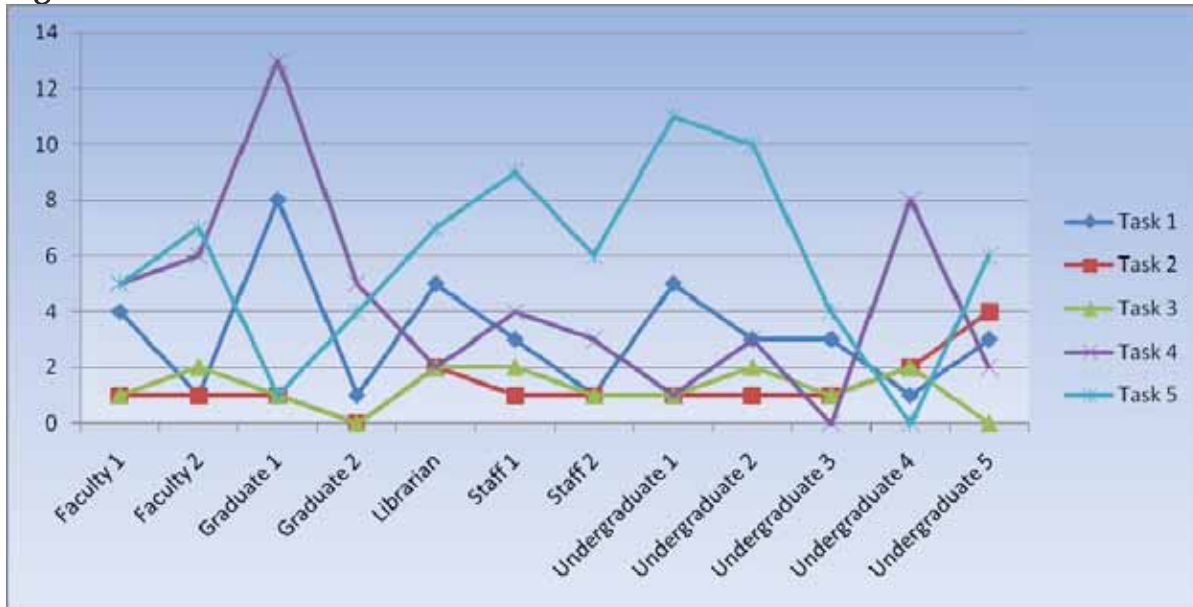
Participants were asked to complete twenty tasks of varying difficulty. The tasks cover both information seeking and research activities such as locating reserves, help, and inter-library loan pages and finding articles and books using available databases and the library catalog, respectively. For each task, the following data elements were collected: time elapsed, number of clicks, and number of webpage changes. For the purpose of this paper, we will focus on the findings of two tangible variables: the time taken by each participant to complete a task, the number of web page changes, and the number of mouse clicks. The charts below reflect the time on tasks and the number of mouse clicks by 12 participants. Overall, the time needed to complete tasks ranged from less than 30 seconds to 13 minutes. Across users, the task which required the most minutes was Task 5 "Find a book on capital

punishment." The time needed ranged from 1 to 11 minutes, with most users on the upper side of the range. The tasks requiring the least amount of time were (1) "locate the help page" and (2) "locate the inter-library loan page." Both tasks took two minutes or less for every user.

Time On Task (TOT) in minutes by each participant: Tasks 1-5

1. Locate the James E. Walker Library Website on 2. the MTSU homepage.
2. Locate on the website the operation hours of James E. Walker Library.
3. Locate the library help page.
4. Read the different types of help; then explore the ones you may need to complete research work.
5. Find a book on capital punishment in America.

Fig. A



Observation:

Task 5: "Find a book on capital punishment in America" may seem to be a very simple task to complete. However, it took 10 of the 12 users 4 minutes or more to complete the task.

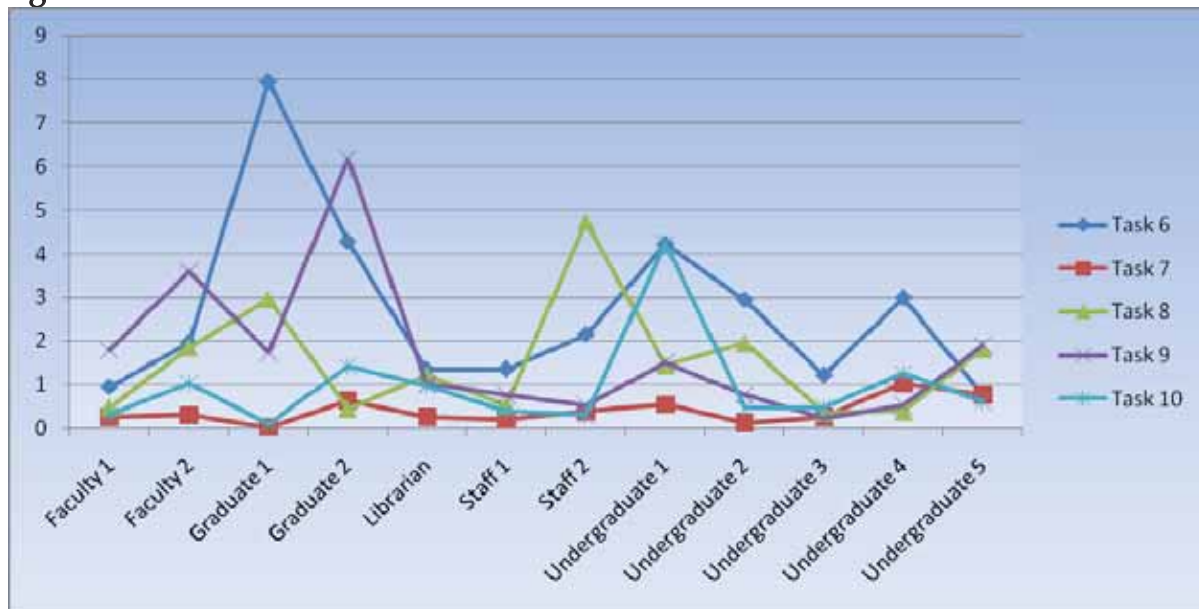
Time On Task (TOT) in minutes by each participant: Tasks 6-10

6. Find an article from a psychology journal

about the drug "Accutane."

7. Locate the Interlibrary Loan services page.
8. Locate an article that a professor has placed on reserve with the Library Reserve Services.
9. Contact a librarian or library staff to set up a research coaching appointment.
10. Find the journal World Archaeology in the Walker Library.

Fig. B



Observations:

Task 6: “Find an article from a psychology journal about Accutane” is a research question. The maximum time on the task was 8 minutes by a graduate student; the least amount of time was 1 minute and this was completed by a librarian.

Task 9: “Contact a librarian to request research coaching service.”

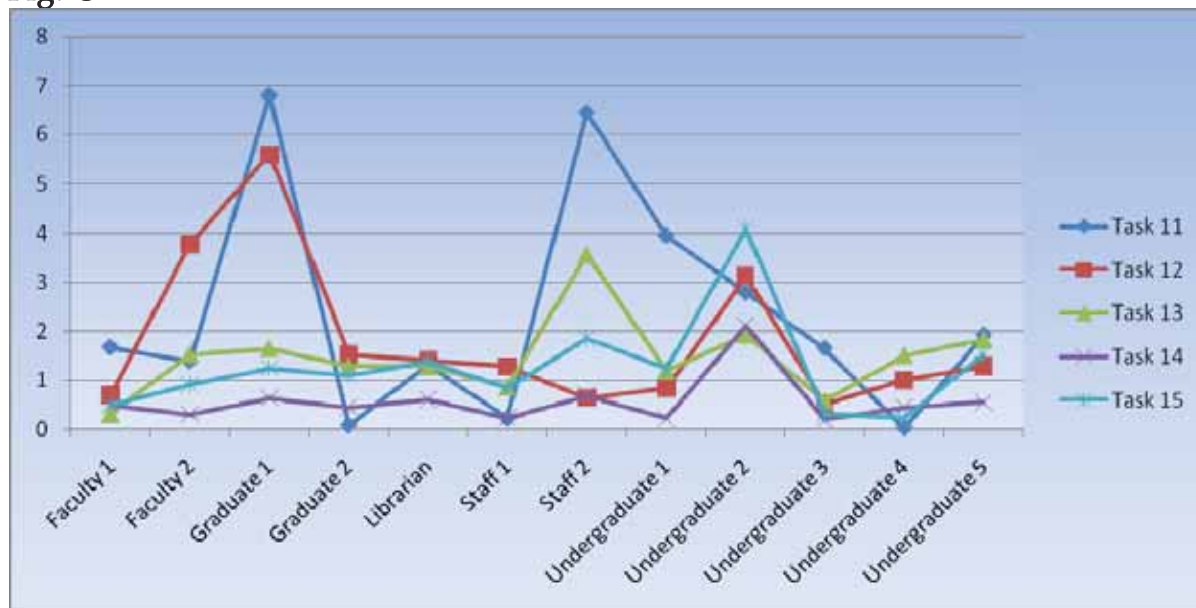
To complete this task, it took undergraduate students an average of about 6 minutes, graduate students 2 minutes, faculty 3 ½ minutes, and librarian and staff a minute or less.

Undergraduates, on average, visited 26 web pages before being able to complete the task; graduate

students visited 11 web pages; faculty 10 web pages, and librarian and staff 4 web pages.

Time On Task (TOT) in minutes by each participant: Tasks 11-15

11. Find a journal article on Piedmont Blues music.
12. Find a full-text recent article on “straw bale construction.”
13. Locate databases where you can find company or industry information.
14. Locate the place where you would pick up Interlibrary Loan material(s).
15. Locate the Course Reserves page and read about the services offered.

Fig. C**Observation:**

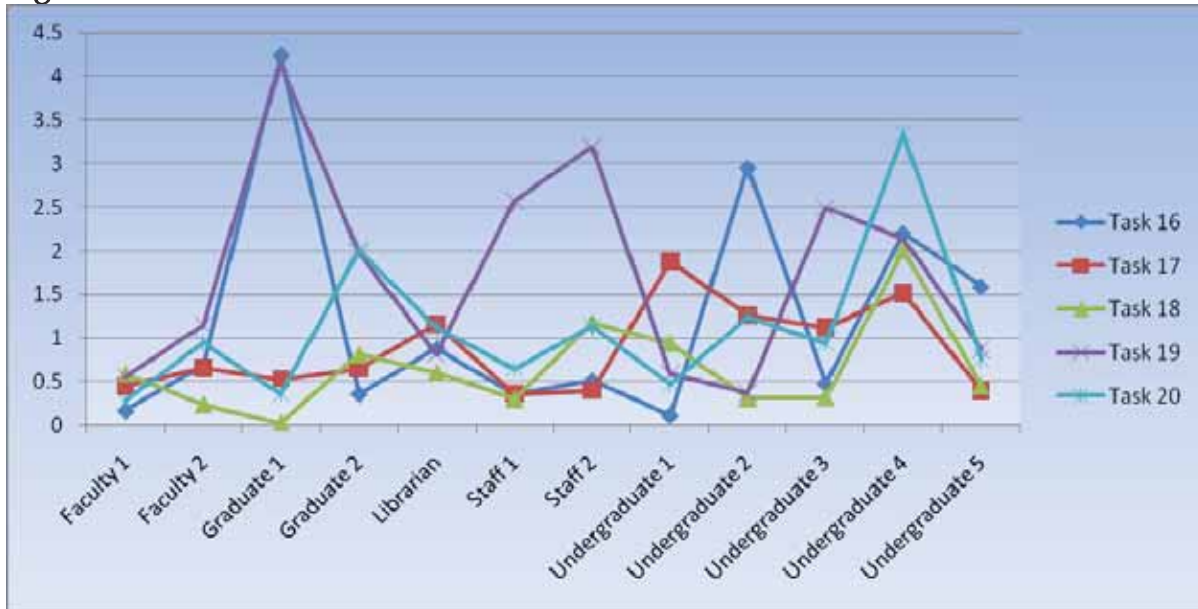
Task 12: “Find a full-text recent article on straw bale construction.”

It took graduate students over 4 minutes to complete this task, undergraduate students about 3 minutes, and for all other users between 1 and 2 minutes. In those 3 minutes, undergraduates made 37 web page changes, graduate students 29 web page changes in 4 minutes, faculty 14 changes, staff 12 changes, and finally, it took librarians only 6 web page changes to complete the task.

Time On Task (TOT) in minutes by each participant: Tasks 16-20

16. Find a brief description of the library databases.
17. Locate the floor where the book *The Grapes of Wrath* is shelved.
18. Locate information on circulation policies.
19. Locate and view a few seconds of the tutorial on how to renew books online.
20. Locate information on printing in the library.

Fig. D



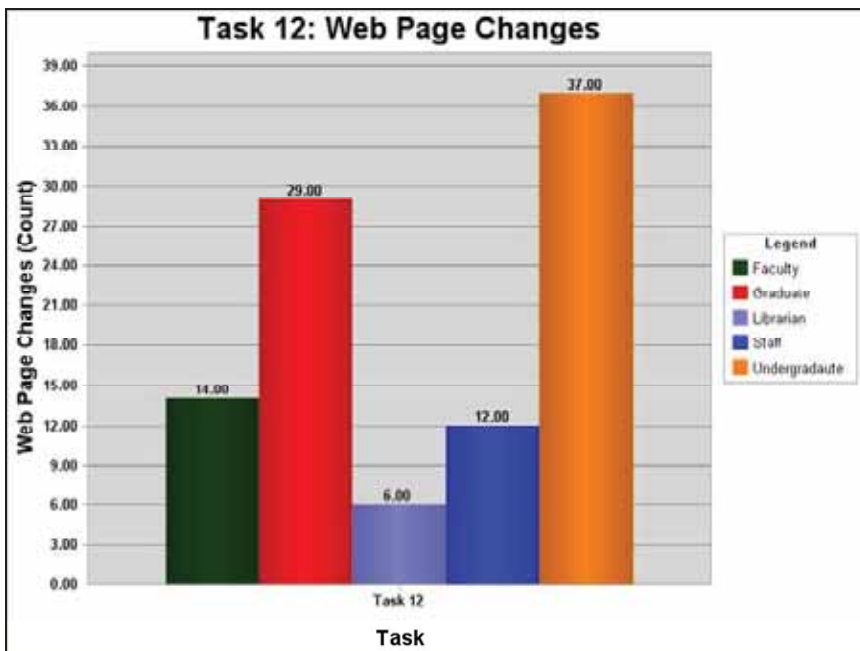
Observation:

This chart, like almost all of the others above, shows a big discrepancy between the time taken by each user in completing tasks. Site architecture and navigational issues cause frustrations and unnecessarily increase the time spent during task completion. The think aloud protocol and the debriefing data support the observation.

It took undergraduates more than 3 minutes to complete the task and it took graduate students 2 minutes. All other groups found this information in a minute or less. Undergraduates made an average of 22 web page changes searching for this information. Graduate students made 9 web page changes, and the rest of the groups visited 5 or fewer web pages.

Task 20: "Locate information on printing in the library."

Web page changes for task 12: Find a full-text recent article on straw bale construction.



Debriefings

After completing the tasks, the usability study participants were asked to rate their agreement with twelve questions concerning the use of the website they just used to complete the tasks (see table below).

Overall, the rate of agreement with the questions asked on the feedback survey was 57%. The question which had the most disagreement was "The organization of the information on the web pages is clear" with 4 respondents disagreeing or

strongly disagreeing, 5 respondents neutral, and 3 respondents agreeing. Other questions having 50% or less agreement were: "ease of learning to use the website," "ease of finding needed research information," "simplicity of using the website," "ability to complete tasks quickly," and "ease of understanding information provided on web page." The questions with the most agreement (eight or more people agreeing) were: "comfort using the website," "effectiveness of website for helping to complete search," "ease of locating website," and "overall satisfaction."

Question	Disagree or Strongly Disagree	Neutral	Agree or Strongly Agree
1. It was easy to locate the website.	1	0	11
2. It was simple to use this website.	2	5	5
3. I can successfully complete the tasks using this website.	0	5	7
4. I am able to quickly complete the tasks using this website.	2	5	5
5. I feel comfortable using this website.	0	4	8
6. It was easy to learn to use this website.	2	5	5
7. It was easy to find information I needed for my research.	3	3	6
8. The information provided on the help page was easy to understand.	1	5	6
9. The information on the website was effective in helping me complete the search.	2	0	10
10. The organization of the information on the web pages is clear.	4	5	3
11. The interface of the Walker Library Website is pleasant.	3	2	7
12. Overall, I am satisfied with this website.	1	2	9

Qualitative Survey

Comments from debriefing test participants closely reflect the results of a four question survey which asked patrons for their thoughts about the current website. The survey results indicate that the main concerns about the current website are:

- Difficulty finding information (9 comments)
 - "It's a little disorganized/ hard to find things sometimes."
 - "Sometimes I have to click on several different things to get what I want."
- Web pages too busy/complicated (4 comments)
 - "It's too busy. Needs to be simpler."
- Navigation difficult/not intuitive (11 comments)
 - "Hard to navigate. Sometimes have to start all over again to get back to where I want to go."
 - "Too much of the content is buried; technical terms are used too much."
- Search options not meeting user needs (7 comments)

- Need “faster, more efficient ways of searching that make sense, easy to navigate.”
- “I would like it to be easier to search the online databases. I find it very hard to find a journal I’m looking for.”
- Poor layout/ design (10 comments)
 - “Instead of news bullets on the front, put commonly used things.”
 - “All important content and links on first page; easy search boxes on home page; laymen’s terminology.

Discussion/Conclusion

Research findings highlight causes of confusion and frustration in navigating the website. Suggestions include changing the semantics of headings to ones readily understood by patrons and improving the ease of finding information which is determined by the amount of time spent on task completions and the number of mouse clicks, and web page changes. The findings of this usability study demonstrate the severity of usability problems with some users making as many as 30 web page changes before being able to complete a task. Addressing these issues will improve efficiency in users’ information search. A good architecture and navigation scheme will reduce instances of patrons getting lost and wandering through several unrelated pages during the search for information. “To avoid confusion while surfing a website, there should be consistency in the use of navigation aids, such as use the same format and style in the navigation aid and approximately the same location on every page.”⁶ Turban states that the Ease of Website Navigation (EWN) can be improved by having a wide and shallow website structure, because this reduces the number of clicks visitors must make to access the needed information.⁷

The findings from the usability study, especially the high number of web page changes needed to complete a task and the time needed to complete a task, highlight inefficiencies with the website design, architecture, and content. These inefficiencies impact the library in many ways. During basic library instruction classes, almost

1/4 of the class time is devoted to explaining the architecture of the website rather than focusing on information literacy acquisition skills. The discrepancy among the users also raises questions about the effectiveness of the library instruction classes. The time involved and difficulty navigating to and using subscription databases and the library catalog discourages users from fully utilizing the library website for research purposes and leads many patrons to use search functions such as Google to find scholarly articles and books. These difficulties result in the website being used less and possibility being viewed as less valuable. As a result of these inefficiencies, the library website is not fully serving the university community and does not produce a good return on investment for the time and money spent for the website and services available through the website. A user-centered library website will lead to a big return on investment because the resources and services will be accessed more efficiently and better utilized.

Practical Implications/Value

Findings from the usability study will be used in the website redesign process to create a more user-centered library website. New architecture and meaningful semantics will help increase access and use of valuable library resources available through the library website and consequently increase the return on the investment made to acquire various library resources. The aesthetics and architecture of the redesigned James E. Walker Library website should closely mirror that of the Middle Tennessee University website template. A close adoption of the template will reflect a symbiosis between the university, its departments and supporting units as recommended by university web advisory committee. The adoption of the template should be able to take into account the findings of this research: incorporate user input, use an iterative design approach, and be mindful of ADA compliance requirements. Some of these recommendations are already being slowly implemented. See sample template below.

WEBMAIL | PIPELINE MT | A TO Z INDEX | FAQ'S | SEARCH MTSU.EDU

MIDDLE TENNESSEE
STATE UNIVERSITY

James E. Walker Library

Library Home | Library Hours | Catalogs | Services | Library Support | My Library Account | Contact | Site Map

- Books and Journals
- Articles
- Course Reserves
- Library Materials



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Furthermore, the relatively low cost of the Morae software and the effectiveness of its usage in setting up a usability lab could help libraries in the decision making process with regard to conducting an ongoing usability study on just about every library product and website. Usability data is useful in the assessment of the value of the library as a learning place where priceless intellectual stimulation is made available to students, faculty, researchers, and the community.

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Assessing Quality of Digital Objects Created in Large Scale Digitization

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Abstract

The notion of quality can be very challenging to quantify within the realm of digital objects. One must grapple with some very new ideas, new technologies, and new processes. At the University of Michigan, we have attempted to define quality in a way that insures consistency while also allowing us to create a dynamic dataset for feedback to Google. The idea has been to have a stable process that creates data that may be manipulated in different ways to inform our dialog with Google about quality. This process also allows us to insert special projects into the workflow if we find it necessary. Many of these special projects were most useful to us in the beginning of the digitization project, but we still have the capacity to undertake future special projects if necessary.

At the beginning we took a very broad view of the quality issues we were seeing, highlighting major trends and helping ensure the digitization process was continually refined and improved. As time has gone on and the quality of the scans has improved, we have gotten more specific with Google in our feedback, providing our regular monthly reports along with a critical error report and an "oddball review" if we feel it is necessary. We do not, and most likely will never within this particular process, provide page level quality data to Google.

Many of the errors we see now are due to the issues within the physical volume rather than the scan. The other major issue that has arisen and is constantly being improved upon is the post-processing. This has improved at an even pace with the evolution of post-processing technology. We have seen Google continuously work to improve any issues that arise due to the post-processing of the scan. The scanning is simply the beginning of this process, and the original files are

intact and always being improved upon to provide the best quality that technology can manage at any given time.

Background of Quality Review

The University of Michigan has been performing a quality review process to a sample of the volumes digitized by Google for the University of Michigan Library system since the start of the project. There is a unique clause in the *UM-Google-Agreement* under *Section 2.4 Digitizing the Selected Content* that states that "U of M will engage in ongoing review (through sampling) of the resulting digital files, and shall inform Google of files that do not meet benchmarking guidelines or do not comply with the agreed upon format."¹. In 2004, we had one full time employee (FTE) solely responsible for the Quality Review (QR) process, who modified the descriptive terminology for errors to better describe the issues she was seeing. The method of recording and maintaining the information recorded was also revised several times until 2006. That year a web-based database became a permanent solution for recording and maintaining the data. Throughout this time the FTE worked one on one with a Google representative to ensure the company was aware of the more serious concerns identified at the beginning of the project. Also in 2006, a Special Projects Librarian was put in charge of the project, and students were hired to supplement the FTE's work. The Special Projects Librarian was in charge of the project until 2009 when the project was moved to the Technical Services Division's Electronic Access Unit. In late 2006, the FTE left and for part of 2007 the work was maintained by students. In May of 2007, a new FTE QR Coordinator was hired, and she continued to supervise the project until August of 2010 when responsibilities were assigned to a fellow FTE in the Electronic Access Unit.

Process

The University of Michigan has chosen to receive bitonal TIFF files and continuous JPEG2000 files. The move to JPEG2000 was made in 2007 after the partner libraries and Google agreed on the specifications. When the digital files become available, they are pulled off of the Google server and various scripts are employed to create the files needed for the QR. These scripts also download the files to local servers. At this stage, automated checks are done to ensure image validations, the compression scheme, and file format. When the image files have been moved to storage, another script pulls sample sets of 20 consecutive pages that are randomly chosen from every volume received. At this time, a .csv file is also created for each of the 20 listed files. These sample pages are what are used for the manual QR.

The QR coordinator selects a number of volumes to upload to the database each day; the amount uploaded is based on the estimated work to be completed that day. A script then combines the individual .csv files for each of the volumes into one large volume that is, in turn, uploaded into the QR database. A worksheet is generated for

each volume and is accessed via our web interface.

Error Terminology

During 2006, the terminology we had been using was reexamined when Google and other partner libraries reported what they had been using. It was decided that a common terminology would provide more effective feedback to Google. At this time, we adapted most of Google's terms for their in house QR. We also added some of our own terms that were specifically related to TIFF thresholding. The additional errors concerning TIFF thresholding were important because Google does not use the TIFF format and therefore does not have errors that are related to that file format. For all of our error types we distinguish between a Critical Error and a Non-Critical Error. An error is Critical when there is a loss of information on the page. A Non-Critical error indicates that there is a problem with the page that does not completely interfere with the information on the page. An example of a Non-Critical error might include a foreign object in the corner of a page or distorted, but not illegible, text.

We have maintained the use of the following error type definitions since that time:

Error	Critical:	Non-Critical:
Thick	Some letters are heavy or dark, difficult to distinguish individual letters and words	Some letters are heavy or dark, but letters and words are legible
Broken	Letters and words have a cracked appearance, resulting in unreadable text	Some letters and words have a slightly cracked appearance but the text is readable
Blurred	Text is blurry and illegible, image content cannot be distinguished	Slight blur, not "crisp," all information is legible
Cleaning	Portions of the text or image are erased from the page	Missing portions of the page with no loss of information or physical objects not associated with the text are visible but do not interfere
Warp	Page is noticeably curved with a portion of text/image missing or illegible	Page is noticeably curved, but is still legible
Crop	A portion of the text/image has been cut off of the page	Text/Image edges have been cut off, but there is no resulting loss of information
Obscured	Text or images are covered in some way, but not erased	N/A* *when part of a page is obscured but there is no loss of information, this is classified as a n/c cleaning error

Outliers and Other Error Types

We have chosen not to report certain types of errors by our standard methods because these errors do not interfere with the quality of the

information on the page. These errors are uncommon and do not interfere with the information on the page in any significant way. Definition of Errors not Noted by Reviewers:²

Error Not Noted	Description
Black and White Textual JPEG200's	Pages that have been captured as JPEG200s even though they contain only text, they do not have ANY residual color to them
Upside down pages	Pages that appear on the screen upside down, but there is no loss of information from this error, it is seen very rarely
Skew	When a page is titled at an angle, but the page is not cropped off and there is not resulting loss of information
Pagination issues	When blank pages have been inserted due to a mistake in the metadata, there will be what appear to be "missing pages" in the text
Marginalia	Handwritten comments, underlining or drawings found within the volume that are not inherent to the volume

These errors are not simply ignored. If we see a pattern of problems we feel needs to be addressed, it is brought to Google's attention through our "Oddballs" process.

Oddball Process

The category we call "Oddballs" can include errors in file format and missing pages. An oddball also encompasses any error that has not previously been noted by our reviewers. We keep a record of our oddballs by month, and the Google QR Coordinator goes through them to decide whether or not to send a report on to the company about what is being seen. This is a very important element of our process because the errors included in our oddball report can help us identify a change in Google's processes that is impacting the quality of the scans.

Reporting

Since May of 2007, we have been sending monthly reports to Google that clearly and succinctly demonstrate what we have seen during the previous month. The reports are simple and include the percentage of each error type, whether they are critical or non-critical, along with the

percentage of all volumes reviewed by QR personnel that month. Our goal has never been to review every volume that Google digitizes for the University of Michigan; rather we have aimed to examine a statistically significant percentage of what is received each month. In the process of maintaining this longitudinal data, we added graphs of the past twelve months of review for each error type. In order to better inform our conversations with Google, we have at times chosen to take on special projects rather than focus on the regular QR work. During these periods, we have not collected our traditional data. We have left those months blank on our spreadsheet.

Trends

The most common trend we have seen is one of improvement. Multiple years of experience with mass digitization have afforded the development of best practices that have benefitted the process and allowed for change and growth within the process. As may be seen in the chart of annual critical error percentages below, improvement has been steady and significant.

	May 2006- April 2007	May 2007- April 2008	May 2008- April 2009	May 2009- April 2010
# of critical thick volumes	189	70	19	144
# of critical broken volumes	518	121	76	64
# of critical blurred volumes	252	40	10	54
# of critical cleaning volumes	208	214	1256	439
# of critical warp volumes	47	37	14	22
# of critical crop volumes	424	246	100	67
# of critical obscured volumes	57	35	21	8
# of noncritical colorization volumes	3250	272	35	19
# of volumes reviewed	33,047	36,981	29,677	17,850

A Look at the Numbers

At this stage in the digitization project, significant critical errors are rare, although we do occasionally have a spike in a certain error type. For example, there has been a rise in thick critical errors this past year. It can most likely be attributed to the type of material currently being scanned. The University of Michigan we has a large Asia Library, and the details of Asian characters can be difficult to properly capture, so we are more likely to see a thickness that makes it difficult to distinguish the individual characteristics of the character. Other textual issues that can cause a page to have some thickness are font size, font type, bolded, and italicized text. These are issues that cannot be controlled for and hopefully will become less of an issue as technology improves.

Blur and broken are the types of errors that were more common at the beginning of the process. These errors are mainly caused by mistakes within the actual scanning process, such as a page being turned too rapidly or too slowly and the scanner capturing the page mid-turn. Experience with the scanning process has helped to decrease the frequency of blur and broken.

Cleaning errors are currently the most common error, critical and non-critical. A cleaning error occurs when the scan is being cleaned up during the post-scan processing. At this stage, Google is attempting to eliminate anything from the page that is not meant to be there, such as an errant finger, etc. The critical errors occur when information from the page is erased along with the offending object or in addition to the object.

When this project began colorization was a huge issue because Google was more prepared to capture and process JPEGs than TIFFs. We were seeing a lot of files that had not been properly converted to bitonal TIFFs from the JPEGs, and this resulted in many colorized pages. This is only an error when the page is captured as JP2000 and is the same color as the actual page of the text. In such cases, it looks brown, rather than as black and white. We now see this error very rarely and are very satisfied with how Google has handled the issue.

As previously mentioned, the quality of the text frequently impacts the quality of the resulting

digital image. Crop is an error that can be caused by issues within the text, such as a tight gutter. It is also an error caused by the scanning process—if the text is not properly configured on the cradle, for example. This is a fairly uncommon error, but it can be a very serious one, if critical, because of the information loss.

Warp is another error that has been diminishing as the project moves forward. It can also be caused by issues such as a tight book gutter or technician error.

Obscured has become a very rare occurrence, although still a rather dramatic one. It has become more and more infrequent to see a hand covering and blocking text at this point. This is an error type which clearly demonstrates that the experience of the technicians is a vital factor in the quality of the digital object.

While we have seen the critical errors go down significantly over the life of this unprecedented scanning project, the ultimate goal is to have absolutely no critical errors and to have all the information for these volumes intact. The original files of all of the scans are maintained and improved upon as technology makes this possible. We also hope to be able to insert pages drawn from our own local scans into existing Google scans to correct certain errors, including supplemental fold-outs which were not originally scanned. The physical books are still with us as this has not been a scan and destroy project. If necessary, we can always rescan entire volumes to achieve desired quality levels.

Special Projects

In order to establish that various factors were not impacting the quality of the scans we have undertaken numerous special projects over the course of this study. All of these projects used our already established practices and tweaked them to create project specific data. We have looked at whether the size of the volume would have an impact on the quality of the scan and found that Google does a rather remarkable job of controlling for this factor.

The most important and significant special project we undertook focused on mass digitization of Special Collections here at University of Michigan. The most significant and surprising information

we took from this study was the impact of the physical object on the quality of the scan. We attempted to control for the quality of the digital images through a pre-scan sorting process. A Visual Sorting Aid³ was created, which presented the problematic material as a digital photograph alongside a scan of the text. By this method, we were able to hold back material that we knew could not be adequately scanned at this time. We felt this was initially important in order to maintain the physical integrity of our rare volumes. As we watched the processes unfold, we determined the pre-sorting of the books may be unnecessary except in cases of great concern about the condition of the texts, such as brittle pages or loose binding. We discovered through a pre- and post-scan condition review of the volumes we sent from Special Collections to Google that the books were being handled with care and were not being unreasonably damaged by their scanning processes. With preservation concerns significantly assuaged, discussion ultimately became more focused around whether or not to let the scans happen regardless of quality outcome to ensure that we retained a scanned copy. These issues are still up for debate in regards to Special Collections, but we hope for a resolution soon.

Conclusion

The purpose of the continued study has been to track Google's progress in maintaining quality and to ensure that their promise of continual improvement of the original files is met. We have used this information to track the general quality of these images, to track the improvement of the

images as they are reprocessed by Google, and to create a dialogue with Google about what our expectations for quality are. Additionally, it has enabled the University to capture errors in the process that might otherwise be missed by Google's automated quality assessment. Through this work we have been able to provide examples and proof of issues that we have found important and that affect the quality of the text.

Our data has shown that the quality of digital images has greatly improved over the past several years and continues to improve as Google's processes become more refined. This gives us great hope that in the future, as technology improves, all of the original scans will become more viable as digital surrogates for our physical objects.

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Notes

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Evaluating Usage of Non-Text Resources Within and Beyond the Online Environment

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Abstract

Conventional methods of tracking usage statistics fall short of illustrating the complexity of the work scholars and students perform in today's online environment, and we outline how traditional measures might be augmented in order to better represent the value of non-text library resources. This paper will discuss models in which libraries can assess the value of non-text library resources produced locally and in cooperative efforts with other institutions or by third-party providers.

Overview

As academic libraries have moved to an increasingly networked environment over the past two decades, corresponding shifts in investment of funds from content acquisition to a broader array of activities (ranging from providing access to local and remote collections via the web to systems support) have occurred. During years of relative plenty, prior to the economic downturn of 2008, measurement of the efficacy of these new, online efforts revolved around *tracking the shift* to a new medium.

Statistics counters for monitoring web traffic developed for commercial web activities were adopted and adapted by the library community. Libraries were able to track patterns of user behavior across their newly-created websites, and providers of journals and other types of information began to offer usage statistics about how people were accessing their products to libraries.

In the serials world, Project COUNTER emerged in 2002, attempting to normalize the way in which publishers, libraries, and intermediaries communicated about usage statistics for online information.¹ COUNTER Codes of Practice were developed and adopted by a variety of resource

providers. These standards focused, as in the commercial web world, on *tracking* web traffic flows—on how students and faculty viewed bits and pieces of journals and journal articles, how they moved across links, and how they performed particular actions (such as printing and downloading PDFs).

Measures for determining return on investment (ROI) were created as libraries began spending larger amounts of money on electronic journals and other resources.² These efforts continue to focus on journal investments: cost-per-article measures have been created, and many electronic resources librarians are required to report on and negotiate with publishers about such metrics. This is increasingly true in a post-2008 world, in which budgetary crises at many institutions have thrust libraries into a mode of “do even more with less,” in which all library expenditures are analyzed at a level never before witnessed in the pre-recession period. A marked shift in how library usage statistics are used is occurring: usage patterns are no longer simply being monitored—they are increasingly being analyzed in order to make collection development decisions.³

While this makes sense if one applies the lens of the commercial world to library investments (Facebook's capital infusions and ability to find advertisers lie mostly in its ability to say x millions of users have logged on its site daily), there are several difficulties posed when applying such models to the educational environment. Not only do current standards typically exclude non-journal/primary source materials, but they also fail to sufficiently answer the question of how such resources impact teaching and research. These shortcomings mean that current methods for assessing the value of digital libraries and electronic library resources, including cost-per-article based ROI measures, fall short of

determining the full utility of such resources in the higher education environment.⁴

While the problem of exclusion of non-journal/primary source materials has and increasingly will be addressed, the larger issue of impact of resources on teaching and research is only beginning to be discussed and analyzed. Areas in which this might occur will be identified in this paper, but it remains for future researchers to propose specific measures for re-examining the way in which library usage statistics are analyzed and used in library decision making.

Non-Text Resources: Why They Are Different

Electronic primary source materials—including images, music and video—are more difficult to track than book and journal articles using commonly-applied usage standards. The format of books and journal articles has been parsed and described in order to make them readable by computers, and their contents are easily broken into segments (Tables of Contents, chapters, articles, etc.). They have standard identifying numbers (ISSN, ISBN), making standardized usage reporting straightforward and efficient, as seen in COUNTER standards, with Release 3 focusing on journals and databases, and Release 1 on Books and Reference Works. We will take a look at COUNTER in more detail in a moment.

Multimedia materials are different. They may or may not be described with standard data descriptions, and where there are standards, they typically apply to one “realm” of academic

pursuit, such as Visual Resources (with its VRA CORE 4.0 metadata standards)⁵ or cultural heritage items (with the Getty Research Institute’s work and other vocabularies).⁶

Concepts such as “page” or “author” are foreign to many multimedia objects, and while “creator” can often be identified, it is sometimes difficult to assess what constitutes an actual discreet countable object. In music, for example, a symphony has several movements, and other types of music follow a variety of formats, which make it difficult to standardize object type across music media.

While functions such as “print” or “download” may exist, other functionalities such as streaming, making a play list or creating an image group fall beyond the realm of easily “countable” units. The variety of objects, object components and functionalities make it much more difficult to track and compare using standard usage statistics formats, as will be seen in the section below, using the specific example of Project COUNTER and the ARTstor Digital Library.⁷

Counter and a Non-Text Resource, ARTstor Digital Library⁸

Project COUNTER’s Technical Advisory Group (TAG) is currently discussing commonalities of different media types in order to supplement its current COUNTER’s Journal and Database Release 3, which consists of 12 possible reports, only a few of which (the database reports) might be applicable to a multimedia resource such as ARTstor Digital Library:

Table 1: Required Reports in Release 3 of the COUNTER code of practice—by report type⁹

	Journal Reports	Database Reports
“Usage Metric” reports	<ul style="list-style-type: none"> • Journal Report 1: Number of Full Text Article Requests by Month and Journal • Journal Report 5: Number of Full Text Article Requests by Year and Journal 	<ul style="list-style-type: none"> • Database Report 1: Total Searches and Sessions by Month and Database • Database Report 3: Total Searches and Sessions by Month and Service
Turnaway Reports	<ul style="list-style-type: none"> • Journal Report 2: Turnaways by Month and Journal 	<ul style="list-style-type: none"> • Database Report 2: Turnaways by Month and Database

For a non-text, site-wide licensing resource such as the ARTstor Digital Library, the only existing COUNTER reports that ARTstor could possibly provide would be Database Report 1 or 3, which

are identical except that DR3 is for databases that are grouped together in a single licensed collection (see Table 2 for an example of the Database Report 1).

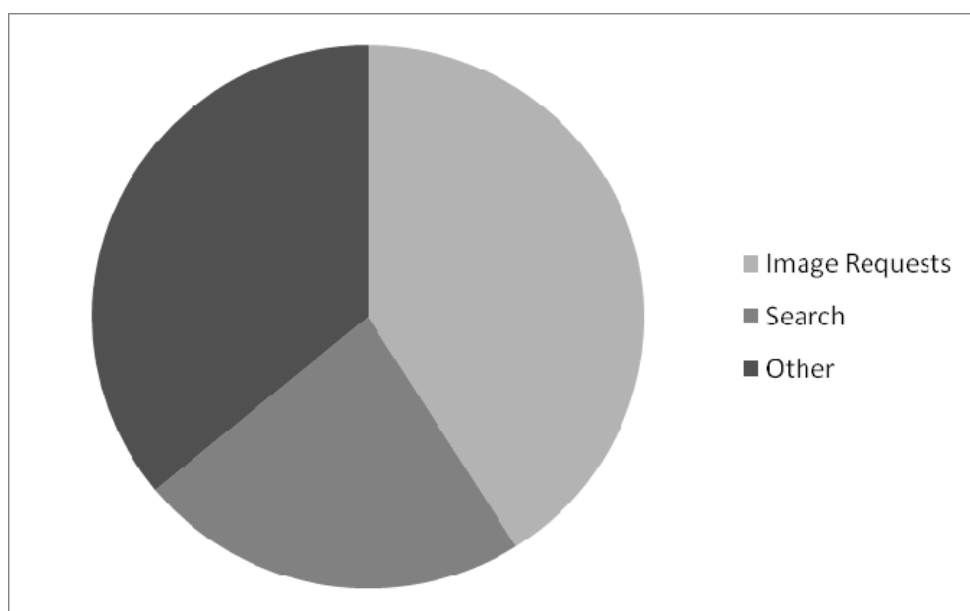
Table 2: Example of Database Report 1

Database Report 1	Total Searches and Sessions by Month and Database						
<(Criteria)>							
Date Run:							
yyyy-mm-dd							
	Publisher	Platform		Jan - 2009	Feb - 2009	Mar - 2009	Total
Database AA	Publisher X	Platform Z	Total Searches Run	2322	2520	2742	7584
Database AA	Publisher X	Platform Z	Searches – Federated & Automated	5932	4976	6022	16930
Database AA	Publisher X	Platform Z	Total Sessions	1821	1929	2211	5961
Database AA	Publisher X	Platform Z	Sessions – Federated & Automated	3421	4523	4409	12353
Database BB	Publisher Y	Platform Z	Total Searches Run	3466	3210	4459	11135
Database BB	Publisher Y	Platform Z	Searches – Federated & Automated	7734	6832	8001	22567
Database BB	Publisher Y	Platform Z	Total Sessions	1987	2200	2544	6731
Database BB	Publisher Y	Platform Z	Sessions – Federated & Automated	3986	2899	3877	10772

As seen in this example, these reports only examine two kinds of functions performed in a database: *sessions and searches*. While searches are an important functionality in multimedia resources, they are hardly the only kind of activity being performed in such a resource. In the case of

ARTstor Digital Library, they do not even comprise a quarter of use. As Figure 1 illustrates, searches make up only 23 percent of ARTstor’s usage activity, while “image requests” (viewing, downloading, printing) make up 41 percent.

Figure 1: ARTstor Digital Library Usage by Usage Type (Total Events, 2004-2009)¹⁰



COUNTER's working group on multimedia issues is, therefore, currently examining how to develop an equivalent to the "full text article request" measure found in the Journal 1 and Journal 5 reports. In ARTstor's case, "image requests" might be used as a corresponding equivalent to such a request.

Beyond Conventional Usage Reporting

Beyond the text-centric focus of existing COUNTER reports, reliance on usage statistics of any sort as the primary vehicle for evaluating non-text resources is problematic. Firstly, there is difficulty measuring "non-traditional" types of use—those that go beyond tracking web traffic and patterns—that are becoming increasingly prevalent with the advent of more robust online environments. Secondly, there exists also the challenge of measuring use that occurs outside of the measurable environment.

As we noted in the introduction to this paper, current usage statistics counting mechanisms deal best with objects which had their origin in text (books and journals), and they do a good job of measuring specific functions: searching, viewing, and then printing, downloading or emailing information for later reference.

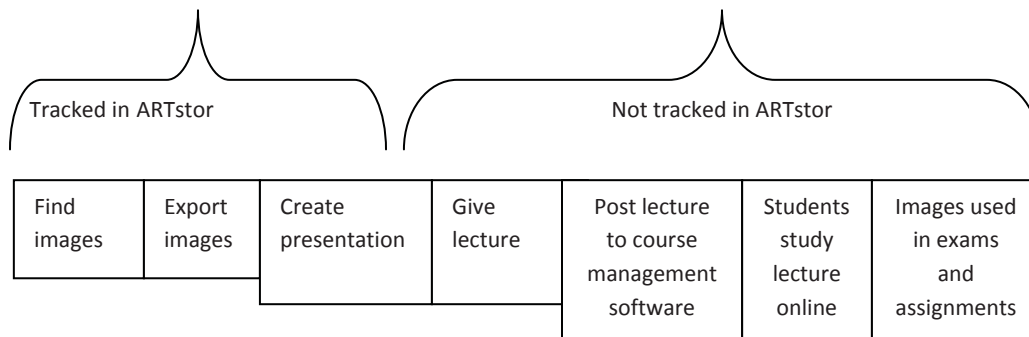
In contrast, resources composed of primary source, multimedia content must support a more diverse range of metrics based on the nature of the material provided. Simply printing an image is not useful for most purposes—users often prefer to actively manipulate multiple images: organizing, annotating, and analyzing them in order to support arguments.¹¹ To this end, ARTstor has developed a variety of tools to support this type of active use. This includes the ability to: save groups of images for later use, create course folders where students can study images, zoom in on details of an image, annotate images, load external images into the ARTstor environment, and build presentations that can be exported. These value-added uses go well beyond simply "viewing, printing or downloading" an item. Use of these advanced functions are tracked in ARTstor's custom usage statistics and comprise 36 percent of ARTstor's total usage (see Figure 1).

The measurement of "non-traditional" uses could

be relevant for text-based resources as well, which are increasingly offering a suite of services for their users such as exporting citations and annotations.¹² It is possible that in the future usage reporting standards will be able to develop metrics for some of these new uses, but given the diversity of the features and the variation in the way these features are (or are not) tracked, it may be quite some time before the community develops and agrees upon a standardized way to report these other types of "non-traditional" usage. For now, the only solution for librarians wanting to fully understand this type of usage is to take the time to look at the custom reports offered by individual resource providers in addition to standard reports.

This brings us to perhaps the most perplexing challenge of multimedia usage statistics: how to account for use that occurs outside the measurable environment. The patterns of use for non-text resources are different than text resources. In the case of images, two of the most common forms of use are: gathering a set of images for in-class presentation, and using course management software to post images for students to use. While ARTstor Digital Library includes a variety of tools to support these uses, we recognize that many users will choose tools and outside of the ARTstor environment, including Microsoft PowerPoint for in-class presentations and course management software for posting images for student study. Based on the results of an annual survey conducted by ARTstor, 82 percent of faculty respondents use ARTstor content for in-class presentations. At the same time, 72 percent of those faculty members report that they use PowerPoint to present that content. Sixty-one percent of undergraduates surveyed said they use ARTstor Digital Library to prepare for tests/exams.¹³ In these instances, the only uses that are tracked in the ARTstor environment occur during the initial process of finding, viewing, downloading, and in some cases organizing and bulk exporting, the images. All of the subsequent activity—ranging from creating or editing the presentation, to giving the lecture, to making the presentation available through course management software, to having many undergraduates access the content for study—goes untracked (see Figure 2).

Figure 2: A typical ARTstor Digital Library use case and which activity is tracked in ARTstor usage statistics



It is important to note that student use of images (e.g., the 61 percent that reported using images in course management software) can account for a significant portion of the total usage in this use case scenario. Many of ARTstor’s highest use institutions are those who use course folders or post URL links to images and image groups that students can only access inside ARTstor’s online environment. Use of course folders in the ARTstor Digital Library for one art history survey course with over 100 students can easily boost ARTstor’s measurable use tenfold, as each of these students enters ARTstor’s online environment multiple times during the semester to study, potentially hundreds of different, images. On the other hand, when faculty choose to reuse multimedia content they have downloaded and lectures from semester to semester, this additional use is currently not credited back to the original resource.

Georgia State University has experienced first-hand the need to measure this type of use.¹⁴ Since 2004, the library subscription to ARTstor has been funded annually from multiple sources: a student technology fee, the School of Art & Design, and the University Library. While the library is able to provide data from ARTstor statistics reports, as discussed above, it has now been asked for measurable use *outside* the resource itself. The following is a quote from an e-mail sent to the library in response to a preliminary proposal for renewal of funding: “Because this is a request for continued funding for a previous year’s award the narrative needs to include ‘outcomes and results of the prior award(s).’ Please give any data about usage—number of classes, disciplines, areas, individuals using the images, and how? Any

other material about outcomes or student/classroom usage?”¹⁵

As budgets decline, we will face increasing pressure to tie usage to student learning and applications outside the database itself, whether it is in the classroom or in the conduct of research. While this problem is not unique to non-text resources, in our experience, providing additional justification for spending on humanities resources, as opposed to other disciplines such as science, is becoming more common. Therefore, it behooves us to develop ways to measure and show the worth of these valuable non-text resources as soon as we can.

Usage Statistic Standards for Assessing Utility of E-Resources: At a Crossroads

It is apparent that the development of standardized usage statistics reports were developed in order for librarians to evaluate the volume of use of the online resources they having increasingly been investing in over the past two decades. The focus on e-journals, indices and books rather than non-text resources makes sense: there more text based e-resources than multimedia e-resources and, as noted above, text-based materials are easier to track and compare than multimedia content. Libraries make substantial investments in journals and books, and standardized usage reporting and attempts at creating measures for discovering return on investment (ROI) were a logical progression, taking on more importance as campus administrators have been forced to re-examine (and re-justify) investments in such resources since 2008.

Traditionally, non-text resources, primarily in the humanities, have not cost as much as e-journals in other disciplines. In addition, until recently, multimedia assets such as images, audio or video were primarily housed within the respective academic departments (e.g., art history for the slide library, music for the music library). However, the digital era has led the library to become much more involved with multimedia resources. As Denise Hattwig from the University of Washington recently wrote:

Libraries have become increasingly interested in digital images, subscription image databases, and visual literacy. Visual resources collections are building digital image databases, and are often looking for the technological infrastructure and metadata expertise typically available in academic libraries. Additionally, many institutions are emphasizing university-wide, rather than departmental resources, particularly as digital resources make this a possibility, and budget realities require it. In this climate, many visual resources collections have moved out of departments and into their college and university libraries. Others have developed partnerships with libraries to further common goals.¹⁶

According to the results of the 2008 Visual Resources Association Professional Status survey, 18.6 percent of the digital image collections at academic institutions now reside within the university library, while an additional 49 percent reside in a cross-institutional setting (a school within the university/or at the college/university level), leaving 32.4 percent at the academic department level.¹⁷ The trend of this change is also dramatic: according to the VRA survey, over 37 percent of respondents started developing a digital image collection between 2004 and 2006. Thus, digital multimedia has only truly begun to take hold at institutions in the past 5 years, and the library's role with this media is likewise new and still very much evolving.

Multimedia resource providers and creators of e-resource standards such as Project COUNTER are, therefore, under pressure from the library community to provide usage statistics that show their value, their ROI. As illustrated above, standard tracking mechanisms fall short of painting a full picture of utility for educational

resources. While particular behaviors may provide some insight to decision makers, but the higher educational community must recognize how many kinds of teaching and research pursuits cannot be easily measured or tracked, and it is here that a new model for determining the value of library resources, both text and non-text, must be created. This issue mirrors the larger question of the value of the library on campus (physically and virtually):

Academic libraries have long enjoyed their status as the "heart of the university."

However, in recent decades, higher education environments have changed.

Government officials see higher education as a national resource. Employers view higher education institutions as producers of a commodity—student learning. Top academic faculty expect higher education institutions to support and promote cutting edge research. Parents and students expect higher education to enhance students' collegiate experience, as well as propel their career placement and earning potential. Not only do stakeholders count on higher education institutions to achieve these goals, they also require them to demonstrate evidence that they have achieved them. The same is true for academic libraries; they too can provide evidence of their value. Community college, college, and university librarians no longer can rely on their stakeholders' belief in their importance. Rather, they must demonstrate their value.¹⁸

Currently, it often falls upon the shoulders of politically savvy library administrators to make the case for the library and its resources, and (as we are seeing in this conference) more sophisticated measures for assessing the value of the library must be created. Any library whose utility on campus is measured solely by standardized usage statistics reports and other traditional measures will fall on increasingly difficult times.

The authors have posed the question to various audiences in prior presentations about how to begin addressing this question, and the question is often met with a follow up question: why should the library worry about how multimedia usage statistics are tracked and examined more

broadly? It is increasingly clear to the authors that to *not* be worrying about this question is to ignore changes in the perception of libraries. If libraries' return on investment (ROI) can only be justified by usage statistics and other trackable activities, administrators can more easily argue against current and future library investments.

Proposed Value Report for Non-Text Resources

It is difficult to propose an ideal way in which to present the value of non-text electronic resources to library and campus administrators, but in order to paint a fuller picture of the utility of such a resource's value, each non-text resource would ideally be evaluated according to the following criteria. A "value report" for such resources (and arguably text resources as well) would overcome some of the limitations of current reporting structures and incorporate current broader thinking about library assessment mechanisms.

A value report for non-text electronic resources could minimally include:

- COUNTER-compliant usage statistics (when the multimedia report becomes available)
- Non-COUNTER usage statistics provided by vendor, supplementing COUNTER reports
- Tally of links to resource in campus course management software
- Citations in institutional repository (i.e. any identified links to resource through citations)
- Narratives from faculty in several disciplines about how they use the resource (research and teaching)
- Narratives from students in several disciplines about how they use the resource (coursework and beyond)
- General statement about instructional/informational technology (IT) as a value-added component of student education¹⁹
- Notes about how resource contributes to accreditation standards, citing relevant passages from such standards

The first two items are commonly tracked in current practice (COUNTER and non-COUNTER usage statistics), but according to our research, the other items proposed are not commonly used in reports to administrators about electronic resource utilization. While it might be time-

consuming and perhaps difficult for a library to compile such information for annual (or more frequent) budget meetings, only with such a comprehensive examination of resource utility are libraries beginning to provide objective descriptions of the value of the resources it provides to its community. We look forward to the development of thoughtful evidence-based reporting methods that will provide opportunities to reflect on, and subsequently illustrate, how multimedia e-resources further institutional goals by supporting research, teaching and learning.

Notes

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4. Objectivity of current usage reporting is examined in: Andrée J. Rathemacher, "E-Journal Usage Statistics," 80-86.
5. "Welcome to the VRA Core 4.0," <http://www.vraweb.org/projects/vracore4/>.
6. "Introduction to Controlled Vocabularies (Getty Research Institute), http://www.getty.edu/research/conducting_research/standards/intro_controlled_vocab/cultural_objects.html.
7. ARTstor, a non-profit organization, was established to provide a shared networked solution for content building workflow that was for decades managed locally at each educational institution. Today, ARTstor is an independent non-profit organization that provides an ever-growing digital image library for use in art history, the humanities, and the social sciences with over 1,200,000 images and software infrastructure to over

- 1,300 colleges, universities, museums, libraries, and schools around the world.
8. Louise Kelly, Tammy Sugarman and Stephanie Krueger previously identified these gaps at the Charleston Conference, 2009, and NASIG, 2010. James Shulman additionally discussed them at an IFLA Pre-Conference on Usage Statistics (2010).
 9. There are additional reports related to usage of an archive (Journal Report 1a) or usage reporting when a resource has been licensed by a consortium (Consortium Report 1 & 2) but these all conform to the types of reports in the table above.
 10. This includes all ARTstor events recorded between January 2004 and September 2009, consisting of a total of almost 100 million events. ARTstor events include a range of tracked activities including search, browse, image views, etc.
 11. Diane Harley et al., "Use and Users of Digital Resources: A Focus on Undergraduate Education in the Humanities and Social Sciences," in *Center for the Study of Higher Education* (Berkeley: UC Berkeley, April 5, 2006). This study documents the complex range of uses made of digital resources.
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Ask the Expert: Using Expertise Domains for Library Service Assessment

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Abstract

Most academic libraries collect reference statistics based on a dichotomy specified by ARL that classifies questions as either reference (difficult) or directional (easy). However, this way of coding fails to describe the expertise required to answer questions at a library service desk and leads to misconceptions about how to cross-train library employees and collaborate between library service areas. As an alternative to coding reference statistics by difficulty, we propose coding based on library expertise domains. We describe how insights from this way of coding have been useful to re-design in-house and online reference services at the J. Willard Marriott Library in order to evaluate services at one-stop service points and evaluate the effectiveness of referral for subject specific reference.

Background

Like other ARL libraries, the University of Utah Marriott J. Willard Marriott Library has had to adapt reference services to massive changes in the information environment. In 2006 we began library-wide discussions about how to restructure in-house and online reference services since, in lockstep with national trends, the number of recorded transactions at our in-house desks had declined in the past decade. At the same time, data from LibQUAL+® surveys (2004, 2006) and from our home-grown “Marriott Library User Satisfaction Survey” (1995, 1997, 1999, 2001, 2003) implied that many research activities had shifted online, while the physical building was increasingly used as a social gathering place, study space, and a place for peer-to-peer learning, group learning and classroom teaching. The library wanted to reduce user frustration with multiple service points in a large building and offer better assistance with queries that combine both research and technology issues. As we

considered practical solutions to co-locate and consolidate in-house services and to improve online reference services we found that reference tally marks didn’t tell us how to measure desired goals:

- Describe the function of our service desks
- Assure that questions are answered by someone with appropriate expertise (or by referral to appropriate experts)
- Implement effective cross-training for librarians and staff
- Monitor patron experience to assure service quality

Despite a profusion of literature on reference statistics, the Marriott Library is not the only academic library frustrated by less-than-useful data. A 2002 book-length study of reference statistics by Saxton and Richardson bemoans that since the 1960s research on reference transactions has been generally sloppy and bluntly states that, “After 30 years of research . . . the question of how to evaluate the quality of reference service performance remains unanswered.”¹ Similar frustration is expressed in SPEC Kit 268 “Reference Service Statistics & Assessment” which reports that respondents generally did not give themselves high marks regarding their library’s assessment activities with respect to recording, analyzing and using reference transaction data. The author concludes that, “libraries seem to be casting about for the ideal solution with one library investigating the methods recently abandoned by another.”² One culprit behind the unsatisfactory desk statistics seems to be ARL guidelines for completing the statistics questionnaire, which asks libraries to count “Reference Transactions,” and exclude “Simple Directional Questions.”³ As a consequence, nearly all desk statistics coding

schemes attempt to define which query types are “simple” enough to ignore without acknowledging that in real life any query type can become complex.

At the Marriott Library, we began casting about for a solution by starting from scratch, recording all reference transactions at a co-located service desk and using a grounded theory approach to categorize the questions. At about the same time but independently, similar studies of service desk statistics were done by Buckley, Tancheva and Li at Cornell University,⁴ and by Wong at Hong Kong University.⁵ All three studies identified virtually identical dimensions of library expertise

as shown in Table 1. The Marriott Library also identified a fourth category of *Feedback* since in many cases library patrons are more expert than library staff regarding their needs, and also patron feedback is essential for staff training. In this article categories are described in shorthand as *Research*, *Technology*, *Policy*, and *Feedback*. Subject expertise constitutes an additional dimension of *Research* since subject content is often the factor that turns an “easy” research query complex. Looking at desk statistics through the lens of expertise makes intuitive sense because it mirrors an organizational structure in which staff are hired specifically because of their abilities in *Research*, *Policy*, or *Technology*.

Table 1. Expertise categories at Academic Libraries

University of Utah expertise categories	Cornell University service categories	Hong Kong University	Who are the experts?
<i>Research</i> : connect people with information	Library items, resources & information	Non-technology: Library Resources	Professional librarians
<i>Technology</i> : offer technology help	Computing; Printing & Photocopying	Technology	IT staff
<i>Policy</i> : organizational policy and building layout	Olin-Uris Library people and places; Equipment and supplies	Non-technology Services: Non-technology Information	Paraprofessional staff
<i>Feedback</i> : accept feedback and user suggestions			Library users

The Difficulty with Measuring Difficulty

Librarians often tell patrons that there are no stupid questions, but we have failed to admit that there are no easy answers, either. According to Katz, librarians have been trying to define the difficulty of reference queries since at least the 1930s and probably longer,⁶ so it is somewhat surprising that no validated method of coding query difficulty exists. Saxton and Richardson reported that the only variable found to predict the accuracy of the librarian’s response was the difficulty of the query, but failed to find a good definition of what makes a question “difficult” so they asked a panel of judges to rate queries on a scale of 1 (low difficulty) to 7 (great difficulty); Childers, Lopata, and Stafford tested nine variables to see if any provided a useful measure question difficulty and concluded that time spent on a question serves as a reasonable approximation of difficulty.⁷ However, the obvious problem with using “time spent” as a proxy for query difficulty is that it penalizes experts who can easily answer questions that are

difficult for non-experts. In recognition of this pitfall, ARL instructions for keeping reference statistics specify that, “duration should not be an element in determining if a transaction is a reference transaction.” Librarians testing the READ Scale (a six-point scale that records the skills, knowledge, techniques and tools utilized by the librarian during a reference transaction) similarly found, “We seem to be underrating our questions, basing our ratings primarily on the time spent to answer them and not on the level of knowledge or expertise used”;⁸ and testing the *Warner Scale*, Neville and Henry reported that no matter what scale they are using, “libraries do not always agree on what should be counted as a reference transaction.”⁹

The rationale for measuring query difficulty has largely to do with staffing and training issues, often with an eye towards replacing (expensive) MLS librarians with (cheaper) staff. For example, a study by Ryan on the cost-effectiveness of staffing a reference desk attempts to differentiate

questions that require a librarian and those that could be answered by a trained staff member.¹⁰ Ryan failed to find an existing classification system that worked for the study and invented a unique coding system. Using Ryan's coding, only 11% of queries required the expertise of a professional librarian, but re-coding Ryan's data, approximately 36% of reported queries fell in the *Research* category which suggests that staffing the desk actually requires significant *Research* expertise. From this example, it is easy to see how much difference the coding system makes to evaluate the function of a service desk.

The conventional wisdom that all staff should be able answer easy/directional query types is sometimes presented as a rationale for combining services at a single desk. For instance, a frequently-cited review article about the concept of Information Commons derides the "chauvinist culture of expertise" as a threat to the combined service model.¹¹ The article suggests that all staff should be able to handle basic information questions and "less complex" computer application, research and circulation queries; "complex questions" should be referred to more specialized staff (though no method is described to determine which question are "less complex").

In fact, as academic libraries move to a co-located service model many of them have been reporting unanticipated problems with the conventional wisdom. For example, Mozenter, Sanders, and Bellemy found that after removing expert librarians from a combined service desk, paraprofessional desk staff needed extensive

formal training in librarianship;¹² Murphy et. al. estimated that "61% of questions did not require a professional librarian to answer" and added "reference interviews" to a list of 10 core competencies, then had to revise the list a year later in order to put reference interviews back into the domain of reference librarians;¹³ Crane and Pavy reported that ". . . some librarians admitted to feeling embarrassed asking a circulation staff member for assistance in completing tasks," apparently as a result of an organizational culture that labeled policy question as "straightforward," "mechanical," and "routine";¹⁴ Fitzpatrick, Moore, and Lang described confusion as librarians struggled to solve equipment problems while student assistants fielded questions beyond their training;¹⁵ McKinstry and McCracken reported that after the first year of operating a combined service desk they had to put up a sign that indicated "Reference" to the left and "Computing" to the right.¹⁶ A common thread in these evaluations is that staff at co-located desks were perceived by the public in the role of "expert" when in fact they lacked the expertise to handle complex queries in some areas.

Thus an additional flaw in existing categorization systems for desk statistics is that they lump "easy" query types together regardless of which expertise domain they represent. For example, Table 2 shows "easy" query types from SPEC Kit 268 re-coded by expertise domain, and likewise Table 3 shows how "easy" query types from the *READ Scale* map into different expertise domains.

Table 2. “Directional” becomes a catch-all category for frequently asked question types that actually require a broad spectrum of expertise:

Tasks categorized as “Directional/Easy” in SPEC Kit 268	Expertise domain (Marriott Library)	Content category (Cornell)
Directions for locating facilities such as restrooms, telephones, photocopiers, etc.; Supplying materials such as paper or pencils; Locating library staff and service points; Information about library policy and hours; transfer a phone call; Explaining Circulation Policies	<i>Policy</i>	Olin-Uris Library People and Places; Equipment & Supplies
Call number location; Going to the stacks with a person who has a call number; Searching for books not on shelf; Find book reserved for a class; Directing patron to a requested title; Directions to another building or service on campus or any geographical location; Assistance filling out Interlibrary Loan request form	<i>Research</i>	Library items, resources and information
Assisting with operation of machines; Clearing printer jams; Rebooting computers; Helping people logon; Fixing printer queues; How do I get a password?;	<i>Technology</i>	Computing; Printing & Photocopying

Table 3. Easy query types on the READ Scale, re-coded by expertise domain

READ scale	Task	Expertise domain
1. Answers that require the least effort and no specialized knowledge	Directional	<i>Policy</i>
	Hours	<i>Policy</i>
	Service point location	<i>Policy</i>
	Rudimentary machine assistance	<i>Technology</i>
2. Minimal specific knowledge	Call number inquiries	<i>Research</i>
	Item location	<i>Research</i>
	Minor machine assistance	<i>Technology</i>
	General library policy	<i>Policy</i>
Etc...		

The Psychology of Expertise

A brief look at the psychology of expertise helps explain why it is so hard to determine query difficulty. Even though people can be labeled “expert” in a purely organizational sense, “expertise” is actually a relative quality which can only be said to exist in relation to the relative lack of experience of a novice or non-expert.

From a social psychology perspective, described by Mieg the role of “expert” is mainly a form of social interaction. In this view an expert is a knowledge interpreter who is consulted because

of “relatively fast utilization of the expert’s compressed experience any reasonable person could make if he or she had enough time to do so.” Even though knowledge can be found in books that anybody could read, using experts is a time-efficient use of knowledge, and in organizations “relational experts” are members of the staff who function as knowledge sources for others in the company.¹⁷

The standard reference on expertise by Chi, Glaser, and Farr lists the following characteristics of an expert (summarized):¹⁸

1. Experts excel mainly in their own domains.
2. Experts perceive large meaningful patterns in their domain.
3. Experts are faster and more accurate than novices at performing skills of their domain.
4. Experts have superior short-term and long term memory.
5. Experts see and represent a problem in their domain at a deeper level than novices.
6. Experts spend a great deal of time analyzing a problem qualitatively.
7. Experts have strong self monitoring skills.

From an educational psychology perspective, expertise is the result of deliberate practice. Willingham writes that, "Experts are not simply better at thinking in their chosen field than novices are; experts actually think in ways that are qualitatively different . . ." and "The only path to expertise, as far as anyone knows, is practice."¹⁹

Thus in a library, it is in the best interest of the patron to ask an "expert," which is to say, the person who is most likely to be able to give a quick, accurate answer. Ideally, a query of any type that threatens to become confusing or time-consuming for the person asked should be referred to an expert who will, in theory at least, be able to apply meaningful patterns learned from experience in order to solve the problem.

Rare query types should be answered by an "expert" not because they are objectively "difficult" but because they are relatively hard for a non-expert to answer. Considering the psychology of expertise, the expected result of distributing rare query types randomly amongst all staff would be to dilute the opportunity to practice. Far from promoting an irrational "chauvinist culture," accurate referrals would be expected to have the positive effect of giving patrons time-efficient, generally accurate answers while at the same time giving library staff sufficient practice to claim the organizational role of "expert" in their domain.

From an expertise perspective, then, it becomes clear that cross-training serves as an investment in future time-saving, and training should focus not on *easy* query types but on *frequently-asked* query types which service desk staff will have abundant chance to practice. Since experts have already made a large time investment to gain their

expertise, it makes sense to provide practice opportunities for individuals who can serve as relative experts within the organization. It is important to recognize that the opportunity to gain practice benefits mainly library staff. Patrons are far more interested in getting an accurate answer right now than in assuring that they will encounter knowledgeable library staff in the future.

Building Expertise into Measurement Strategies

The ideas presented above informed the strategy used by various Marriott Library committees and taskforces working to build a better system for gathering desk statistics. A Marriott Library Reference Statistics Taskforce formed in 2007 originally took on the task of redesigning an online desk statistics form. The taskforce arrived at the elegant solution of designing the form with four columns, one for each library expertise domain. Specific query types could then be listed in each column and desk staff could simply click on a query type to record each transaction. This prototype form also provided an open-ended field for comments in order to record actual questions. The first version of the form was used for an entire academic year in 2007-2008, and during this time the Library appointed a new Head of Online Services and Head of Research and Information Services who lead the planning efforts to build a new one-stop-shopping Knowledge Commons and improve Online public services. In December 2009, the Marriott Library began using DeskStats and RefTracker software to record service desk and online reference transactions. This gave us an opportunity to evaluate the existing measurement tool, make revisions to the strategy and adapt it to the new software. In October 2009, the Library began using CampusGuides software to publish online research guides, and by using the same categories, was able to gather usage statistics on the guides that easily merges with data from in-house service desk and online reference. The structure of data gathering is described in detail below:

College & Interdisciplinary Teams promote Research subject expertise

Prior to institutional re-organization, the Marriott Library had been organized by subject specialty departments and each department staffed and managed a physical service desk. Afterwards

librarians were re-assigned librarians to functional departments. Instead of the former subject specialized departments the library formed College and Interdisciplinary Teams (CITs) which are responsible for collection development, department liaison work and maintaining subject expertise. The team structure is more flexible than the department structure since a single librarian can be on more than one team and it easier to change teams than to change departments. Membership in a CIT defines the group of people who are specifically responsible to be “experts” in the following subject areas:

- Documents & Maps
- Fine Arts, Architecture, Planning, Humanities
- International & Interdisciplinary
- Media
- Science, Health Engineering & Mines
- Social Science, Education Business Social Work
- Special Collections

The CIT groups function as subject-specific reference desks, but translated into virtual space. Subject specific queries can be referred to the whole group by broad subject area since team members are more aware of who has specialized knowledge within a group and can consult that individual.

Physical desk statistics coded by expertise domain

Table 4 shows how DeskStats (a software module for recording in-house statistics) records transactions by query type listed assigned to an expertise category group (*Research*, *Technology*, *Policy*, *Feedback*). Specific query types are also recorded.

- The statistics show a fairly even split between the three functions of *Technology* (37.9%); *Policy* (33.68%); and *Research* (23.68%).
- The desk fields a large number of *Technology*

questions, but most of them are solved very quickly because the query-type is printing. Both *Technology* and *Research* produced time-consuming queries, though a slightly higher number of *Research* queries required extended help.

- Directional/Policy and Circulation/Reserve are both *Policy* categories, but they are recorded in separate columns because Circulation/Reserve experts are located at a different service desk. The fact that few extended Circulation/Reserve queries were handled at the Knowledge Commons desk may indicate that desk staff made appropriate referrals for tough questions.

By looking at recorded questions, it is possible to estimate how much subject specific expertise is used at a service desk. For example, a preliminary study of science questions at the Knowledge Commons desk showed that in a 4 month period between February and May 2010: 3653 Questions were categorized as *Research* (18% of all questions); 153 of those included comments; 29 of the comments indicated science topics(19%). So, as an estimate, 19% of all Knowledge Commons *Research* questions are science topics; considering all questions, the Knowledge Commons desk gets about 173 Science questions per month, and about 3% of all Knowledge Commons desk questions are Science related. These estimates clearly show that the physical desk is handling a large number of science-specific questions (3000+ /year) but they are a small proportion of all questions. The combined service model means that a patron who randomly approaches the desk will almost never ask a science expert, and no individual at the desk will field enough science questions to develop and maintain up-to-date subject expertise. As a solution, the RefTracker e-mail reference system has been set up to specifically facilitate referral to a CIT committee.

Table 4. In-house desk statistics from the Marriott Library Knowledge Commons, Summer Semester 2010

	Technology Assistance	Research Assistance	Directional/policy	Circulation/Reserve Services	Other	Workshops, Tours, Classes	Suggestions/Comments
< 1 Min	1375	379	1037	843	64	30	78
1-15 min	1326	1218	333	332	79	77	21
> 15 min	150	143	6	6	7	2	0
Extended	32	61	3	2	1	2	0
Totals	2883	1801	1379	1183	151	111	99
	37.90%	23.68%	18.13%	15.55%	1.99%	1.46%	1.30%

Online reference forms distribute to expertise groups

RefTracker is an e-mail management software module that supports online reference. RefTracker was set up to include e-mail distribution lists for each CIT group (*Research* expertise), and also for *Policy* expertise groups in Interlibrary Loan, Reserve/Circulation, and E-Journals. Questions received via e-mail are distributed to the entire group, and then reallocated to whichever individual will actually answer the question. Allowing the whole group to see questions is a *Feedback* strategy to promote subject-specific expertise. *Technology* queries are typically received via a separate trouble-ticket system.

Virtual desk statistics coded by expertise domain

One problem with reference desk statistics is that public service is not necessarily tied to a physical location. Table 5 shows how using DeskStats reference transactions can be attributed to a virtual service desk rather than to a physical service location in order to record queries that were received through referral or in person. CIT members can record subject specific questions that they receive via referral or personal contact. A comment box may be used to record the actual question so that over time, questions can be compiled into a list in order to identify subject-specific frequently-asked-questions. Since accurate referral can be understood as a measure of service quality, recording off-desk activity helps evaluate whether CITs are receiving appropriate referrals.

Table 5. Virtual desk statistics recorded by members of the DOCMAP College and Interdisciplinary Team for Summer Semester 2010

	Directional/policy	Research Assistance	Technology Assistance	Total	
< 1 Min	1	1	0	2	5.00%
1-15 min	3	18	0	21	52.50%
> 15 min	0	6	2	8	20.00%
Extended	0	9	0	9	22.50%
Totals	4	34	2	40	100.00%
	10.00%	85.00%	5.00%		

E-mail queries coded by subject expertise group

When a RefTracker transaction is complete, the respondent can assign it to either a CIT category

or to "Other." Table 6 shows statistics from Summer Semester 2010 that indicate that about 37% of online questions drew on subject-specialized expertise

Table 6. E-mail questions received in Summer Semester 2010, coded by CIT group to indicate questions that required subject-specific knowledge

Documents, Maps	Fine Arts, Architecture, Planning, Humanities	International, Interdisciplinary	Multimedia	Other	Science, Health, Engineering, Mines	Social Sciences, Business, Education, Social Work	Special Collections
5	4	1	7	40	6	11	1
6.67%	5.33%	1.33%	9.33%	53.33%	8.00%	14.67%	1.33%

Online research guides grouped by expertise group

Online research guides are also grouped by CIT category in order to identify subject experts and facilitate referrals since it is easy to evaluate the relative expertise of whoever wrote the guide. The Marriott Library uses CampusGuides software which offers built-in usage statistics that can be downloaded to an Excel spreadsheet, and used in conjunction with data from DeskStats and RefTracker. Guidestatistics can also be used to get *Feedback* about patron interest in various subjects. For example, a large number of hits on a "Ski Industry Demographics" page prompted librarians to expand link the information to other guides.

Conclusion

The measurement strategies described here are not meant as an argument against the combined service desks which actually have many compelling advantages as a public service model. Rather it is an argument that distinct services co-located at a service desk should be described and measured separately, even when (or especially when) staff are crossing expertise boundaries in their daily work. In order to measure services in this way it is necessary to abandon the idea that some tasks are so easy they "don't count," and recognize that "easy" query types actually form the foundation for developing deeper expertise in any service area. In practice, Marriott Library committees found this type of data informative for evaluation and planning, but there are other advantages as well. Continual *Feedback* assures that training, cross-training and practice are focused where they will be most beneficial to staff

and patrons. The system is scalable, and allows comparison between service desks with different functions. Perhaps the strongest advantage is, recognizing the value of different types of expertise fosters collaboration by encouraging librarians and staff to develop better understanding and respect for abilities outside of their own domain.

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Instant Messaging, a Synchronous Virtual Reference Tool That Mirrors Higher Education's Mission and Students' Needs: How Grounded Theory Placed the Library in the Middle of the Mix

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Abstract

Most academic libraries provide instant messaging services, which are a form of synchronous virtual reference (SVR), to their users. The authors wanted to discover what occurs during SVR interviews at Iowa State University library. Grounded Theory formed the theoretical framework for this qualitative research. Analyzing the SVR interviews, in this case instant messaging (IM) transcripts, involves coding the text. The patterns that developed from these codes developed into groups that became axial codes and selective codes. After developing several code groups called axial codes, networks emerged. Three networks grew out of this research; the networks were community awareness, teaching and learning, and service quality. This research illustrates that reference services provided essential community awareness regarding community services and provided teaching and learning opportunities for users. SVR increases users' abilities to access and assess research materials and builds users' knowledge of their campus community. SVR illustrates the library's central role in supporting the teaching and learning experiences of users and in complementing the mission of research institutions.

Introduction

What occurs during a synchronous virtual reference (SVR) interview? What place does this service have within the larger mission of the university? SVR is a reference service that provides real-time feedback. SVR can include instant messaging (IM), Skype, or videoconferencing. In contrast, email is an asynchronous messaging tool. The SVR research conducted at Iowa State University (ISU) library assessed the content of the instant messaging transcripts employing Grounded Theory (GT). GT

is an inductive model. This research moved from the transcript data to create a generalized theory "about" synchronous virtual reference. The research uncovered three main activities related to reference questions. The two activities—community awareness and teaching and learning—provide important support to the larger goals and mission of the university. Additionally, the other activity—service quality—described the level of service users' received during an SVR interview. The results of this research illustrated that SVR provided important community awareness services to users. This awareness provided users with a physical and virtual understanding of their community environment. Additionally, SVR afforded users, at times, essential teaching and learning opportunities especially when users asked questions related to accessing electronic scholarly resources. This assessment showed SVR services can supply libraries with important data. It is possible that this type of assessment can be used by library personnel and administrators to illustrate the library's central role in supporting student learning and the mission of the university.

Background

Tic-mark tallying is a common method for gathering reference data. There is no standard method for assessing the content of SVR transactions. ISU library used the instant messaging (IM) application Meebo as its SVR tool. In the fall of 2008, the assessment librarian reviewed the IM transactions. The assessment librarian, in collaboration with a Meebo coordinator, formulated a qualitative analysis of the transcripts that would allow them to assess the content and effectiveness of the library's SVR service.

Theoretical Framework

To fully assess SVR transcripts, the researcher used GT, a method that lets the material “speak for itself.” The sociologists Barney Glaser and Anselm Strauss developed GT in the 1960s. Glaser and Anselm acknowledged that the schema of data gathering, data coding, and data analysis is not a linear process.¹ Inductive research starts with the specifics or particulars. A hypothesis grows from the particulars of the data. Most importantly, theory emerges from immersion in the data itself. Due to the fact that GT is an emergent theoretical model, the researcher does not conduct a preliminarily literature review before conducting research.

Four basic elements ensure the validity of library assessment employing GT.

1. The theory must fit the phenomenon and reflect the data.
2. The theory should provide understanding about the event, and it must be understandable.
3. The analysis from GT should provide generalities for a variety of contexts.
4. The theory should support actionable goals.

GT provided a rigorous, comprehensive framework to analyze, to illuminate, to generalize, and to provide actionable goals related to the service provided by ISU library.

In later years a philosophical schism occurred between Barney Glaser and Anselm Strauss. Strauss emphasized immersion in the data and discovery of meaning by reviewing the process. Glaser’s method underscored the need for a structure and a process in organizing the data. This research incorporated elements of each “tradition.” Emphasizing Strauss’s focus on the analytical and interpretative skills of the researcher, the initial research proceeded with a discovery-oriented approach. As the work progressed, the researcher used Glaser’s structure for organizing the data, the patterns, and the theory. To learn more about the differences in GT processes, the book *Constructing Grounded Theory: A Practical Guide Through Qualitative Analysis* by Kathy Charmaz provides lucid introductory information on this topic.² The combination of both theories increased the fit,

validity, and generalizability of this research. Implementing Glaser’s formal structure eases the ability of future analysts to perform similar assessments of synchronous virtual reference.

Methodology

The initial analysis included the collection of 38 synchronous virtual references. The researcher then proceeded to code an additional 46 transcripts over a period of six months. The researchers coded the text, provided memos, and created conceptual frameworks. Codes represented comparable occurrences across multiple transcripts. The process of coding occurred in three major stages. This process included coding the first batch of transcripts, reviewing and revising the codes, and completing the coding for all transcripts. This research employed the ATLAS.ti software developed for qualitative analysis.

Software

ATLAS.ti is a software developed specifically for qualitative research. The software facilitates researcher ability to code transcripts, create networks, examine frequencies, and review density from the data. Data analyzed in ATLAS.ti can be summarized in visually appealing tables, graphs, or figures. The initial 38 transcripts were coded in the software. The software does not allow additional transcripts to be added once the analysis is begun. Either a new set of transcripts becomes a separate hermeneutic group, or it must be tallied in a different application. To analyze the other 50 SVR transactions, the researcher used Microsoft Word and Excel.

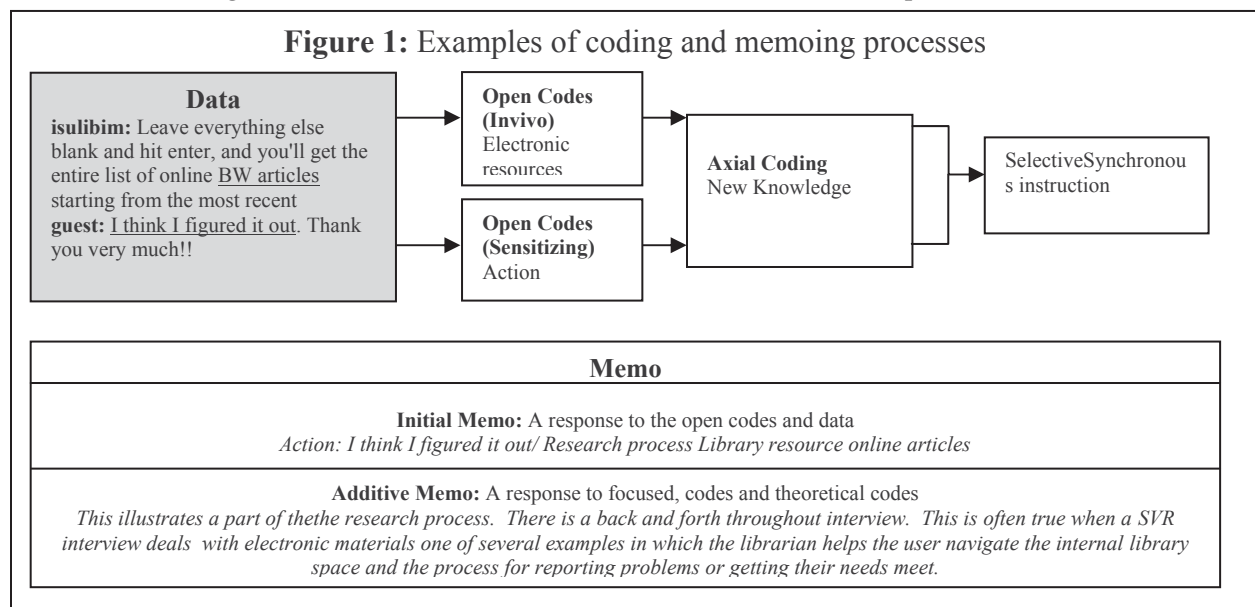
Coding

The coding process facilitated the researcher’s immersion in the data. Immersion allows the researcher to understand the data. Concepts and a theoretical understanding of the content emerged from the transcripts. Coding proceeds sequentially: open coding, focused coding, and lastly, theoretical coding. In previous analysis of SVR transcripts, this researcher used ATLAS.ti terminology.³ For this paper, the terminology used is the standard vocabulary employed by GT and/or qualitative researchers. Table 1 provides definitions of the specialized terms used in GT.⁴

Term	Definition
Open coding	This stage focuses on the words of the participants. The unit to analyze varies from an individual word, line-by-line, several sentences, or paragraphs; the process includes highlighting words and creating reflective memos about potential interpretations of data.
Axial Coding	This is the second stage of coding. It identifies properties and dimensions of categories (key categories subsume sub categories & specify interrelationships).
Selective Coding	This is the final stage of coding: the researchers create substantive theory from “core categories.” At this stage the researchers generate category that integrates all other categories (tells the whole story) into a network.
Invivo Coding	This type of code directly describes the data. For example, the code milkman represents the word milkman.
Sensitizing Coding	This is a conceptual code that describes the implicit or social meaning of a code. For example, the code learning can represent the word phrase- I understand.

A reiterative, recursive process occurred during this stage of analysis. The shifting and sorting of data occur until the focused codes create a pattern that explains the content of the SVR interview. The next stage involved creating networks. This involved the emergence of the theoretical schema

that is graphically created in ATLAS.ti. The integration of data, categories, and meaning occurs at the theoretical coding stage. Figure one illustrates the relationship between the data and different codes and between memos that occurred within these transcripts.



Memoing and Sorting

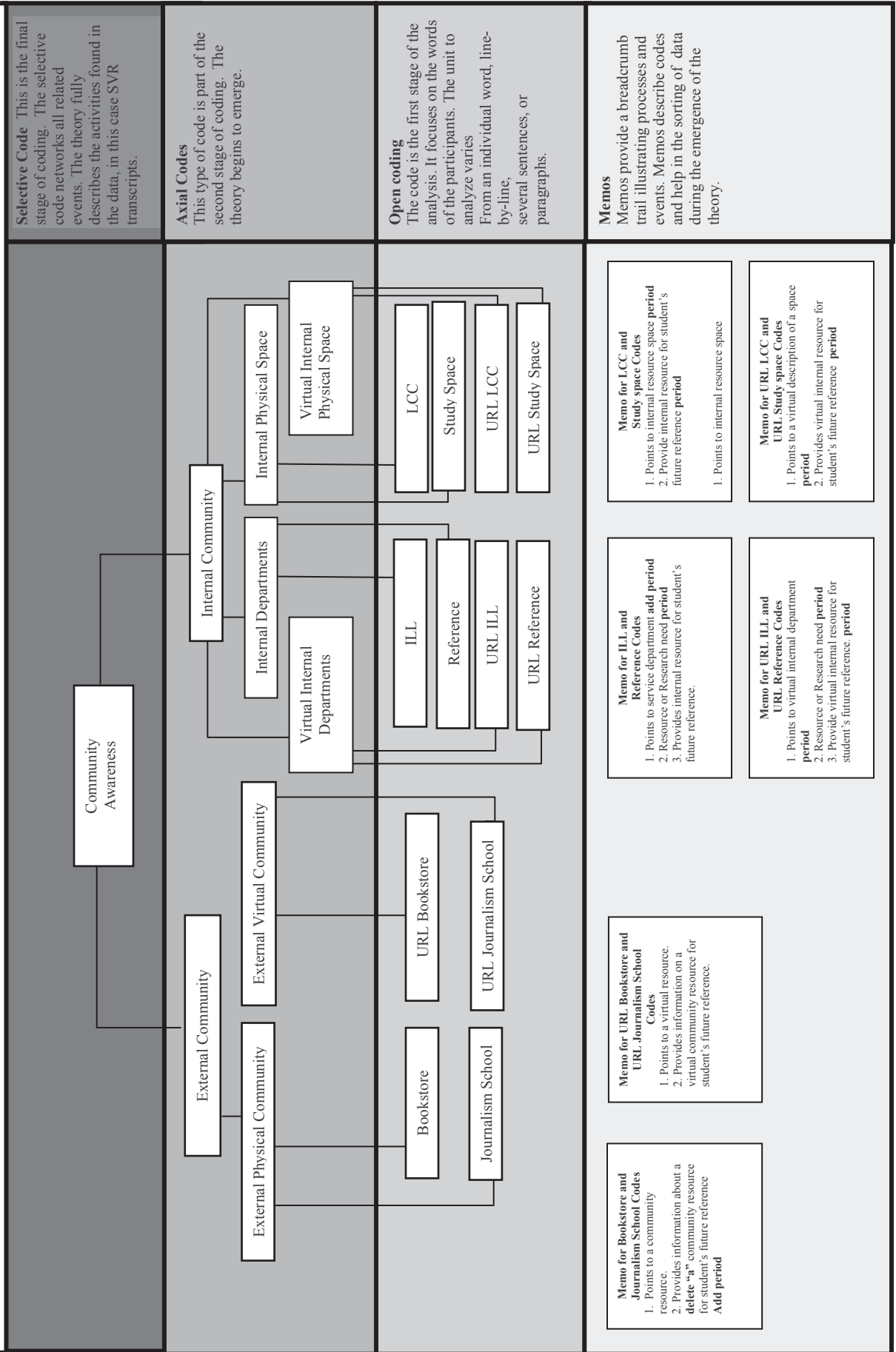
During the coding process, the researcher takes notes concerning the data, the development of codes, and the interrelationship of events. Memos provided a breadcrumb trail illustrating analytical processes and events. Sorting the data, the codes, and the memos assisted in the organization and finalization of a theoretical description of what

actually happened during the SVR interviews.

Results

The organization of the codes fell into three major selective codes or networks: teaching and learning, community awareness, and service quality. The complete content of all the analyzed transcripts fell into one of the three networks.

Figure 2: The Community Awareness network includes two branches of selective codes. This figure shows the relationship between the different strata of codes. A few of the many codes for each family are shown. Codes form the foundation of the Community Awareness network. A similar graph will appear in the article "The Role of Synchronous Virtual Reference in Teaching and Learning: A Grounded Theory Analysis of Instant Messaging Transcripts," *College & Research Libraries*.



Community Awareness Network

Figure 2 depicts the structure of the community awareness network. This research defined community awareness as providing increased knowledge of and/or increased access points to community services either within or outside the library walls. This concept parallels the idea of boundary spanning. Boundary spanning allows a person to make connections to other services or resources.⁵ In this case, the data illustrates that users make connections with the services within the library, the campus, and beyond. The ISU SVR service supplies users with markers for physical and virtual places and departments. For users, particularly students, URLs virtually map community resources and/or important educational services.

Community Awareness Data

Of the 84 transcripts analyzed, 39 fell within the

community awareness network. Community awareness transcripts dealt with a service resource, place, or department. Community awareness activities represented 45% of the total transcripts. Of those 39 transcripts, 29 related to the *internal community*. Internal community deals with the library as a place. Within the *internal community* subcategory, 18 transcripts related to *internal departments*, and 11 related to *internal space*.

The axial code *internal departments* and *virtual internal departments* occurred twice; axial codes *internal space* and *virtual internal space* occurred once. The identification of a URL that corresponded to a physical space or department characterizes this category. The virtual categories in this research always had a one-to-one relationship with the physical space or department discussed or named.

Figure 3: Example of a coded transcript from the Community Awareness Network

The screenshot displays a chat transcript in a software window titled "mistressmeebo2 - ATLAS.tI". The transcript shows a conversation between a "Guest" and "Isulibim" (a librarian) regarding a lactation room. The guest asks for information, the librarian provides a URL, and the guest thanks the librarian. The right side of the window shows a hierarchical tree of axial codes applied to the transcript. The codes include "Introduction", "Lactation Room", "query user parks physical space", "referral internal", "virtual internal lactation", "teamwork--", "Extreme Appreciation User", "exclamation point", "User Technology Problems", "Closing", and "exclamation point".

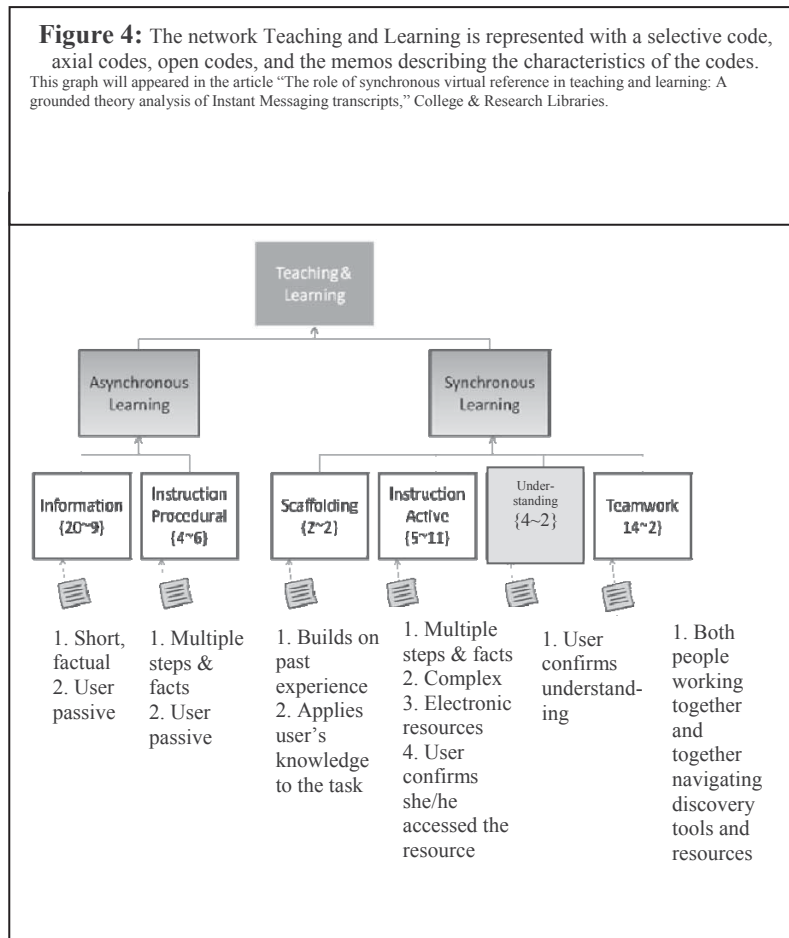
The other sub-category in the community awareness network was external community. A total of nine transcripts contained the code *external community resources*; this code described campus departments, regional public

libraries, other universities, or businesses. Of the nine *external community resource codes*, three also referred the community service virtually with a URL marker.

Community Network Examples

Figure 3 illustrates a transcript uploaded and coded in the ATLAS.ti software. Figure three illustrates codes that became part of the focused category *internal community* and *virtual internal community*. This represents a user request about a library space. The librarian refers both to the room and to the URL that virtually describes the room.

In essence, the URL maps, for the user, the room in both a virtual space and within the physical space of the library. It mirrors the world students live in—a world in which the virtual and physical are not dualistic but rather complementary.⁶ This also encourages retention of the information for later use.



Teaching and Learning Network

At times learning occurs because the "teacher" imparts basic information to the student in a procedural fashion. At other times teaching and learning is form an interactive, collaborative process between students and instructors that promotes critical thinking and creative skills when examining problems, issues, or concepts. The teaching and learning network includes two teaching and learning axial codes; the first is asynchronous learning, which is a linear approach to teaching, and the second axial code is synchronous learning, which is a complex and dynamic collaborative learning.

Figure 4 shows the open, axial, and selective codes for this network. There are two open codes: information and instruction procedural that make up the larger asynchronous-like learning focused code. In Figure 4, the memos for asynchronous learning describe a static process. The synchronous learning memos describe a dynamic learning experience, which is preferred by today's students and which complements the strengths of synchronous learning.⁷

Teaching and Learning Data

Of 84 transcripts, 52 (62 percent) fell within the teaching and learning network. SVR teaching and

learning queries dealt with collections (journals, books, etc.) and/or resource finding tools (library catalog, library discovery tool, databases etc.). This was 62% of the total transcripts. Of the 52 teaching and learning transcripts, 44 related to asynchronous learning. Eight of 52 teaching and learning transcripts belonged to the synchronous

learning axial code. Within this axial code, four transcripts related to scaffolding, nine to active learning, six to understanding, and 20 to teamwork. For a transcript to fall under the synchronous learning branch, three of the four open codes had to be present.

Figure 5: Excerpts representing codes in the Asynchronous learning Family	
CODE: Information	CODE: Instruction Procedural
<p>Guest: Can you please tell me if ISU has online access to the journal " Education with Production" Add question mark. None of these comments have punctuation – Is that intentional? Same at right.</p> <p>Isulibim: Let me check</p> <p>Guest: thank you</p> <p>Isulibim: No we don't seem to have it. Could could get articles from it through interlibrary loan</p>	<p>Isulibim: That should link to several options for the full text online, depending on the date of the article.</p> <p>Guest: yes and it said in the periodical room, does that sound right</p> <p>Guest: i am looking for two different dates and there is nothing for the earlier dates, so i looked on line and it says you have a journal of psychology here</p> <p>Isulibim: Periodical Room would be for very recent paper issues,</p>

Teaching and Learning Examples

The examples in Figures 5 and 6 show the characteristics of each code. In graph Figure 5 the example for the open code—*information*—shows how the incident involves a fact and a simple response. The *instruction procedural* open code

shows how there are a multiple facts that explain something and the user passively receives the information. Even though this is a synchronous tool the teaching style is more linear and asynchronous.

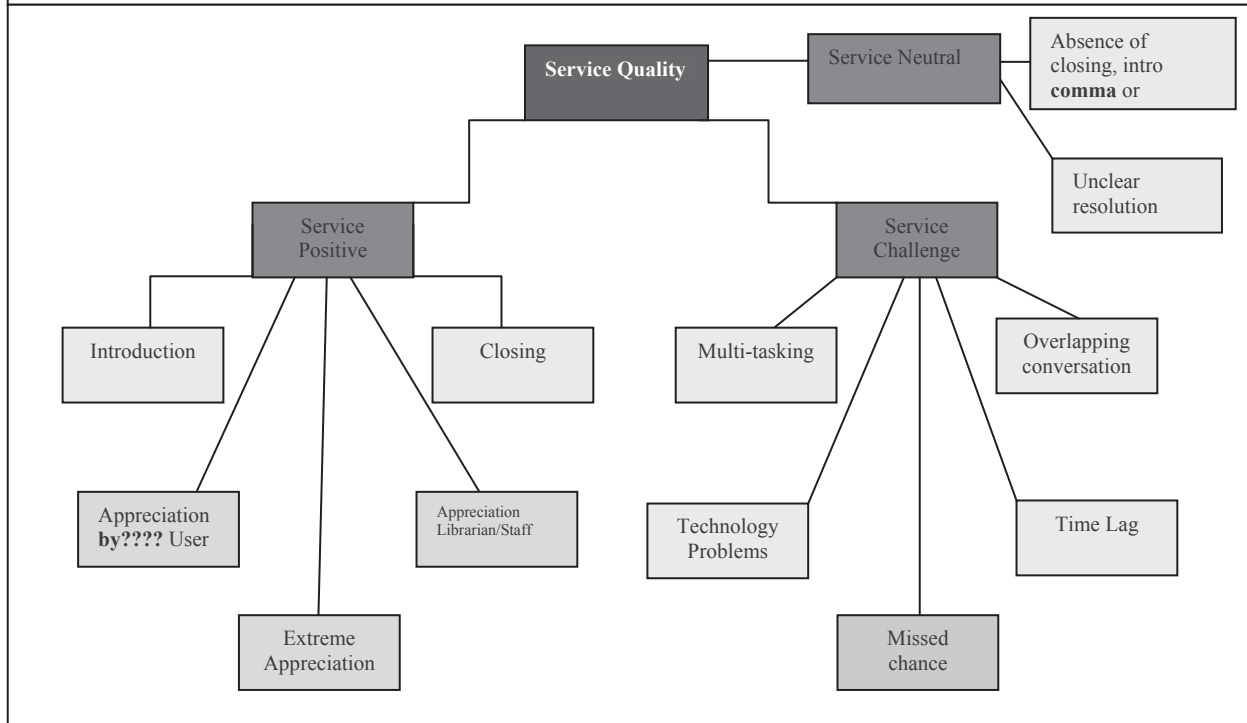
Figure 6: Excerpts representing codes in the Synchronous learning Family	
CODE: Teamwork	CODE: Scaffolding
<p>Isulibim: What date are you looking for?</p> <p>Guest: I need . . .</p> <p>Isulibim: Let me check</p> <p>Guest: any luck?</p>	<p>Isulibim: Are you familiar with Business and Company Resource Center?</p> <p>Guest: no, but I am looking for them online through the library website</p> <p>Isulibim: Here's what you can do:</p>
CODE: Understanding .	CODE: Active Instruction
<p>isulibim: ok</p> <p>isulibim: There is a limiter by language</p> <p>Guest:: Aah I see it</p> <p>Again . . . is intentional to have no caps or punctuation?</p>	<p>Isulibim: Click on the "My Value Line" when you log in</p> <p>Isulibim: Let me know when you're there.</p> <p>Guest: Okay i am that far</p> <p>Isulibim: OK, now go into the database - . . click on proceed.</p> <p>Guest:k</p> <p>Isulibim: Good now click</p>

The *understanding* code corresponds to active language such as "Aah, I see it." Under the scaffolding example (Figure 6), the librarian asks a background question "are you familiar . . ." which engages the user. The active instruction example questions the user with "did you get what you needed . . ." and "ok, now go into the database—click on proceed . . ." All the codes of the synchronous learning branch provide immediate, interactive feedback with the user. Previous research concluded that these elements increase the users' learning and complement the learning tools and styles found throughout our current educational environment.⁸

Service Network

Service is the third network. This research defines service as the interaction positive, negative, or neutral-between the library staff(s) and user(s). Service, like teaching and learning, is a fluid process. Service can either continually improve, remain static, or deteriorate. Libraries must continually assess and tweak services to provide the support users need to feel tied to their community and to succeed in their research.⁹ Figure 7 illustrates the service quality network.

Figure 7: The two branches of service quality are service positive and service challenge. A similar graph will appear in the article “The Role of Synchronous Virtual Reference in Teaching and Learning: A Grounded Theory Analysis of Instant Messaging Transcripts,” *College & Research Libraries*.



Service Network Data

Of 84 transcripts 61 (71%) contained positive service. 12 transcripts, or (14%), illustrated negative service. 11 transcripts, (13%), illustrated

neutral service. Figure 7 illustrates the service network branches.

Figure 8: Excerpts representing codes in the Service Challenge Network	
<p>CODE: Overlap</p> <p>Guest: And are you ...? Isulibim: Yes - Isulibim: hold on a second - ...I want to check on something for you. Guest: And how can I? I need that document Guest: ok</p>	<p>CODE: Technology</p> <p>Isulibim: even a moment later... Guest:: Oh no! My popup blocker reset the chat window. Could you sent that link once more?</p>
<p>CODE: Time lag</p> <p>Guest: And are you ...? Isulibim: Yes - Isulibim: hold on a second - I want to check on something for you. Guest: And how can I? I need that document Guest:: ok</p>	<p>CODE: Missed Chance</p> <p>Isulibim: There is this item . . Guest:: i doubt that is the one Guest:: how do i search for it myself? Isulibim:: There is this one: No colon</p>
<p>CODE: Multitasking</p> <p>Isulibim: Hope you haven't given up - - I had someone at the desk just as you asked your question.</p>	

Service Network Examples

Service challenge and service positives (see Figure 7) codes show the importance of quality service. Figure 8 shows examples of service challenge codes; the *overlap* code illustrates the user and the librarian stepping on each other’s words and the

conversation breaks down. This occurred six times in the transcripts. The *Time lag* code describes a lag in the service or in the user’s response. This breaks up the communication flow. This occurred five times. *Technology issues* occurred ten times. Either a window pops up, the

application crashes, or other computer-related issues affect service. The code *missed chance* only occurred three times but has the potential to create the strongest negative impact. This occurs when the librarian does not listen, overriding the user's need. *Multitasking* occurred five times and

occurred when a librarian helped more than one user. It also occurred when a user left to do something else only to return later. All these elements negatively impact users, their learning, and their access to information.

Figure 9: Excerpts representing codes in the Service Positive Network	
CODE: Introduction	CODE: Extreme Appreciation
<p>Guest: Hello Isulibim: How can I help you?</p>	<p>Guest: OKay thank you very much! have a great day and enjoy the weather outside its amazing out!!! Isulibim thanks -</p>
CODE: Closing	CODE: Appreciation
<p>Guest: thanks for the help Isulibim: You're welcome. Sorry it wasn't better news for you. Guest:: Delete one of these colons. ok</p>	<p>Guest: Sounds good. I will! I appreciate your help. Isulibim: No problem. Glad you used our service</p>

Figure 9 shows examples of service positive. Service positive included an *introduction*, *closing*, *appreciation*, and/ or *extreme appreciation* (in which exclamation points, emoticons, or words such as very, extremely, happy, or similar adjectives are used).

Neutral service occurred when there was no response from the user that indicated the SVR experience was useful. This happened because the user left and came back later in the day telling the librarian they returned. Other times the user just logged off. It was unclear if the service was positive or negative.

Recommendations

Based on these findings, the researchers put forward several recommendations. The recommendations were:

1. Librarians should do only one type of reference at a time. No librarian should be assigned face-to-face reference while doing SVR.
2. Librarians should provide an introduction, closing, or acknowledgement to the user.
3. Librarians should listen to the user and take their cue from the user.
4. Librarians should be given support in learning sound pedagogical techniques to increase their skills.
5. Librarians should be mentored and provided time to assess their skills.
6. Librarians should explore visually enhanced SVR such as SKYPE as a tool that could

increase users' community awareness and learning by providing visual mapping cues.

These recommendations support librarians', and users', learning. SVR requires skills and comfort with tools that generally are not taught in library school. SVR provides a robust teaching and learning experience and parallels educational methods and theory. By providing staff development opportunities and resources in the area of synchronous virtual learning, librarians learn how to use an important tool that can facilitate users' learning.

Impact and Implications

Libraries are essential to organizing our ever-changing and expanding information-rich education world. Librarians guide users to community services and to scholarly information. This assessment demonstrates how libraries are a central player in engaging users, many of whom are students, at universities. The library provides an important role in providing students access to community services and to scholarly materials. People from all over the world use the service to access ISU scholarship. Librarians also provide local users with tools and skills to access information across the world. For example, one user wanted copies of South Dakota newspapers. This service provided users with virtual and/or physical mental marking opportunities about the community and scholarly resources.

All 84 SVR transcripts contained incidents regarding community awareness or teaching and learning. Some transcripts contained both. These experiences can support student success by engaging them with community services and with their research process.¹⁰

With respect to community awareness, users' inquiries about a service, department, or the institution, the library provides essential information that creates a nearly complete picture of the library for the user. When referring to community, regional, and national organizations, SVR provides background and details to users about the larger community.

The onslaught of new information, new environments, new friends, and more during the first year of college, as well as the constant change occurring during the college years from decisions in courses, in majors, and in planning for the future, can overwhelm students. The vast incomprehensibility of libraries to campus users cannot be underestimated.¹¹ The importance of providing SVR, which is convenient and allows for some personalization (e.g., changing user names, employing emoticons), complements many users' preferred mode of communication. It embeds the user within the services of the library and within the campus as a form of community awareness, which is essential to supporting student success.¹²

This service provides teaching and learning opportunities to users in a mode that implements current technology in a method most users prefer.¹³ SVR provides a means for learning about and accessing scholarly materials that cannot, as of now, be easily found on the web. But libraries must examine and improve their services to provide support and success for users. Libraries increase users' awareness of all the services and resources that the whole university provides. By providing the best services it is probable that the amount of synchronous learning between librarians and users will increase.

SVR service provides a mechanism that supports student social and academic needs. It is imperative that reference librarians continually improve their skills and that their skills transfer to Skype and other SVR tools. The more contact with, the more assistance provided to, and the

more quality service given to users provide academic libraries a strong argument for the value they add to the community and to teaching and learning services that support the mission of the larger institution.

Conclusion

Librarians need to conduct more in-depth assessments in the area of reference services and learning. With respect to this research, it would be of great interest if other librarians replicated this research doing a content analysis using the codes developed for this assessment. Can this assessment be generalized to other college and university libraries? Do the SVR activities of IM correspond to the activities of texting or other synchronous technologies? Would providing a visually enriched service like SKYPE increase learning? Can the lessons learned from this assessment apply to other areas of the library? Library instruction, especially during a synchronous learning activity, would benefit from implementing some of the recommendations. Most importantly, this assessment provides data and exciting narratives to share with university administrators. Sharing this type of data with university officials provides the library with a leadership role in the area of providing innovative community access points and teaching and learning experiences to the users of the campus.

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Renewals and Interlibrary Loans in Libraries: An Analysis of Affordances and Changing User Behavior

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Abstract

The purpose of the paper is to explore intended and unintended effects of technological development in relation to user behavior. Another purpose is to explore how well and ecological perspective and approach can contribute to explanations of intended and unintended effects. The specific purpose of the paper is to explore changes in renewals and in interlibrary loans and analyze these changes.

The technological development investigated is the Danish national database consisting of the databases and catalogues of all libraries in the country. All citizens have access to the joint holdings of all libraries through a national database named bibliotek.dk. Users have the right to order material from every library in the country and get it delivered at their local library, be it a public library or a research library. Every library gives the user the option to seek, localize, reserve and renew documents.

There are several interesting findings. First of all, the drastic increase in renewals and their distribution on different libraries and types of materials are analyzed. The consequences and effects of this drastic increase are analyzed in an ecological perspective. We also found an increase in interlibrary loans especially in relation to the size of the collection. It is surprising because one could hypothesize that access to an increasing amount of digital resources would minimize the need for interlibrary loans. The study indicates interesting correlations with other activity statistics. The increase in renewals is a new phenomenon that indicates changed user behavior. On a theoretical level, the paper demonstrates the fruitfulness of the ecological perspective and on a more practical level, the study indicates tremendous changes in behavior as an effect of exposure to and use of it – development. The paper gives evidence of this

changed behavior and discusses it in relation to advantages and disadvantages in relation to objectives. In this way, the paper is about assessment of a national library system.

Introduction and background

The overall purpose of the paper is to explore intended and unintended effects of technological development in relation to user behavior. Another purpose is to explore how well an ecological perspective and approach can contribute to explanations of intended and unintended effects. This paper explores the changes taking place in renewals and interlibrary loans in the Danish Library System. Two phenomena are interesting in this context. First of all, the number of renewals of materials has grown very rapidly. Further, the number of interlibrary loans has also increased. This has to be seen in the perspective that the total number of circulation appears to be rather stable.

The specific purpose of the paper is to explore changes in renewals and in interlibrary loans and analyze these changes in relation to accessibility, availability, use and perceived misuse of the whole system. This analysis departs from an ecological perspective discussing the merits and the demerits of the system in relation to user behavior.

The paper discusses the situation in Denmark, but the results ought to be of wider interest because the focus is really on the relationship between user behavior and technological development.

This paper takes a macro-ecological view of the traces of library users' behavior as reflected in the statistical data of interlibrary and renewals. It means, that all the libraries in the nation are considered as a part of a system of interconnected libraries

The theoretical perspective is the theory of affordances. This theoretical perspective is suited for the analyses of data because it is easy to document intentions behind the system and innovations and it is also rather easy to identify perceptions and unintended use of the system. In reality, the paper is concerned with issues about how the interaction with an advanced information system affects behavior and how users react to the affordances embedded in the system.

It is old news that digital access to the databases of libraries has changed the way users behave in relation to both physical and digital collections. However, several interesting topics have gone rather unnoticed both in research and in the professional debate. Two of these topics are investigated in this paper. The paper focuses on renewals and interlibrary lending in public and academic libraries.

It is important to note that the Danish library system by law and regulation have to be viewed as one system. All libraries have the obligation to participate in the nation-wide arrangement concerning interlibrary loans. In Denmark, all citizens have access to the joint holdings of all libraries through a national database named bibliotek.dk. Users have the right to order material from every library in the country and get it delivered at their local library, be it a public library or a research library. This system is now highly automatic meaning that the system itself seeks in the database and recognizes the library that has the requested document with the shortest waiting list or preferably at home and place the order at library. The document is then transported in a national library transport system to the library of choice by the user. Further every library gives the user the option to seek, localize, reserve and renew documents. These options change the user requests. First of all, the requests become less topical and more specific on average indicating that topical needs through digital interaction is transformed into specific requests for titles. This is extremely important and to the author's knowledge an unexplored topic in the professional literature. Second, the number of renewals increases at a very high rate. It is of course only possible to renew a document if it is not reserved and requested by another user.

Bibliotek.dk is closely connected to the Library Act from 2000. As a matter of fact, the act is more an act that secures the single citizen's access to information than it is an act regulating the operations of libraries. The act states very clearly that all citizens have the right to loan materials from all libraries in the country. The act also emphasizes the principle of the cooperating library system meaning that all types of libraries have to participate in the interlibrary loan system. Bibliotek.dk can be considered as the technological facilitator of these intentions. Bibliotek.dk cooperates with the local library databases. When a user employs bibliotek.dk and decides to order literature or other material, the user is transferred to a so-called favorite library. It will normally be the local public library or an academic library. The favorite library is the place to which the ordered material will be sent unless the library owns the material. If the library owns the material the request is considered as a request to the collection of the favorite library. Many of the operations are automatic. The cooperating library system has also introduced their own transportation system outsourcing daily transportation of library materials from library to library in a net that covers the whole country and all types of libraries.

Renewals are a facility all libraries have on their local web-pages. All users can investigate the collection in their favorite libraries and they can make reservations, renewals unless other users have requested the document and they can perform some other tasks like cancellations of requests and similar. The possibility for renewal of documents has always existed, but earlier one had to take the document to library to loan it again. Now all these operations can be conducted from home or from any computer.

The intentions appear to be rather clear. It is simply to give citizens access to all library materials in the country through a very well developed infrastructure. Another intention is of course to get a better use of library materials as a whole. The overriding intention is to give users a service improvement – in other words to make library activities more attractive and convenient.¹

Research Questions and methodology

There are two types of research questions. The first type is descriptive and the second more analytical in character. The paper focuses on the following questions:

1. How has the development been in the number of renewals and interlibrary loan been in the period since 2000 in public libraries and in academic libraries in relation to other loan-oriented activities and how is the interaction between libraries from the two sectors?
2. How are the renewal patterns and the patterns of interlibrary loans correlated with other statistical factors?
3. Can affordance theory be used as an explanatory frame of reference to explain the development in renewals and interlibrary loans?

The 5 research questions are closely interwoven and they are in many respects exploratory in character.

The data has been collected from 2000 to 2009. The data consists of the number of renewals and the number of interlibrary loans for every single library in the country. For some of the years, we have more detailed data dividing the data into types of media and materials and we are able to correlate the data with other forms of data like weeding, acquisitions and data on user groups, perceived misuse and similar types of statistical data. Some of these data has been obtained through special runs from the statistical database of the Danish National Library Authority. Other data comes from the published national library statistical database.²

Affordances

Affordance theory can be considered as a kind of subset of a broader ecological perspective. The ecological psychology works primarily on an individual level but the perspective offered in this paper is based on an assumption that it is meaningful to use the approach on groups of users of a cooperating library system. The ecological approach can of course be found in many disciplines. It is for example often used in the management literature studying strategic planning and development. Affordance theory is central for studies of human-computer interaction³ and usability studies.⁴ Williamson⁵

introduced it in the library and information science literature claiming that the approach would give a richer and more detailed understanding of information behavior in a full context. Givens and Sadler⁶ have developed the concept in library and information science with inspiration from ecological psychology and give a rather simple definition of affordances and affordance theory. Their starting point is the simple observation that objects has embedded several affordances. Some of these are intended by the designer or creator, others are not. Users of the object can perceive this affordances either as intended by the designer or they can interpret the affordances in the object differently using the object in a way not intended by the designer. In their paper they give many examples of these possible discrepancies between designer intention and user perceptions of objects and the appropriate way to use the object. It is in this perspective about intentions and perceptions.

In the present paper, the affordance perspective is combined with an ecological perspective. An ecological perspective is especially appropriate in this context because we look at the all the libraries in the nation as a system in relation to renewals and interlibrary loans. It should also be noted that the affordance perspective normally are employed using qualitative methods. In this paper, the perspective is analyzed employing huge numbers of numbers. It means that intentions and perceptions are interpreted through the traces of behavior the users leave behind. The theory is not expanded in this paper. For a more detailed discussion of affordances it would be beneficial to turn to Gibson⁷ and Norman⁸ It is especially the concepts of intentions and perceptions that are employed.

The trends in interlibrary loans and renewals

This paragraph is a descriptive one presenting the development and trends in the amount of renewals and interlibrary loans in the Danish library system.

Table 1 gives an overview of loans and renewals in the total Danish public library system. It is evident from the table that the total circulation consisting of first-time loans and renewals has been rather stable during the last 10 years. However, the proportion of renewals has

increased from 10 % to 37 % in the period, indicating that more than one third of the

circulation is a renewal.

Table 1: Loans and Renewals in Danish public libraries in millions

	1999	2000	2001	2002	2003	2004	2005	2006	2007	2008	2009
Total loans	73	72.5	71.7	72.2	72.7	74.7	73.7	72.8	71.6	74.5	76.9
Renewals	7.5	10.7	12.3	14.3	16.4	17.9	19.6	21.3	22.7	26.3	28.6
First-time loans	65.5	61.8	59.3	58	57.2	56.8	54.1	51.6	49	48.2	48.3
% Renewals	10	15	17	20	23	24	27	29	32	35	37

The number of first-time loans has decreased every year since 1999. The decrease in first time loans is as a matter of fact impressive. Overall, the trends are clear.

Table 2 shows the same type of trends in the academic library sector. The table includes data from 16 of the biggest academic libraries in the country. The number of downloads is also included as it gives a more detailed picture of behavior.

Table 2: Downloads, loans and renewals in 16 academic libraries in millions

	2000	2001	2002	2003	2004	2005	2006	2007	2008	2009
Downloads	1.4	2.8	3.6	5.5	7.1	10	11.2	11.9	13.1	16.4
Renewals	0.1	2	2.5	3.5	3.5	3.9	3.1	3.1	3	3.1
First-time loans	4.1	3.9	3.9	3.6	3.5	3.3	3.1	2.8	2.7	2.6
Total loans	4.2	5.9	6.4	7.1	7	7.2	6.2	5.9	5.7	5.7
% Renewals	2	34	39	49	50	54	50	53	53	54

The increase in downloads is remarkable and it can be considered surprising that loans of physical materials declines rather slowly. Due to renewals we see nearly the same picture as in public libraries that the total loans of physical materials are rather stable. However, the proportion of circulation that is renewals is around 50 %.

We will now turn our attention to interlibrary loans. Interlibrary loans are a two-way traffic. Libraries can order documents from other libraries or they can loan to other libraries. In this paper, we focus on the incoming loans in the public libraries and in relation to academic

libraries we focus on outgoing interlibrary loans. The reason for this choice is that it is of special interest to see how citizen react to the exposure of the national library holdings. It is also of interest to analyze the changes in the academic libraries loans to public libraries.

We will start to look at the same 16 academic libraries outgoing loans to other libraries in from 1998 and onwards. The row named "ILL to other libraries" contains the number of documents send to other libraries. Till 2001 renewals are included in these figures but from 2002 renewals are counted separately.

Table 3: The development of outgoing ILL for 16 academic libraries in thousands

	1999	2000	2001	2002	2003	2004	2005	2006	2007	2008	2009
ILL to other libraries	709	656	692	657	645	733	751	753	663	723	730
Renewals of ILL				84	164	246	284	293	327	367	365
Total	709	656	692	741	809	979	1035	1046	990	1090	1095

It could be expected that the massive investment in digital resources including e-journals would affect interlibrary loans in a diminishing manner but it is obviously not the case among Danish academic libraries. It is interesting to see that the increase in interlibrary loans increases in conjunction with the growth in digital access. It is also interesting to see that the number of renewals of interlibrary loans is increasing. It has of course effects on the availability at the loan-giving library. The increase in renewals raises questions both about convenience and of course also about the length of loan periods.

It is also evident that the public libraries are main receivers of the loans from the academic libraries. In 2003 the public library system received 56 % of the 16 academic libraries' loan to other libraries. This proportion increases every year and in 2009 the proportion was over 78 %. Over three quarters of the interlibrary loans - nearly 4 out of 5 - from these 16 academic libraries goes to the public library system indicating that the exposure to the holdings of the library system as a whole changes the behavior. It must also be noted that the increasing proportion is calculated on the basis of an increasing number of interlibrary loans.

We will now turn to the public libraries and the most important data is displayed in table 4. Before we turn to the table, it is worth to investigate to which degree the public library system as an ecological system can fulfill the users' request on its own. In 2000 83 % of all the interlibrary loan activities in the public libraries was lending between public libraries indicating that 17 % of the activity of loans from other libraries was from academic libraries. The proportion of self-sufficiency in the public library system has declined every year since 2000 and is now down to just over 70% indicating that nearly every 3rd loan from a library to a public library comes from outside the municipality sector. It is another way to say that the state-funded academic libraries

contribute to the municipality-funded public libraries.

One of the interesting figures in table 4 is the decrease in the total collection in the public library system. This is due to a rather extensive weeding and the large decrease from 2006 to 2007 is a result of a municipality reform that reduced the number of municipalities from over 270 to 98. The merged libraries had of course many duplicates and triplicates. Overall, the size of the total collection is decreasing rapidly, probably also due to the need for space to other activities like public libraries as reading room, a third place and a growing awareness of the advantages of a more effective display of materials. It is also interesting that the number of interlibrary loans only dropped slightly in 2007. It was the year in which over 270 public library systems were merged to 98 and an interlibrary loan is defined as a loan from another library outside the municipality. The CFQ-ratio (Collection Failure Quotient) simply represents the ratio between loans from other libraries and the size of the collection. It is a ratio that is difficult to interpret and this author will not go as far as Henderson⁹ and discuss it in the perspective of a failure in the collection. However, there are good reasons to believe that there exists a delicate balance between accessibility and immediate availability. There is no doubt the CFQ-ratio at least is an indicator of the local immediate availability of the collection.

It is evident that the immediate availability of physical documents decreases as an effect of the increase in renewals and interlibrary loans. This point can be illustrated by a simple example. The example is an example and it only demonstrates what happens to the immediate availability when a library send part of its collection to other libraries and its users engage heavily in renewal activities. This is of course not new and it relates directly to the discussion of ownership, access and availability.

Table 4: The ratio between loans from other libraries and collection size in Danish public libraries in millions

	2000	2001	2002	2003	2004	2005	2006	2007	2008	2009
Total Collection	30.8	30.5	30.5	29.8	28.9	28.2	28	25.9	24.9	24.2
Total ILL borrowing	0.9	1.2	1.3	1.6	1.8	2	2.1	1.9	1.8	2.0*
CFQ - ratio	2.9	3.9	4.3	5.5	6.2	7.1	7.5	7.3	7.2	8.3

* The number is estimated because renewals of ILL are not part of the statistic from 2009. the proportion of renewals are conservative set to 20 %

Several factors influence the availability. The amount of requests as reflected in the circulation, the length of the loan period and the size and composition of the collection including the number of copies of single documents.¹⁰ The figures from the previous tables indicate that the immediate availability is decreasing due to a decrease in collection size, renewals and an average longer loan period.

In the next paragraph we will explore the phenomena of renewals and ILL in more depth.

Analyses and findings

The analysis departs from a very detailed set of data of renewals. For every single public library we have obtained the number of renewals for every type of material. In previous paragraphs the paper explored the longitudinal and distribution of the average proportion of renewals. For the years 2007-2009 we have the detailed information and it will be explored in this paragraph.

We will start to look at the distribution of the proportion of renewals in relation to the circulation according to type of material. We only look at materials for adults.

Table 5: The proportion of circulation coming from renewals in relation to type of documents for adults in public libraries in 2007, 2008 and 2009 in %

	2007	2008	2009
Books	34	37	39
Serials	32	35	37
Audio books	23	24	25
Music	31	35	36
Film (DVD)	25	30	32
Multimedia	31	36	38
Other	31	35	38
Total	32	36	37

This table simply shows the proportion of renewals in relation to circulation and it is evident that audio-books and films on DVD are renewed a bit less than the other categories of materials. However, we also see that an increase in renewal can be found in relation to all categories. The correlation coefficient between renewals in 2007 and 2008 is 0.94 indicating a very high correlation.

From 2008 to 2009 the correlation coefficient is 99.6 indicating that we do have a very widespread increase in every library system. However, we do see a rather marked difference in renewals in the different public libraries.

In 2007, the range of proportion of renewals went from 12 % to a maximum of 68 %. The similar

figures for 2008 are a minimum of 14 % and a maximum of 62 %. 8 public library systems had in 2008 renewals proportion of more than 40 and in 2009 it was 11. The similar figures in 2009 were a minimum of 14 % and a maximum of 65 % for the single libraries. 14 libraries had renewals proportions of over 40 %.

The public libraries with the highest proportion of renewals in relation to the circulation are nearly all situated in Copenhagen and the suburban area and in or in the vicinity of the other big cities in Denmark. The big cities have of course all universities, college universities and a number of professional schools. At the bottom of the list we find public libraries situated in smaller towns on islands or areas with a significant rural characteristics.

The 16 research libraries included in this study have also an enormous increase in renewals of their physical documents. In 2000, renewals in the 16 academic libraries were 3 % of the loans. It increased dramatically in 2001 to 34 % and it has increased every year since and in 2009, renewals were up to 54 % of the total loans of physical documents. The dramatic increase from 2000 to 2001 can probably be explained by bibliotek.dk and new features in the library database system together with emphasis on self-service.

The proportion of renewals in relation to loans of physical documents varies very much among the research libraries. In 2009, the proportion varies between 24 % as the minimum up to 80 % as the maximum.

We will now turn our attention to interlibrary loans. Interlibrary loans are also of interest in this context. One would naturally hypothesize that the amount of incoming interlibrary loans would decrease if the local library had a reasonably large local availability combined with relevant digital distributed documents and possibilities for down loads.

On the other hand, one would hypothesize that the amount of ordering documents from other libraries would increase if users have convenient access to the bibliographic universe and possibilities for self-service combined with a belief in the effectiveness and efficiency of the system. Further, a widespread employment of search

engines like Google and the export of catalogue data into these kinds of search engines would also tend to increase interlibrary loans.

If we look at and compare the data from the 16 academic libraries interlibrary loans in 2007 and 2009 we can see that the interlibrary loans among research libraries are decreasing a bit but the loans to the public libraries are increasing. The differences are small but they constitute a trend that clearly substantiates the theses above concerning factors affecting the flow of documents between libraries and library sectors. The flow of material from the academic libraries to the public libraries increases and constitutes a major part of the academic libraries loans to other libraries. The flow of documents among the academic libraries decreases, not much but a bit every year establishing a trend.

The CFQ-ratio is relevant in this context. For the public library system as a whole we saw in table 4 that this ratio has nearly tripled in the period investigated. This is the effect of a diminishing overall collection size and an increase in interlibrary loans requests. However, it would also be interesting to see how the dispersion of the ratio is in different public libraries.

The CFQ-ratio in 2007 varied between 2.7 and 19.8. It is a rather dramatic dispersion in the material indicating a much diversified behavior in relation to the different local library systems. We do see the lowest CFQ in former central libraries situated in cities without universities and with an over average collection per citizen.

We will now turn our attention to which public libraries that rely heavily on the academic libraries and their collection. We saw in earlier that an increasing number of interlibrary loans went from academic libraries to the public libraries. Here we see some very interesting findings. 3 public library systems have over 60 % of their incoming interlibrary loans from the academic libraries. It is the libraries in 3 of the biggest cities in the country and they all are situated in cities with universities and many other institutions for further education. A look at the top 10 list gives additional support for the thesis about a correlation between size, number of students and loans from academic libraries.

Some interesting correlations emerge from the data. From the 2007—data there is a rather significant correlation between the CFQ and the size of collection per capita. The correlation coefficient is -0.28 indicating a correlation between the two factors. There is a tendency that a high CFQ correlates with a low collection per capita. The correlation is not strong, but it is statistical significant and it is a correlation that warrants further analyses. However, this correlation cannot stand alone. A richer picture emerges when we correlate the absolute size of the collection with the proportion of loans from other libraries coming from academic libraries. The correlation coefficient is 0.74 indicating a very strong correlation between the size of the library and its loan from academic libraries. This is not surprising as the biggest public libraries are situated in cities near universities and other institutions of higher education.

This is a clear indication of changed user behavior. It is known from earlier investigation that a proportion of all students in institutions of higher education and universities use several libraries for study purposes including public libraries.¹¹ An earlier investigation into the use of interlibrary loans¹² indicated clearly two pertinent facts. One of them was at that time that more than half of the users of bibliotek.dk in Copenhagen were students. It also emerged that many of the students ordered documents from university libraries—including the university library at the university in which they were enrolled—to be delivered at their local public library. This is clearly a question of convenience. Another interesting piece of information from these investigations was that nearly 25 % of the interlibrary users placed requests at both bibliotek.dk and at their university library at the same time increasing their possibility to obtain the document. This is a good example of individual rationality that creates irrationality at the level of the system. Further, 4 out of 10 users answered that they sometimes requested documents they did not have time to use. However, it is important to be aware of the fact that the data collection took place in 2004 and since then the reception and use of bibliotek.dk and of libraries web pages have become much more widespread. As a matter of fact, newer investigations in suburban libraries indicate that the use of bibliotek.dk is relative equal distributed among different age groups.¹³

Another phenomenon that from time to time has caused debate in the library debate is that fact that quite a number of documents ordered and received in the library from other libraries is not picked up by the users. Another phenomenon that also is debated from time to time is a possible misuse of the possibility to request documents. Examples of users ordering several hundreds of for example music CDs cause some concern about misuse. This is of course exceptions but the number of interlibrary loaned documents not picked up is substantive in number. A few investigations—most of them of local character—have been conducted in this area. The results indicate that between 10 to 30 % of the documents is not picked up at the local library by the end-user. It is especially in the university cities we see the highest figures of documents not picked up.

Conclusion and perspectives

The ecological perspective combined with concepts like intentions and perceptions gives a fruitful approach to study interactions in a system like the highly integrated and cooperative library system in Denmark. The ecological perspective gives a very good picture of the flow of documents in the system and both intended and unintended effects of the design of the system.

There is no doubt that bibliotek.dk is a success. It is used more every year and an increasing part of the population has adopted it in their search for information, entertainment and documents. In many ways, the effects of the intentions behind the technological system are fulfilled. It is obvious from the data that the system is a clear service improvement increasing the convenience for users and

From the users point of view they now a convenient and easy access to all libraries' collections and they can order documents from every library. From the system's point of view bibliotek.dk represent a technological solution to secure a better use of documents and it gives especially people outside the bigger cities access to information and entertainment it would be difficult and troublesome to get hold of. Further, the constant development of the system reduces the amount of manual work. An example of this is that the system for most of the requests places the order in an automatic way to the library where the documents is on the shelf or where the waiting list

is shortest. One could argue that the system gives an extremely advanced technological solution to a democratic problem we could call equal access to all documents for all citizens. The technological solution is supported by a transportation system. Lorries brings documents around the country. This system is cheaper than using the traditional post service.

The system also had some unintended effects. One of them is probably that a rather big proportion of the interlibrary loans are renewed. Another is the amount of documents not picked up by users at the receiving library. Finally, it was probably not the intention that a few users order huge amounts of documents.

It is obviously that the possibility to renew loaned documents can be considered a service improvement for the users at least in terms of convenience. However, it diminishes the immediate availability of documents. This applies to both physical and digital access. What the consequences are of this diminished availability is totally unknown and further research must be conducted. The rather dramatic increase in renewals signifies new information behavior among at least a group of users. The reasons for this increase is probably the fact that more and more people use the libraries' database and become more aware of the possibilities for organizing a library visit but also for using the system to renew. This is probably connected to another service improvement. It is the fact that nearly all public libraries notify by email or by sms the users that the loan period is near the end. A user would normally get this notification 4–5 days before the end of the loan period. It can easily be hypothesized that at least some of the users act on this information by renewing documents on loan. It has as a matter of fact the side effect that the income of the libraries go down because they will after this service improvement lack some of the income generated by overdue loans and the resulting fines.

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The Future of Academic Librarians in the Workforce: A Ten-Year Forecast of Librarian Supply and Demand

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Abstract

This paper presents results of an Institute of Museum and Library Services (IMLS) sponsored study “A National Study of the Future of Librarians in the Workforce” involving public, academic, special and school librarians. The focus of this paper is to examine factors that contribute to a ten-year forecast of the supply and demand of academic librarians. Demand factors include past trends in growth in number of academic libraries and librarians (from 1982 to 2007), changes in staff structure, career paths of librarians (e.g., progression in type of work done and position), demographics of librarians (e.g., age), reasons that librarians leave the workforce (e.g., due to death, retirement, family obligations, etc.), and attitudes of librarians toward their work and librarianship in general. The demand factors and ten-year forecast of the number of librarians needed are based on a survey of academic libraries (n=822) and librarians (n=847) and other sources of information. Since we are currently in a recession an analysis is made of the consequences of two past recessions on the academic librarian workforce. Trends in academic librarian supply are based on a survey of ALA accredited LIS schools and data provided by ALISE, ALA and IMLS. It is estimated there will be a demand for 15,100 new academic librarians from accredited schools from those entering 2007-08 to 2016-17. Across the entire librarian workforce, the demand far exceeds the projected supply. In 2007-08 there is estimated to be a deficit of about 400 academic librarians. That is, demand exceeds supply by that amount. The ten-year deficit is expected to require a doubling to quadrupling of the projected supply for the entire ten-year period.

Introduction

This paper presents results of an (IMLS) sponsored national study of the future of librarians in the workforce with academic librarians discussed here. The study included a 2007 survey of all 3,772 academic libraries reported in the *American Libraries Director—2007-2008 Edition*. A total of 3,022 libraries were able to be contacted through e-mail and 822 academic libraries responded (27% response rate). The web-based survey instruments were divided into two parts; one part was common to all surveyed libraries and the second part addressed to in-depth questions concerning past trends in operations, services, functions performed in the library or elsewhere, and importance of librarian competencies. One part asked librarians to forward the survey to staff members (i.e., a Staff Survey) resulting in a total of 1,333 responses. The study focuses on MLS librarians who have a graduate degree from an LIS program accredited by the American Library Association. A total of 847 academic MLS librarians responded to the Staff Survey.

The MLS librarians “demand” portion of this paper includes past trends in number of academic libraries and MLS librarians, staff structure, career paths of academic MLS librarians, forecast of number of MLS librarians needed due to departures from the workplace from 2007 to 2017 (i.e., demand). Since the country is in a current recession, some evidence is provided on the impact of past recessions on librarians and libraries. Evidence of the “supply” of academic MLS librarians is provided by a survey of LIS

Schools with accredited programs and library survey estimates of the number of 2006 MLS graduates who entered the academic library workforce. Additional information is provided by National Center for Education Statistics (NCES) and IMLS, the American Library Association, ALISE, and other sources.

Assisting the authors were Songphan Choemprayong and Kathleen J. McClatchey (SILS, UNC); Robert Keene, University Center for Social and Urban Research (UCSUR), University of Pittsburgh who handled the web-based survey; and Sarah Aerni (SILS) and now UCSUR and Etondi Tchwenko.

Past Trend in Number of Academic Libraries and MLS Librarians

The *ALD (2007-2008 Edition)* gives an estimate of 3,772 academic librarians broken down into 1,171 total community college libraries (including 179 departmental, 11 medical and 9 religious libraries) and 2,601 university and college libraries (including 1,379 departmental, 247 medical, 181 law and 234 religious libraries). A 1983 study¹ sponsored by NCES shows 2,960 academic libraries which increased to 3,772 in 2007 or a 25-year increase of 27.4%. Recently, the *ALD* shows a 5-year increase of 8.4% from 2002-03 to 2007-08 (8.2% in community colleges and 8.5% in universities and colleges) or an average of about 1.6% each year (the 25-year average per year is less at less than one percent, about 0.9% per year).

Official estimates of number of MLS librarians are given by full-time equivalents (FTE). The number in 1982 was 21,200 academic librarians (although loosely defined) compared with 26,523 (projected by NCES) or a 25.1% increase which corresponds to the 27.4% increase in academic libraries. Thus, the number of librarians per academic library may have decreased slightly, from 7.15 to 7.03 per library even though student enrollment and faculty sizes have increased substantially over the time period. Recent NCES data show an increase of 24,815 FTE MLS librarians in 1998 up to 26,469 in 2006 or 6.6% over these years. The average number of academic MLS librarians per library in 2001 (with comparable data available) is 7.44 MLS librarians per library.

The library and MLS librarians Staff Survey provided estimates of “headcounts” instead of FTE because the Staff Survey was of individuals regardless of their full-time or part-time status. Taking into account of the librarian status, we estimated that there were 29,278 MLS librarian headcount (i.e., 2,572 full-time, 9 month; 2,617 part-time, 9 month; 19,561 full-time, 12 month; and 4,528 part-time 12 month). Thus, 26,523 FTE is converted to 29,278 headcount which is the basis for all estimates given in this paper.

The Staff Survey yielded estimates of MLS librarian’s demographics. Nearly three-fourths of responding academic MLS librarians are female (74.3%) and tend to be slightly older than their male counterparts. The MLS librarians are more likely to be white than the overall US adult population (92.1% vs. 77.4%). Female MLS librarians appear to be paid less at lower salary levels (under \$40,000-16.2% vs. 13.5%, but more at the highest level \$100,000 or more), reflected by average Director salaries (\$75,400 vs. \$64,200). However, when considered by years of experience, male MLS librarians tend to make slightly higher salaries (less than 10 years—\$45,500 vs. \$44,300; 10 to 19 years—\$54,000 vs. \$53,500; 20 or more years—\$61,200 vs. \$60,900) and males tend to be more satisfied with their salaries (3.40 average rating vs. 3.28 with ratings 1-lowest to 5-highest). We also examined three types of fringe benefits; value-added compensation in addition to salaries or wages (e.g., insurance, pension, etc.), paid time not at work (e.g., length of allowed vacations, holidays, etc.), and other non-monetary benefits (e.g., flexible hours, job sharing, etc). These benefits are described in detail in the academic librarian report.²

Trends in Academic Library Staff Structure

The staff structure is categorized by MLS librarians, other librarians or professionals working in a librarian capacity (“other librarians”), other professionals working in another capacity such as systems, administration, etc. (“other professionals”), paraprofessionals, and non-professionals. The proportion (%) and total number of paid staff (headcount) is given in the table below.

Category of Staff	2002-03		2007-08	
	(%)	Total	(%)	Total
MLS Librarian	32.8	27,698	33.1	29,278
Other Librarian	2.3	1,909	2.3	2,063
Other professional	4.0	3,376	4.6	4,115
Paraprofessional	33.1	27,977	33.7	29,840
Non-professional	27.8	23,522	26.3	23,251
Total	100.0	84,482	100.0	88,547

Library Survey

The staff structure appears to be relatively stable between 2002-03 and 2007-08. One aspect of structure is that few of the staff involves "other librarians" or "other professionals," although the latter increased some (21.2%).

The total staff above is influenced by the increase in number of libraries. The table below provides estimates of the proportion libraries having staff and average number per library.

Category of Staff	2002-03		2007-08	
	(%)	Average	(%)	Average
MLS Librarian	96.0	7.34	98.0	7.76
Other Librarian	27.2	0.51	28.1	0.55
Other professional	30.7	0.89	34.5	1.09
Paraprofessional	77.9	7.42	80.3	7.91
Non-professional	46.8	6.24	48.0	6.16
Total		22.40		23.47

Library Survey

Results show that proportion of libraries having staff and average staff per library increased from 2002-03 to 2007-08 in all categories of staff except non-professionals, although all categories of staff increased most for other professionals (i.e., up 12.4% in proportion of libraries having these professionals and 22.5% in average number). Staff vacancies vary substantially by staff category

in 2007-08. Nearly 5% of academic libraries have vacancies for MLS librarians which projects to 401 vacancies across the libraries. Fewer libraries have vacancies for other staff and the number of vacancies is far less. For example, only 0.6% of libraries have vacancies for "other librarians" and the total vacancies is only 26; the values for "other professionals" is 1.1% and 75; and for paraprofessionals 2.8% and 20 vacancies.

Career Paths of Academic MLS Librarians

Experience prior to first employment in academic libraries

Prior to joining the library workforce many current academic MLS Librarians had worked in a

full-time capacity in a library, but not as a librarian (35.2% of them) or as a professional in another occupation (37.7%). As shown below, those working in another occupation tend to have spent much more time there compared with those who worked in a library not as a librarian.

Table 3. Proportion (%) of MLS librarians Who Had Worked Full-time in a Library, but not as a Librarian or an Another Occupation Before Joining the Library Workforce by Range of Time Worked: 2007-08 (n = 847)		
Proportion (%) Who Worked in:		
Years Worked	A Library	Another Occupation
Less than 2	18.5	8.4
2 to 4	40.2	33.4
5 to 9	25.5	26.2
10 to 14	9.4	10.8
15 or more	6.4	21.2
Total	100.00	100.00

Staff Survey

This experience has two ramifications: it means the MLS librarians are more mature and experienced when they enter the library workforce than those without such experience, but on the other hand they will spend less time in the library workplace meaning that there is more

pressure to supply academic librarians from accredited LIS schools.

That so many librarians had lengthy prior experience contributes to the fact that the age of new MLS recipients are older as shown below.

Table 4. Proportion (%) of Academic MLS Librarians by Age at Which they Earned Their MLS Degree in 2007 (n = 771)	
Age	Proportion (%) MLS Librarians
Under 25 years old	20.2
25 to 29 years old	32.6
30 to 34 years old	19.0
35 years and over	28.2
Total	100.0

Staff Survey

Nearly 50% of graduating MLS librarians are 30 years old or more, again potentially resulting in a relatively brief career requiring a larger supply of librarians.

graduated in 2006 were employed in academic libraries. As will be discussed later, this number did not meet the demand for new academic librarians.

One positive aspect of academic librarianship is that 72.8% of those employed in 2007 said they were first employed in the year they graduated and about 93% were employed within one year later. It is estimated that 1,380 librarians who

Progression of level and type of employment of MLS librarians

Level of employment of MLS librarians in 2007 is shown in Table 5 below. The levels are also displayed by their years of experience in a librarian capacity.

Years of Experience				
Level of Employment	All Librarians	Less than 10 Years	10 to 19 Years	20 or More Years
Director	7.1	1.5	6.8	11.8
Assistant or Associate Director	6.0	0.8	7.7	9.2
Department or Branch Head	27.5	17.9	32.9	31.4
Other supervising capacity	9.6	14.5	7.2	7.7
Non-supervisory capacity	45.8	61.5	41.4	36.7
Other	4.0	3.8	4.1	3.3
All	100.0	100.0	100.0	100.0

Staff Survey

As one might expect, a majority of the Librarians moved up as their experience increased, however 36.7% of the librarians remain in a non-supervisory capacity even though they have 20 or more years of experience. This is shown later to affect their attitudes toward their work.

The type of work done is indicated by the primary department to which they are primarily assigned, recognizing some libraries are small and do not have departments and these librarians usually do all kinds of work. The type of work and progression is given in Table 6.

Years of Experience				
Department Assigned	All Librarians	Less than 10 Years	10 to 19 Years	20 or More Years
Library not organized by department	12.5	17.9	6.8	8.7
Administration (not specific to a dept.)	8.6	0.9	7.3	17.3
Acquisitions	4.6	7.3	4.8	4.5
Technical services	13.6	13.6	10.5	11.3
User services (e.g., circulation)	6.5	8.2	8.9	5.6
Reference and research	37.4	54.5	42.7	35.1
Special collections	3.3	2.7	5.6	3.4
Systems	3.1	0.9	5.9	0.6
Other/unknown	10.4	11.8	10.5	13.4
Total	100.0	99.9	100.0	100.0

Staff Survey

Libraries not organized by departments may often be department libraries. Fewer experienced librarians work in these libraries and some may move into administration (not specific to a department). The most pronounced progression through experience is from reference and research (i.e., from 54.5% for those with less than 10 years to 35.1% for those having 20 or more years experience). Many of these librarians undoubtedly moved into administration, perhaps the best route to be administrators.

Continuity of work in academic libraries

Most current MLS librarians (89%) say they have been employed in an academic library since their initial employment in a library. The rest (11%) say they left and then came back to academic libraries

for various reasons such as an illness or disability (1.5%), employed in another occupation (23.3%), increase in position or salary (3.3%), family obligations (19.2%), relocation (22.5%), to further education (7.5%), military (5.0%), other/unknown (17.5%). Males are more likely to leave for another occupation (37.5% vs. 19.8%), whereas females are more likely to leave for family obligations and relocation, that is, 22.9% vs. 4.2% and 24.0% and 16.7% respectively. About an equal proportion of males and females left for military duty.

The libraries reported that 1,519 MLS librarians left the library workplace in 2007-08 and another 1,054 left academic libraries to join another type of library (thus not leaving the library workforce). Reasons that the 1,519 librarians left the library workforce are shown in Table 7 below.

Reasons Left	Proportions (%) Who Left
Death, illness or disability	16.0
Retirement	57.8
Employed in another occupation	9.8
Family obligation, education, military etc.	9.0
Downsized, laid off, quit	2.2
Other/unknown	5.1
Total	99.9

Library Survey

Even though well over half of those who left the library workforce was due to retirement, only 3.0% of the entire academic library workforce left for this reason.

Interestingly, current MLS librarians were asked at which age they anticipated retiring. Compared with the actual age of retirement shows that the actual age is much younger for both males and females, although this may change during the current recession. About 4.3% of current librarians (i.e., in 2007) said they retired and came back to work as part-time employees (i.e., 66.7% who came back) and the rest as temporary employees.

Academic MLS Librarian Attitudes Toward Work-Related Issues, Librarianship and How Well They Were Educated

Attitudes toward work-related issues

Academic MLS librarians were asked to rate (1 to 5) the importance of and satisfaction with their salary, fringe benefits, type of work they do, opportunities for advancement and geographic location. Type of work done was rated highest in importance (4.34) and in satisfaction (4.21) with geographic location second highest in each (4.01 and 4.03). Third in importance is salary at 4.00;

but with a disparity in low satisfaction (3.31). A similar picture exists for fringe benefits (3.98 and 3.68). By far the lowest satisfaction rating is with opportunities for advancement (3.00) lowest in importance (3.40). These ratings probably reflect the number of MLS librarians who remain in non-supervisory capacity even though having 20 or more years experience. Those who did advance probably were relatively satisfied. The ratings vary slightly between males and females.

Attitude toward librarianship

The MLS librarians were asked if they could choose their career over again, would they still choose librarianship. Responses were pre-coded by (1) definitely not, (2) probably not, (3) unsure, (4) probably, and (5) definitely. Over one-third (36.4%) said definitely and 73.2% said probably and definitely. Only 1.9% said definitely not. The ratings were similar among the three levels of experience.

There is a significant different in rating between those who would choose librarianship and those who would not which is an indicator of the significance of this work factor. The largest difference in average satisfaction ratings is satisfaction with type of work done (4.40 for those who would choose and 3.28 would not—1.12 rating difference). This is an indication of the significance of type of work. On the other hand opportunity for advancement is lowest for both those who would and would not choose (3.16 and 2.37) only a 0.79 difference. The smallest rating difference is with fringe benefits (3.78 and 3.30 – 0.48 difference) which may mean this work factor is of less significance in attitude toward librarianship. Salary also has a relatively small difference (3.45 and 2.78 – 0.67 difference).

Satisfaction ratings are corrected with attitudes toward librarianship which follow general satisfaction. For example, those who said they definitely or definitely would not, had particularly low satisfaction ratings for opportunity for advancement (2.37) and salaries (2.78), although a few of them gave the highest satisfaction ratings of 5 (2.49 and 5.99 respectively) which means some other factors were the source of unhappiness with librarianship for them. Conversely, many who were dissatisfied

with opportunity for advancement (rating of 1) said they definitely or probably would choose librarianship again (9.5%) were dissatisfied with their salary (6.5%).

When importance ratings of work-related issues are compared with retrospective choice of careers there is little difference for those who would and would not choose librarianship. In fact, some who would not choose librarianship rate importance higher than those who would; for example salaries (3.97 and 4.04) and opportunities for advancement (3.40 and 3.45).

Retrospective choice of careers is rated by level of employment with relatively little difference: library director (4.04), assistant/associate director (3.80), department/brand head (3.98), other supervisory capacity (3.95), and non-supervising capacity (3.98). It is somewhat surprising that non-supervisory capacity does not appear to be negatively related to retrospective choice of career since so many MLS librarians are dissatisfied with opportunity for advancement.

Type of work done is definitely an aspect of retrospective career choice as shown in order of average rating: user services (4.03), technical services (4.03), acquisitions (3.91), administration (3.77), reference and research (3.62), systems (3.26) and special collections (3.23).

Attitudes toward LIS education

MLS librarians were asked to rate how well they thought their Library or Information Science education prepared them for their initial assignment and their current position. Ratings were from 1—not at all well to 7—extremely well. Generally, average ratings were higher for their initial assignment (4.73) than their current position (4.25). Only 13.4% of librarians rated their education preparation for their initial assignment as being extremely well and only 9.4% for current assignment. Examined by years experience, ratings for initial assignment increased from 4.58 for less than 10 years to 4.86 for 20 years or more, but down some for current positions (4.34 to 4.20 respectively). Perhaps LIS education prepared them better in earlier years or that those ill-prepared dropped out of the workforce over time.

Supply and Demand for Academic MLS Librarians

Evidence of the demand for academic MLS Librarians from 2007-08 to 2016-17

The future demand for academic MLS librarians is based on three principal estimates. The first component starts with an examination of the estimated 29,278 current academic MLS librarians (headcount) and estimates how many will leave in 2007 and subsequent years up to 2017. These librarians are anticipated to leave for many reasons including disability or illness; death; retirement; employment in another library; employment in another occupation; drop out for family, education or military purposes, etc; or being laid off or the library being downsized. Taking all these reasons into account, an estimate is made of the beginning MLS librarians remaining in the academic library workforce in 2016-17. Each year some of these librarians from the beginning year (2007-08) will leave the workforce and some of those who left will come back and leave again. There are currently (2007-08) 401 vacancies that are assumed to be filled in 2007-08 who may leave and come back, etc. Observation of these events provides an analysis and estimate of total attrition each year over ten years.

The second component is a forecast of the expected size of the academic MLS librarian workforce from 2007-08 to 2016-17. This forecast takes advantage of a U.S. Bureau of Labor Statistics (BLS) forecast, where the total academic librarians in 2006 is given as 30,546 and 30,721 in 2016, giving a ten-year increase of 1.005729 percent. Assuming that the 29,278 MLS librarian workforce in 2007-08 increased at the same time rate there would be 29,446 librarians in 2016-17 or an increase of 168 MLS librarians over ten years.

Subtracting the remaining current MLS librarians (after attrition) from the forecast of expected size of the workforce each year provides an estimate of the total number of MLS librarians that need to be added to the workforce over a ten-year period.

Lastly adding total attrition, current vacancies, and expected number of new academic librarian positions yields an estimate of total demand for academic MLS librarians over the ten year period.

The total attrition from the beginning workforce (29,278) is 14,502 MLS librarians, the number of 2007-08 vacancies to be filled is 401 MLS librarians, and there is an expected number of new positions of 168 MLS librarians resulting in a ten-year demand of 15,071 MLS librarians.

The estimate of the demand for academic MLS librarians is based largely on an actuarial—like analysis of the number of male and female librarians and by their age since attrition is very much dependent on these demographics. For example, both death and illness rates are age and gender dependent. Beyond that, as shown above (Table 7), librarians leave the academic library workforce for many reasons which are also age and gender dependent. Finally, many who leave actually come back which sometimes occur more than once. The extent to which these events occur are determined from the Library and Staff Surveys.

The detailed analysis is described in the academic librarian report³ to establish attention each year from 2007-08 to 2016-17. To the attrition is added the number of current vacancies (401 MLS librarians) and expected new positions (168) to establish total demand of 15,071 MLS librarians. The year-by-year demand is given in Table 8.

Table 8. Total Academic MLS Librarian Demand by Source of Demand by Years 2007-08 to 2016-17.

Year	Total Attrition	Current Vacancies	Expected Positions	Total Demand
2007-08	1,738	401	17	2,156
2008-09	1,633	0	17	1,650
2009-10	1,568	0	16	1,584
2010-11	1,531	0	17	1,548
2011-12	1,472	0	17	1,489
2012-13	1,413	0	17	1,430
2014-15	1,387	0	16	1,403
2015-16	1,241	0	17	1,258
2016-17	1,160	0	17	1,177
Total	14,502	401	168	15,071

Below some evidence is given for what one might expect during the current recession and then we show that the demand is unlikely to be satisfied by the current level of supply.

Evidence of academic librarian employment during two recessions

There have been two significant recessions in recent decades in which the library community has corresponding data with which to determine their effects on academic librarian employment.

- The early 1980s when there were two economic troughs in January 1980 and

November 1982. Average unemployment rates ranged from 5.8% in 1979 to 9.7% in 1982.

- The early 2000s when the trough was in November 2001 and unemployment went from 4.0% in 2000 to 6.0% in 2003 and down to 5.5% in 2004.

An early *Library Human Resources* NCES sponsored study was conducted in 1982⁴ which provides evidence of academic librarian employment from 1978 to 1982. The FTE number of librarians⁵ is given below for these years:

Year of Employment	Unemployment Rate (%)	Number of Academic Librarians (FTE)
1978	6.1	19,900
1979	5.8	20,360
1980	7.1	20,410
1981	7.	20,410
1982	9.7	21,220
4-year experience	5.9	6.6%

While the numbers of librarians are not MLS librarians the data suggest that the recession did not adversely affect academic librarian employment.

During this period other professionals increased from 2,170 in 1978 to 2,500 in 1982 (a 15.2%

increase) and support staff increased from 33,440 to 35,570 (a 9.4% increase). Non-librarian staff had a much greater growth than librarians, perhaps due to the fact that the supply of graduates of library education programs decreased substantially during this time period. MLS librarian graduates decreased from 5,500 in 1978

to 4,200 in 1981 and were expected to drop to 3,710 in 1982. Furthermore, during this era librarian graduates were increasingly hired in non-traditional work even though starting salaries of librarians increased 8.0% in constant dollars from 1978 to 1981 (maybe in an attempt to remain

competitive).

The NCES provides some evidence of the MLS librarian employment during the early 2000s recession as shown below.

Year of Employment	Unemployment Rate (%)	Total Librarians (FTE)	Average Librarians per Library
2000	4.0	25,170	6.83
2002	5.8	25,881	6.53
2004	5.5	26,469	6.67
4-year change		+5.2%	-2.2%

Even though the number of MLS librarians increased 5.2% the average number per library decreased 2.2%. Evidence from these two recessions are reasonably positive for MLS librarian employment.

Evidence of the supply of MLS librarians

The total number of Master's degrees in Library Science awarded by US institutions has fluctuated between 3,500 and 6,700 over the past 35 years.⁶ The number of Master's degrees awarded from US programs accredited by ALA have grown slightly but remained relatively flat through the 1990s and then had a burst in growth due to emergence of technology-enabled distance education programs and a few additional programs accredited by ALA.

Recent surveys indicate that about 5,850 MLS librarians received degrees in 2008-09. Based on a survey of accredited programs, it is estimated that about 4,500 of these graduates took jobs in libraries. These estimates are supported by the Library Surveys which indicated about 4,057 MLS graduates were hired in 2006; of which 1,380 were estimated to be hired in academic libraries.

The demand for librarians is expected to grow well beyond the current supply from ALA accredited programs. The projected demand for all MLS librarians ranges from a high of 11,374 in 2009 to 4,333 in 2018 or accumulate to 62,320 librarians. If the current supply of MLS librarians stays relatively constant, the effective demand fast outpaces available supply. Thus, the increase in supply capacity required ranges from about 200 to

400 percent or a doubling to quadrupling of the current capacity. Whether this overall MLS library demand will hold for academic MLS librarians is unknown but certainly one of concern.

—Copyright 2011 José-Marie Griffiths and Donald W. King

Notes

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4. King Research, Inc.
5. Librarians are defined more broadly than MLS librarians who received degrees from LIS programs accredited by the American Library Association. However, the number of academic MLS librarians was estimated to be 19,000 in 1982 or 89.5% of the total.
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Assessing Public Library Use of the Internet: A Sixteen Year Perspective

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Abstract

Public libraries were early adopters of Internet-based technologies, and the *Public Libraries and the Internet* and *Public Library Funding and Technology Access* national surveys have charted the involvement with and use of the Internet by US public libraries since 1994. Since 1994, 12 national studies—funded over the years by the American Library Association, the Bill & Melinda Gates Foundation, the National Commission on Libraries and Information Science, and the US Institute of Museum and Library Services—provide longitudinal data that track trends in the public access computing and Internet access provided by public libraries to the communities that they serve. This paper provides an overview and review of selected *Public Libraries and the Internet* national survey data; identifies key trends and changes in Internet-enabled services and resources provided by public libraries to their communities over the course of the 16 years of conducting the national surveys; identifies key issues that emerge from the data regarding public library Internet use and involvement; and identifies selected future issues regarding public library Internet-enabled services, particularly as the public access that libraries provide their communities takes on increasing importance in supporting a range of services such as e-government, jobs/employment, health information, and education. The paper therefore seeks to provide an evolutionary perspective on public library Internet connectivity.

Background

The *Public Libraries and the Internet* national surveys began in 1994 with the purpose of tracking the growth of public library Internet connectivity and uses as a basis for: (1) proposing

and promoting public library Internet policies at the federal level; (2) maintaining selected longitudinal data as to the connectivity, services, and deployment of the Internet in public libraries; and (3) providing national estimates regarding public library Internet connectivity. Through 2004, the surveys were conducted roughly every two years. Beginning in 2006, the surveys switched to an annual data collection cycle, and became part of a larger *Public Library Funding and Technology Access* study (<http://www.ala.org/plinternetfunding>) funded by the American Library Association and the Bill & Melinda Gates Foundation.¹

Due to its longevity, longitudinal data, and unique data, data from the surveys appeared over the years in Congressional testimony, filings with the Federal Communications Commission (FCC), filings with the National Telecommunications and Information Administration (particularly regarding the recent Broadband Technology Opportunity Program grant program), in the *Children's Internet Protection Act* US Supreme Court decision, US Senate hearings on the E-government Act, and many other critical policy venues. State librarians have also used the data in state legislative testimony, and in a range of state policy documents and initiatives. In short, the data from the surveys are used by a number of stakeholders in a wide range of ways. All 12 reports, and other related content, can be found at <http://www.plinternetsurvey.org>.²

Methodology in Brief

The survey's methodology has evolved over time to meet changing survey goals. As of this writing,

the survey provides both national and state estimates with the following objectives:

- to provide branch-level national data regarding public library Internet connectivity and use;
- to provide state branch-level data (including the District of Columbia) regarding public library Internet connectivity and use; and
- to provide system (administrative)-level data (including the District of Columbia) regarding e-rate use and library operating and technology funding and expenditures.

The survey uses a stratified “proportionate to size sample” to ensure a proportionate national sample. The sampling approach taken ensures high quality and generalizable data within the states analyzed, nationally, and across and within the various strata such as metropolitan status (e.g., urban, suburban, and rural).

The study team uses the Institute of Museum and Library Services public library dataset, formerly maintained by the US National Center for Education Statistics, (see <http://harvester.census.gov/imls/publib.asp>) to draw its sample. The survey asks respondents to answer questions about specific library branches and about the library system to which each respondent branch belonged. Respondents typically answer the survey between September and November of each survey year. In each year of the survey, except for the 2006-2007 survey, the survey response rate has been between 70.0% and 82.0%, and provides between 5,500 and 6,400 survey responses. The data are weighted for both national and state level analysis, and have a margin of error or +/- 3%. The high survey response rate and representativeness of responses demonstrate the high quality of the survey data and the ability to generalize to the public library population. Additional detail regarding study methodology can be found in the studies themselves.

Selected Longitudinal and Key Findings

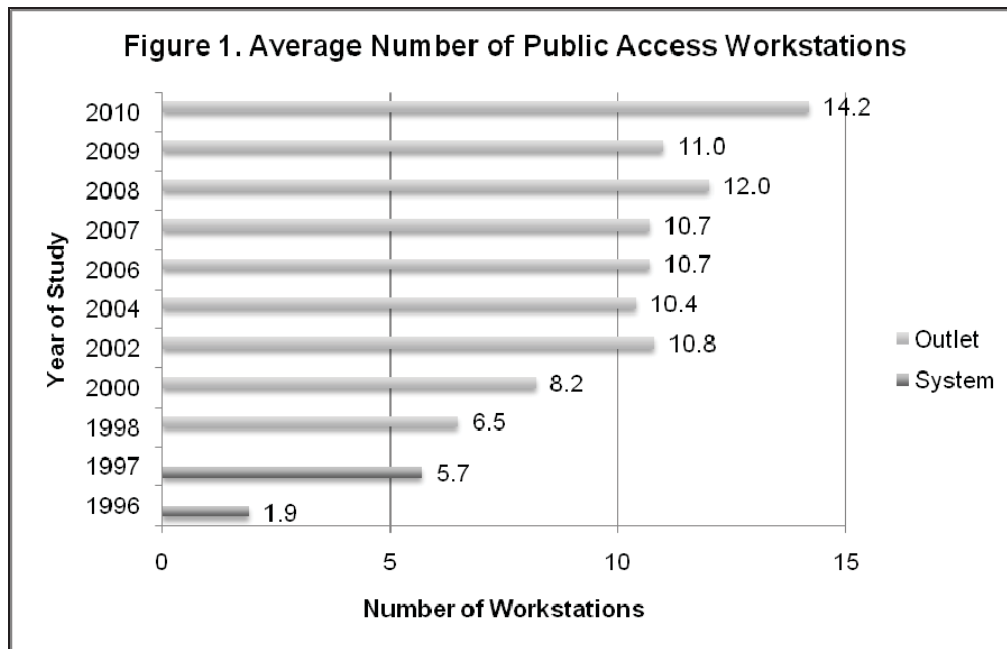
This section provides an overview of selected

longitudinal data. The section provides longitudinal data for as many survey years as possible. It is important to note, however, that key survey questions such as broadband connectivity speeds, have changed substantially over the years to reflect the evolving nature of Internet connectivity. For example, the first surveys asked about dial-up connections and their speeds, versus today’s questions that explore fiber optic and other types of Internet connectivity and corresponding higher speeds. Thus some longitudinal comparisons would not make sense. Finally, the section provides selected findings regarding newer services, particularly as they have an impact on future public library Internet-enabled services.

Infrastructure

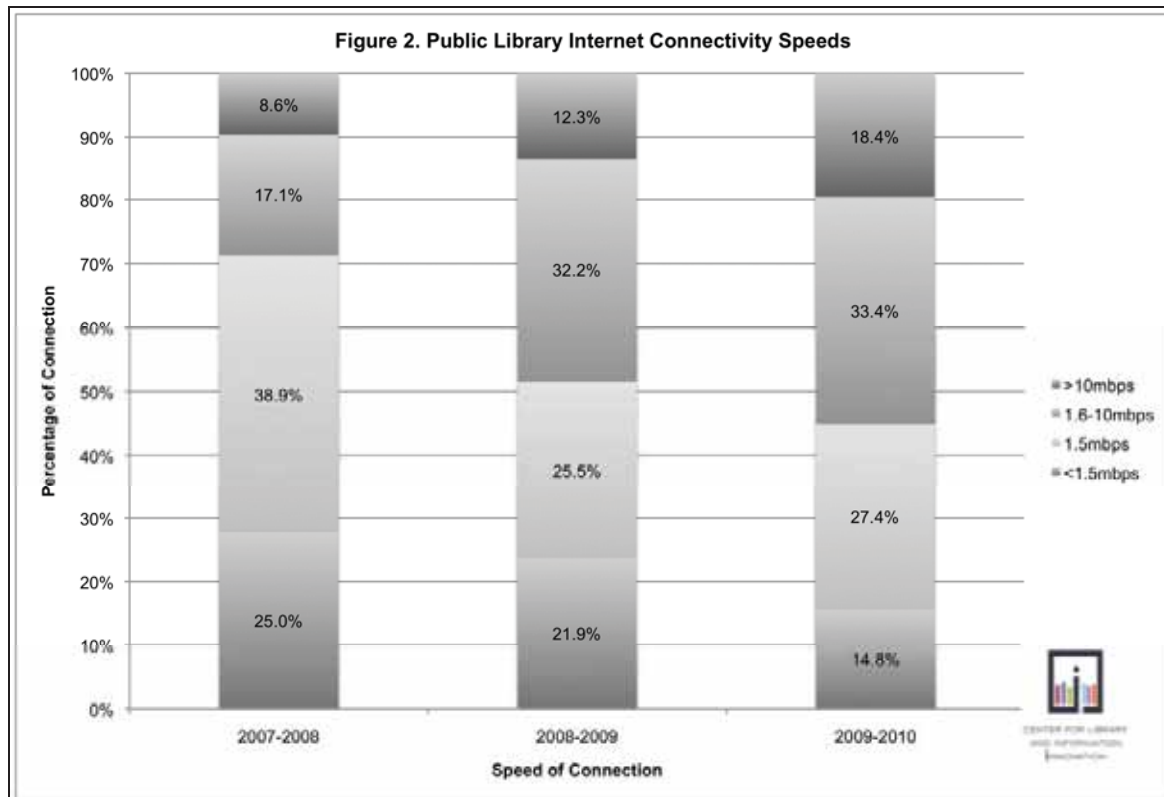
The survey asks a number of questions about a public library’s public access infrastructure—e.g., public access to the Internet, numbers of workstations, wireless (Wi-Fi) access, and connectivity speed. Nearly 100% of public libraries are connected to the Internet. Libraries achieved this growth in connectivity quite quickly, from 20.9% of public library systems connected to the Internet in 1994 to nearly 100% by 2002. Indeed, so prevalent is Internet connectivity in public libraries, that the survey discontinued asking this question in 2008. And, nearly all connected public libraries provide public access to the Internet. Interestingly, nearly all libraries that reported an Internet connection indicated the provision of public access to the Internet—even in 1998, with 87.7% of connected libraries providing public access to the Internet.

Along with Internet connectivity, public libraries also rapidly increased the average number of workstations that they provided for public use. Between 1996 and 2009, the average number of workstations grew from 1.9 to 14.2 (see Figure 1). Of note is that the average number of workstations, hovered between 10.0 and 11.0 since 2002, before finally climbing in 2009. Libraries reported cost, staff, and space issues were impediments to adding more workstations.



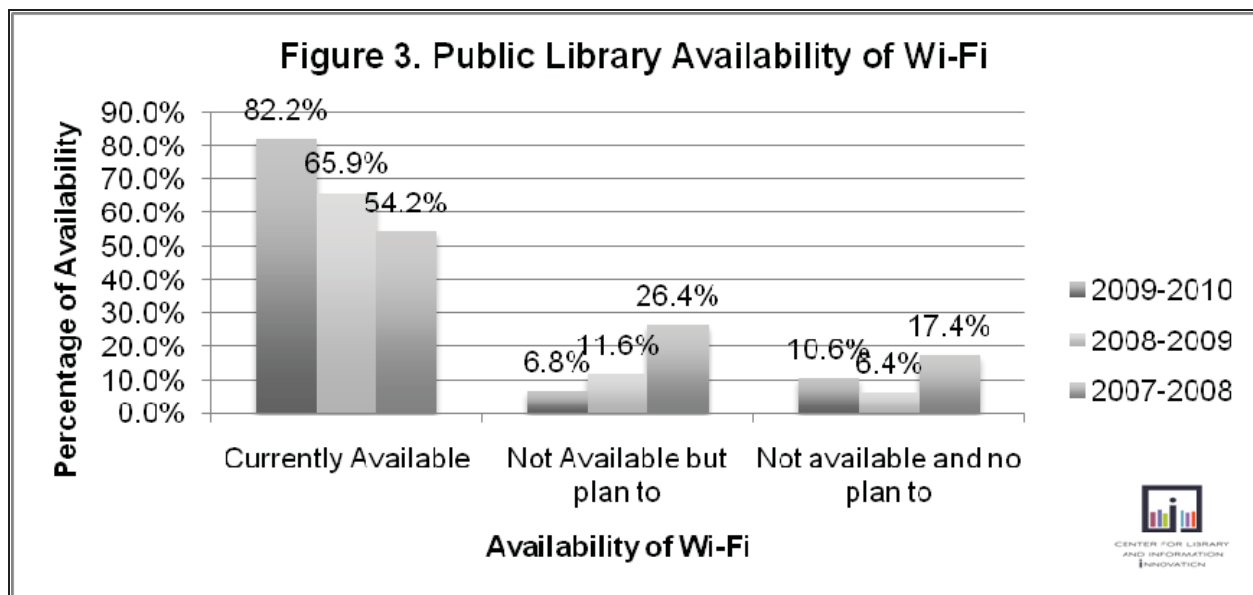
Public library adoption of broadband continued to increase over time (see Figure 4). Libraries continue to enhance their connection speeds annually. Indeed, from 2008 to 2009, public libraries reported an increase in connectivity

speed, with 51.8% of libraries reporting connection speeds of greater than 1.5MBPS in 2009 as opposed to 44.5% in 2008. Libraries reported a corresponding decline in speeds of 1.5MPBS or less in 2009 as compared to 2008.



Libraries report a substantial increase in the availability of wireless (Wi-Fi) services for public use (see Figure 3). In 2009, 82.2% of public libraries provide public wireless access, as compared to 54.2% in 2007. And, if libraries that indicate they are planning to provide wireless

access within the year do so, the figure will approach 90.0%. The adoption of Wi-Fi in public libraries has been quite rapid, and is likely to become almost as ubiquitous as Internet connectivity in libraries.



Connectivity, however, is a prerequisite to providing a range of Internet-enabled services and resources to the communities that libraries serve.

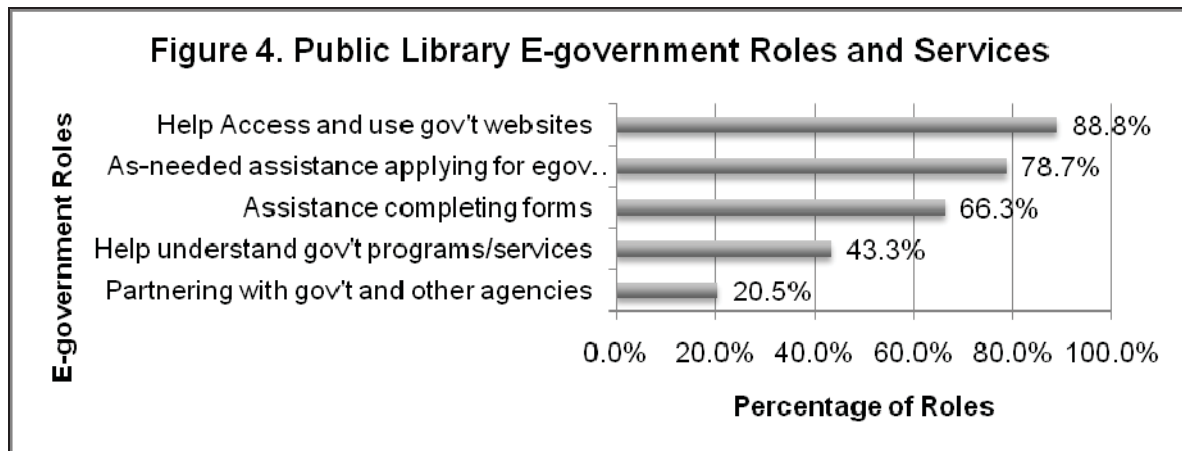
Services

Public libraries use their Internet connectivity and public access computers to provide databases, e-books, digital reference, training, and a number of Internet-enabled services to their users—both from inside and outside of the library's walls. More specifically, as reported in 2009, public libraries:

- offer licensed databases (95.0%), homework resources (88.2%), audio content such as audio books (82.5%), and digital reference (72.3%);

- offer a substantial amount of information technology training on a wide range of topics, including general computer use (93.4%), general Internet use (91.7%), online searching (81.0%), and general software use (75.5%); and
- provide innovative support services to meet community needs in such areas as E-government by assisting users understand and use government web resources (88.8%), assisting patrons apply for government benefits (78.7%), and assist patrons complete forms (66.3%) (see Figure 4).

There are other services provided by public libraries, but these demonstrate the depth and breadth of public library Internet-enabled services.



If one looks at the survey data over the years, there is a sense that public libraries quickly incorporated public access technologies into their libraries, made public access a critical service they provided to their communities, offered training and instructional programs to facilitate the ability of users to interact with Internet technologies, and responded to community needs such as E-government. Libraries do not provide these services without challenge, however.

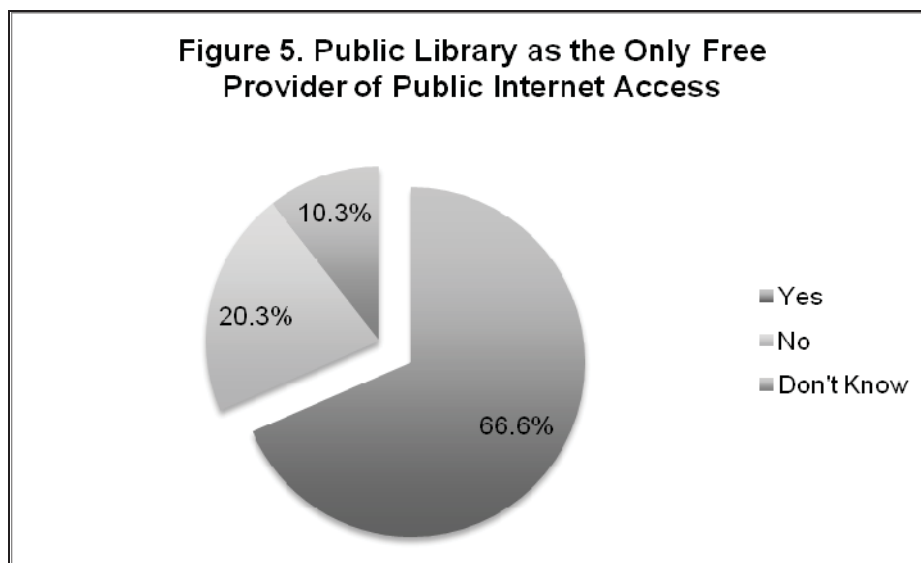
Challenges in Public Access Services and Technologies

Increasingly, the Public Library Internet surveys show conflicting results. This section focuses on these somewhat contradictory results, by way of findings reported in the latest (2009-2010) survey. On the one hand, public libraries continue to offer enhanced public access computing and Internet

access to their communities. As presented above, public libraries:

- offer wireless (Wi-Fi) access to the Internet;
- have faster public access broadband speeds than other local public access points or are the only public access point in the community;
- offer technology and Internet training; and
- offer a range of other services such as databases, digital reference, e-books, and E-government.

And, as libraries report, 66.6% are the only free public access computing and Internet centers in their communities (see Figure 5). Thus, public libraries provide critical public access computing and Internet services that support their communities in a wide range of areas.



On the other hand, however, public libraries indicate that:

- **Their broadband speeds are inadequate.** At the same time, 45.1% of respondents reported that their connectivity speed is insufficient some or all of the time.
- **Their numbers of public access computers are inadequate.** 73.5% of libraries reported that they have insufficient availability of workstations some or all of the time.
- **Costs, space, and buildings are real barriers to the public access environment public libraries can offer.** 79.8% of libraries reported that cost factors, 75.1% reported space limitations, and 53.1% reported that the building infrastructure (e.g., cabling, wiring, electrical outlets) influence their decisions to add public access workstations/laptops.
- **They rely on non-professional IT staff for technology support.** 67.3% of libraries report that they rely on non-IT public service staff or library directors for support their technology. This percentage climbs to 76.3% for rural libraries and drops to 45.0% for urban libraries. 47.0% of libraries support their IT with system-level IT staff, but only 35.4% of rural libraries have access to such support as compared to 75.3% of urban libraries.

The real significance of these findings is that some libraries continue to face the same challenges *in spite of upgrades to their technology infrastructure*. And, more significantly, libraries continue to offer a significant amount of services to the communities that they serve—licensed databases, technology training, e-government, and more—while often the only free public access point within their communities.

During the years 2009-2010, public libraries have witnessed one of the most severe recessions in the history of the United States. Many public libraries have cut staff, reduced their hours, reduced the purchase of books and other material, and postponed technology upgrades—among other responses. In short, they have not been able to increase adequately their public computing and Internet access capacity at the same time when demand for computing and Internet access increased significantly. Many people depend on their public libraries in difficult economic times for assistance in job search, completing online government forms or job applications, accessing

online data and information, and much more. The degree to which the country, and public libraries, will recover from this recession in the immediate years to come is as yet unclear. But how such recovery occurs will be an important topic in future national surveys.

Thus, public libraries increasingly report that they are unable to meet patron demands for services due to inadequate technology infrastructure, costs associated with operating and maintaining that infrastructure, and bandwidth quality/availability issues—but not for lack of trying to enhance their services. What is unclear is how libraries will maintain their levels of public access computer and Internet access services, much less extend and augment them in the current economic downturn. It is in this mixed and paradoxical context that public libraries provide their public access services.

Future Issues and Considerations

The surveys have demonstrated the embracement of the Internet and public access technologies by public libraries—not just from an infrastructure perspective, but also from a service and resource perspective. Public libraries, on average, increased the number of public access workstations by several hundred percent in a period of 8 years; they substantially increased their Internet speeds; expanded service to include Wi-Fi public access; offer a large range of Internet-enabled services and resources such as databases, digital reference, and e-books/audio books; and provide technology and Internet resource training services. But the data also show that libraries are stretched, and increasingly challenged to maintain and/or enhance their levels of services.

This concluding section offers insights into key issue areas that public libraries, policymakers, and others may need to consider as public libraries continue to fulfill their role as community-based providers of cost-free public access to the Internet and computing:

- **How much is enough? It's never enough.** A question that the surveys have never adequately addressed is “how much access (workstations, broadband speeds) is enough?” In fact, as the bar gets higher in terms of service provision, so too does the assessment of how much is needed. Libraries—even the smallest in the most rural

areas—are rapidly approaching the need for fiber optic connections. Nearly half of all libraries report a T1 (1.5 MBPS) connection—something that only a few short years ago was considered robust bandwidth. And yet, a vast majority of libraries report that this increase in bandwidth is inadequate.

- **Better understanding of the relationship between infrastructure and services.** The initial Public Library Internet surveys showed that libraries viewed Internet connectivity as an experimental service—one that had substantial potential, but it was unclear at the time (after all, the Mosaic browser was introduced in 1993, the same year that the first survey went into the field) just how revolutionary the Internet would be to public library service. As Internet-enabled services are a mainstay of the public library, there is a substantial need to better understand which services require what amount of bandwidth. Increasingly, for example, streaming video content is in high definition format, which consumes substantially more bandwidth than web browsing.
- **The need for comprehensive capacity planning.** Public access services and resources require libraries to look across their Internet-enabled services and resources comprehensively. Public access workstations, broadband, and Wi-Fi are part of a collective public access technology environment that directly impact the ability of libraries to offer patrons high quality Internet services and resources—and moreover, high quality user experiences. A library that has 7 public access workstations and offers Wi-Fi, but has a DSL connection, ultimately provides a dial-up experience to its users. Capacity planning needs to include not just the last mile, but also internal library infrastructure, including routers, switches, up to date workstations, at the least, to provide quality public access services.
- **Continual upgrades to technology and staff.** As the surveys demonstrate, public access computing and Internet infrastructure and services are not a one-time investment. There is a continual need to upgrade computing technology, Internet connectivity, and buildings. Also, the surveys show that, given the demands placed on libraries for training, e-government, education, employment, and other critical service areas, there is a need to continually train library staff on a range of technologies as well as services (such as how to help apply for government benefits, help with seeking employment, certification exams, and more).
- **Setting service quality benchmarks.** Given increasing demands, and libraries that report the inability to keep up with demand, libraries may need to consider setting levels of service quality benchmarks at the local, state, and/or national levels. Libraries will need to decide whether they will offer as many services at the highest level of quality as possible, or set levels of service quality, realizing that a library may not be able to meet all requests and demands. In some cases, service quality levels may be dictated by the, for example, broadband that is available to a library due to cost and geography.
- **The library divide.** One factor across all the surveys conducted in the last 10 years remains: rural libraries in general have fewer resources, less connectivity, fewer workstations, less access to technology support, and other factors. This does not mean that urban libraries are infinitely better off—in fact, urban libraries often report similar issues in terms of keeping up with demand. But the survey data are clear: rural libraries face substantial challenges in supporting their public access technology environment, and there is no indication of abatement in this circumstance.
- **Developing national policies to support public access public library computing.** A debate about the appropriate role of public libraries in national Internet and broadband policy has received inadequate attention. The recent National Broadband Plan issued by the Federal Communications Commission (<http://www.broadband.gov/plan/>) is a first step in having such a debate. But specific policy research and recommendations are needed for a national Internet and broadband plan that clearly includes and supports public libraries as a public access Internet provider of both first and last resort.

The above are a selection of issues that will need consideration and resolution if public libraries are to continue their role as critical providers of community public Internet and computing access.

Future *Public Libraries and the Internet* surveys will need to continue exploring the evolving service context of public access Internet and computing services within public libraries. Some examples of possible future topics that may need exploration include the following:

- How will new and evolving Internet, computing, and broadband technologies affect the public library's capacity to meet user needs? Evolving technologies such as Max-Fi, web 2.0 and 3.0 applications, cloud computing, etc. are likely to affect public library provision of services in different ways—many of which cannot be easily anticipated.
- Will new means for organizing public libraries and participating in new types of resource sharing develop? Since many public libraries cannot currently meet user needs and provide adequate computing and network capacity, new strategies may evolve to leverage and extend existing resources.
- What are the implications of entering the age of "infinite storage?" With new computing and storage devices, individuals are likely to be able to carry with them massive amounts of data and applications for very little cost. Such massive data storage may significantly affect use of and need for traditional computing workstations.
- How will the development of mobile devices affect provision of public library computing and Internet access? Forecasts for the amount and sophistication of data and applications on future mobile devices suggest that the type of public computing and Internet access public library users may need could change radically.

Public libraries have clearly moved beyond issues of "getting connected" and into critical services provision via the Internet. Indeed, one cannot imagine a public library that is not connected to the Internet, not providing public access computers, or not offering users a number of online resources such as licensed databases, assistance with using technology and/or the Internet, or, increasingly, Wi-Fi access. One can no longer separate the public library from public Internet access. The issue is not one of measuring connectivity, but rather, better understanding the nature and roles of public libraries as providers of

community-based public access and how they can best meet user needs and expectations.

This 16 year experience in developing, designing, and implementing a national survey tracking public library Internet connectivity and use has shown the importance of having longitudinal data to address and plan for a host of issues. The original studies were modest efforts that grew into a significant and extensive national survey with broad support from the public library community. Strategies are under development to sustain this national survey effort and to obtain additional funding after completion of the 2011-2012 survey to continue developing and administering the surveys.

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Conducting Practical Library Assessments That Promote Program Change and Improvements

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Abstract

This paper reviews a number of recent studies conducted by the Information Use Management and Policy Institute at the College of Communication and Information, Florida State University. The studies reviewed in the paper demonstrate how, over the Institute's 11-year history, the staff accomplished effective, sustainable, and practical assessments that affected change and improved the delivery of library services and programs. Moreover, the paper suggests that such studies do not have to be expensive nor does the methodology need to be complicated. The paper reviews three recent studies: (1) a website assessment, (2) a broadband mapping assessment, and (3) a training assessment. In addition, the paper makes comparisons among these three in terms of methods, data collection, reporting, impacts, and benefits.

Introduction

The Information Use Management and Policy Institute (Information Institute; www.ii.fsu.edu) at Florida State University's College of Communication and Information assesses numerous library services and programs each year. These assessments cover a wide range of services and programs. In recent years, the Information Institute has also done considerable work evaluating electronic library services, such as web portals, digital libraries, and the underlying broadband infrastructure necessary to provide electronic library services. This paper details three Information Institute assessments of electronic library services that include:

- Two-year development and evaluation of a the Hurricane Preparedness and Response for Florida Public Libraries Web Portal (hurricanes.ii.fsu.edu);
- Three-month statewide public library broadband needs assessment; and
- Nine-month multi-tier assessment of marketing and training plans for a statewide digital library, the Florida Electronic Library (FEL; www.flelibrary.org).

These three projects were chosen for their wide variation, not only in the underlying service being assessed, but also in the methodologies employed and timeframe for completion of the assessments.

The purpose of this paper is to use these three projects as examples of how public libraries can assess electronic library services, regardless of time constraints and utilizing a variety of methodologies. The authors hope this paper provides research strategies that are easy to understand and simple to employ in public libraries.

Overview of the Three Example Studies

The three example projects described in this paper represent over two years of assessment work by the Information Institute. The hurricane project covers the largest timeframe, running from August 2008–August 2010, but the web portal evaluation occurred during one portion of the overall project, from November 2009–January 2010. The broadband needs assessment covers the shortest timeframe, occurring during the summer

of 2009 (June-July). The Information Institute conducted the FEL training and marketing assessment during a nine month period (October 2009–June 2010), although this project is part of a longer term evaluation program for the Florida Electronic Library, which the Information Institute has conducted since 2003 and continues through 2011.

Hurricane Web Portal Evaluation: Overview

The Florida Catastrophic Storm Risk Management Center at FSU’s College of Business awarded a grant to the Information Institute to assist public libraries and local communities better plan for, and respond to, hurricanes. A central part of the project was the development of the Hurricane/Disaster Preparedness and Response web portal to aid Florida public librarians and emergency response personnel during hurricanes and/or disasters (see: hurricanes.ii.fsu.edu). The study team developed plans for use and usefulness data collection activities based on the following two scenarios:

- *Scenario 1 – Hurricane/Disaster Event Occurs.* If a hurricane/disaster event occurred during the project, the study team would conduct interviews, focus groups, and surveys to collect information related to the use and usefulness of the web portal prior to, during, and after the event; and
- *Scenario 2 – Hurricane/Disaster Event Does Not Occur.* If no hurricane/disaster event occurred during the project, the study team would conduct interviews, focus groups, and surveys to collect information related to the use and usefulness of the web portal.

Since no significant hurricane/disaster event occurred during the 2009 season, the project team implemented the evaluation plan under Scenario 2. For more information on the overall hurricane project, see the final report,¹ and for more detail on the evaluation of the project web portal, see the evaluation report.²

Broadband Needs Assessment: Overview

The Information Institute received a grant from the State Library and Archives of Florida (State Library) to conduct a needs assessment of Florida’s public library E-government and emergency/disaster management broadband-enabled services. This project provided preliminary findings to assist the State Library in

determining (1) broadband needs of public libraries in Florida, and (2) E-government and emergency/disaster management services that might be deployed throughout the state with increased broadband connectivity. This project was a first step to enhance delivery of broadband-based E-government and emergency/disaster management services and resources, improve Florida residents’ access to and use of these services and resources, and assist public libraries to better support these activities at local and state levels. Additionally, the findings provided background information and justification for a proposal to the National Telecommunications and Information Administration Broadband Technology Opportunities Program to support improving Florida public libraries’ broadband capacity.

FEL Training and Marketing Assessment: Overview

Since 2002, the Information Institute has engaged in multiple evaluations of the FEL. During this time frame, the Information Institute has assisted in the clarification of the status and goals of the FEL,³ developed criteria and measures to assess the FEL,⁴ and developed evaluation plans and strategies for the FEL. In addition, the Information Institute has conducted usability, functionality, and accessibility testing of various components of the FEL for the State Library and Archives of Florida.⁵ The Information Institute also has completed marketing studies⁶ and developed an evaluation database of key statistical indicators to describe FEL activities.⁷

The current evaluation efforts of the FEL build upon prior FEL studies⁸ and include:

- Summary evaluation of selected aspects of the FEL for Library Services and Technology Act (LSTA) reporting;⁹
- Assessment of Ask-a-Librarian (AAL) chat reference questions;¹⁰
- Updated FEL five-year plan and assessment of public library and school needs to better provide consumer health information via the FEL;¹¹
- Continuation of assessment of the AAL component of the FEL;¹² and
- Provision of support to the State Library regarding the maintenance, use, and analysis of FEL statistics.¹³

The project described in this paper includes evaluation of marketing efforts conducted by the primary database vendor for the FEL (Gale-Cengage; www.gale.cengage.com), the usage of FEL-Gale resources, and the effect of training on library staff's ability to be self-sufficient users of FEL-Gale resources and to train others on the use of FEL products.

These assessments build on prior FEL studies conducted by the Information Institute for the State Library and focus on three tasks: (1) measuring usage of FEL-Gale resources, (2) assessing the effect of FEL-Gale training program on usability, and (3) identifying awareness of FEL-Gale resources. For more information on the current FEL project, see the final report, which provides an overview of findings from each task, summary findings for the project overall, and suggested future evaluation activities.¹⁴

Methodologies Employed in the Three Studies

Typically, the Information Institute relies on multi-method assessment strategies and combines various strategies that best fit the needs and goals of the project at hand. For each project described in this paper, the methodology design took into consideration the specific goals of the assessment, the resources available, and situational factors associated with the assessment, which are discussed below.

Hurricane Web Portal Evaluation: Methodology

The hurricane web portal evaluation included three primary methods: (1) interviews/focus groups and surveys, (2) usability, functionality, and accessibility testing, and (3) web analytics. The interviews and surveys were designed to assess the use and usefulness of the project's web portal by soliciting feedback and opinions from hurricane-experienced librarians from a convenience sample of Florida public libraries. The usability, functionality, and accessibility assessments of the overall usability of the project web portal included user and expert usability testing, and expert functionality and accessibility testing to assess the degree to which the hurricane web portal meets general usability, functionality, and accessibility standards. Web analytics were obtained by utilizing Google Analytics to evaluate web portal usage from October 1 through

December 31, 2009. Based on the analyses of these data, the study team edited, refined, and improved the project web portal to better meet Florida librarians' and local/state emergency responders' needs.

Interviews, Focus Groups, and Surveys

Using an interview/focus group script and *Hurricane Web Site Use Survey*, participants across the state were questioned regarding the effectiveness of the web portal, its usability, its organization and its comprehensiveness. The interview script and survey were pretested on librarians at a Southeast Florida public library. Their answers were recorded to preserve the input, and the study teams' questions were refined to acquire the most valuable recommendations. After making the necessary changes to the script and survey, 15 librarians were interviewed and their responses were recorded and analyzed so their feedback could be used to make changes to the web portal.

Usability, Functionality, and Accessibility Testing

To perform usability, functionality and accessibility testing, the team developed standard usability protocols for the evaluation of the hurricane web portal. Areas included within the protocols were based on general information seeking behaviors of users that include the use and usefulness of the web portal's content and design. In addition, the usability protocol included questions related to the most and least useful aspects of the web portal and recommendations to improve the web portal.

The usability evaluation included assessments by selected public librarians and expert testing by members of the study team. The study team emailed a usability protocol to 3-5 selected Florida public librarians. The usability protocol developed for this project was specific to the hurricane/disaster preparedness and response web portal and was based on the study team's prior usability testing experience.¹⁵ The selected participants reviewed the protocol and project web portal, and completed and returned the usability protocol form to the project team along with recommendations on how to improve the web portal. The study team also conducted expert usability assessments of the project web portal where members of the study team reviewed the

project web portal and completed the usability protocol.

Functionality is the degree to which all aspects of a website are functional and operate properly. Functionality testing helps assure that a system performs as expected, or that it works.¹⁶ This testing insures that the web portal is delivering the intended services and capabilities needed by the targeted population of users. For the project web portal, functionality testing included a systematic assessment of every page of the portal.

Accessibility is the level at which a technology can be used by individuals with disabilities.¹⁷ Accessibility testing is particularly important in Florida as many seniors have disabilities including visual, hearing, and mobility impairments that impact the ability to use Web-based materials. Categories of evaluation include checking for accessibility friendly features as menu driven selections, testing policy, accessibility statement, and compatibility with assistive devices used by individuals with disabilities. Members of the study team (i.e., experts) conducted the accessibility testing.

Web Analytics

The study team utilized Google Web Analytics (www.google.com/analytics/) to examine web portal usage and selected metrics determined to be the most useful for assessment of web portal usage. The project team used a convenience sample of the first quarter (i.e., October 1–December 31, 2009) after the portal was launched and the marketing campaign has been in full effect. Overall, the analytics indicated that the portal is experiencing increased usage, even toward the end of a quiet hurricane season.

Broadband Needs Assessment: Methodology

The needs assessment employed a multi-method data collection approach, which included seven distinct methods: (1) literature review, (2) interviews, (3) case studies, (4) site visits, (5) GIS analysis, (6) survey data analysis, and (7) costing models. The authors limited the discussion in this paper to only three of these methods: case studies, GIS analysis, and costing models. Additional information related to the project methods and data collection techniques used in this study is available in the final report.¹⁸

The study team employed a combination of purposeful and cluster sampling for the study's iterative multi-method data collection efforts. The study was exploratory and purposeful, thus limiting the generalization of the data. The seven methodologies, however, provided detailed and overlapping findings regarding broadband capacity issues associated with providing E-Government and emergency/disaster management services and resources in public libraries. By using an iterative and multi-method approach, the study team identified and triangulated perspectives on broadband needs for the delivery of E-Government and emergency/disaster management services and resources in public libraries from both the public library and user populations, thus ensuring reliable and valid data.

Public Library Case Studies

The study team enlisted selected public libraries to conduct case studies describing their current broadband configuration/infrastructure, collecting data on workstation connectivity speeds and network configurations, and collecting anecdotal data related to use of the workstations at the current connectivity speeds. The study team enlisted six public libraries to conduct broadband connectivity case studies in their libraries.

Data collection efforts for the case studies were based on library-provided answers to the following requests:

- Provide us with a written network configuration for your library network beginning with the bandwidth coming in to the system (library), how all the branches and outlets are connected, with what, and at what speed;
- Tell us your telecommunications/broadband costs for the current network and name of the ISP;
- Do some speed tests at the workstation level using www.speakeasy.com (or whatever you prefer) over a one week time period at a selection of the branches, preferably around (9:00 AM and 4:00 PM in the afternoon) on weekdays—MWF would be great;
- Supply us with anecdotes or stories regarding connectivity and bandwidth at the branch level as to problems or issues;

- Describe the internal size of the library technical staff and the amount/type of assistance you get from the ISP;
- Draw the DREAM configuration that you wish you had for your broadband connection (based on number one above) and indicate what the costs would be with your current provider; and
- Send all this material to the Information Institute; we will then schedule a quick conference call to discuss.

Typically, a member of the study team contacted either the library director or lead technical support person at the case study site and asked if they would be willing to provide answers to the above seven questions. An attempt was made to obtain data from two large library settings, two moderate sized libraries and two smaller and rural libraries. The libraries provided answers to the above seven questions as best they could. In a number of instances, a member of the study team (either through email or via phone conversations) assisted participating library staff members to locate/obtain the information.

Geographic Information System (GIS) Analysis of Public Library Telecommunications

Study team members accessed the Bill & Melinda Gates Foundation 2009 Florida public library technology dataset, made available by the State Library and Archives of Florida, and the 2009 Florida K-12 public school dataset, made available by the Florida Department of Education. The study team used geographic information systems (GIS) software to manage, analyze, and display geographically Florida public library broadband information. The study team utilized GIS to analyze connectivity speeds and costs for public library outlets, schools, and school districts. Results of analysis of speed and cost connectivity were displayed statewide, by county averages, and by LATA and RACEC.

The Information Institute used these designations to produce four series of maps. First, the Information Institute looked at public library Internet connectivity speed and cost statewide by mapping individual library outlets' connectivity speeds in comparison to each other, average annual connection costs for public library outlets in each county, and average connectivity speeds for public library outlets in each county. Then, the

study team compared public library Internet connectivity speed and cost by LATA in a series of 21 maps that included one map showing the location of all 10 LATAs in Florida and two maps for each LATA, one showing individual library outlets' connectivity speeds in comparison to each other and the other showing individual library outlets' annual connection costs in comparison to each other.

Next, the team investigated K-12 public school district office Internet connectivity speed and cost statewide by creating two maps showing the connectivity speeds and annual costs for public school district offices in comparison to each other. Finally, the Information Institute looked at Public library, public school, and school district office Internet connectivity speed and cost by RACEC.

This final series of six maps included two maps for each of the three RACECs in Florida, one map showing the connectivity speeds of individual public library outlets, public schools, and school district offices in comparison to each other and the other showing the connection costs of individual public library outlets, public schools, and school district offices in comparison to each other.

Connectivity Costing Models

Study team members investigated several possible models by which to cost out library equipment and bandwidth upgrades. Study team members provided public library location, current connectivity speeds, and current annual cost to AT&T and requested broadband upgrade costs and connection speeds for all 547 Florida public library outlets. Data collected from site visits, case studies, GIS maps, public library national survey data, and AT&T upgrade costs allowed study team members to develop a number of initial connectivity cost logic models.

This method would have resulted in the cost logic model, a total cost for upgrades in all Florida public libraries, and a total cost for upgrading only the libraries in the 28 RACEC counties. However, based on the NTIA Notice of Funding Availability (NOFA) and with input from the State Library, the study team abandoned the plan for cost models to upgrade library bandwidth. Ultimately, the study team, working in concert with the State Library, developed a menu of

equipment options from which libraries selected what they needed, and tabulated a total cost of all necessary upgrade equipment for libraries participating in the State Library's BTOP grant program.

FEL Training and Marketing Assessment: Methodology

The Gale-Cengage training assessment included three main tasks, each of which required a unique approach to data collection. Measuring changes in usage before and after the beginning of the marketing effort relied heavily on analysis of usage statistics. Assessing the effect of the training program on library staffs' ability to use the FEL in a self-sufficient manner employed e-mail questionnaires and evaluation of quiz results from online self-paced modules. Due to limitations of the quiz results, however, only the e-mail questionnaires are discussed here. For details on this method, see the final report.¹⁹ Evaluating the impact of the marketing program on levels of library staff awareness of the FEL occurred via two rounds of telephone interviews.

Analysis of Usage Statistics

To analyze usage statistics, the Information Institute first gained access to the Gale-Cengage statistical portal and participated in a webinar/teleconference to learn how best to use the portal. Then, the study team reviewed the available reports in the portal and downloaded benchmark data (November 2009) from the portal. Finally, the Information Institute downloaded monthly usage data for December 2009 and January-May 2010 to compare to the benchmark to determine the degree to which usage has increased (or otherwise changed). Downloaded benchmark and monthly usage data included the canned reports entitled: Usage Summary; Usage by Database; Session Time; Session Location, Date and Time; Journal Retrievals; and eBook Retrievals. Data from each report were analyzed in Microsoft Excel to determine any change, and results were reported using a variety of line and bar charts.

E-Mail Questionnaires

First, the Information Institute recruited library staff who had completed Gale-Cengage trainings (face-to-face or via the on demand web modules) to respond to email questionnaires to assess the degree to which the Gale-Cengage training

program improved their abilities to use the FEL, both for themselves and to train others in using the FEL. Gale-Cengage provided the Information Institute with a population of 179 unique library staff who had completed Gale-Cengage trainings by the end of April 2010. For the interviews, the Information Institute selected a random sample of 77 from the population of training participants (43% of the population). Information Institute staff then contacted these library staff members via email and asked them to participate in an online questionnaire by the end of May. As instructed by the email, Information Institute staff contacted those library staff members who did not complete the interview script within the time allotted and conducted their interviews over the phone. This took between 5-10 minutes per interviewee. Overall, the Institute received responses from 31 library staff members, or 40% of the total sample of 77.

Telephone Interviews

The Information Institute needed to conduct targeted interviews with public librarians for a pre-marketing program score of awareness and a subsequent round of interviews to measure any change in awareness. The sample for the pre-marketing interviews was comprised of a random sample of 54 libraries (10%) that were pulled from the population of 547 Florida public libraries. The sample for the post-marketing awareness totaled 49 public libraries: seven main libraries, 33 branch libraries, two academic-affiliated libraries, and seven non-responses (i.e., librarians who did answer phone calls or declined to participate in the interviews). Both rounds of interviews were conducted using a predetermined list of questions, and only after library staff signed informed consent forms. Each interview lasted between 10-15 minutes, with responses manually recorded for subsequent analysis.

Practical Lessons for Conducting Program Evaluation

While the Information Institute regularly conducts assessment studies that are budgeted in the hundreds of thousands of dollars, the assessments described above were budgeted in the \$50,000 range. Each assessment relied on very practical and effective methods and data collection techniques that resulted in high quality data.

The Hurricane Preparedness and Response website assessment resulted in much improved access to hurricane preparedness and response content. The broadband needs assessment findings assisted the state library and archives of Florida to identify areas in the state where improved library broadband is essential. The FEL training and marketing assessment will result in the Gale-Cengage's ability to better fine tune the training content to specific audiences and to determine the degree to which the training affected overall FEL usage.

The three studies presented here provide a number of practical lessons for library program evaluations:

- ***Write proposals that are feasible given time and financial constraints.*** The first stage of any project is the proposal writing stage. At this point, the study team needs to sit down and discuss what can and cannot be accomplished within the constraints of the request for proposals, such as budget limitations, imposed timelines, etc. Be careful to write proposals that include *only* those tasks and activities that reasonably can be accomplished within those financial and time constraints.
- ***Be organized at the start of a project to minimize problems later on.*** For all evaluations and other research, the Information Institute begins each project by compiling a detailed tasking document that lays out key tasks for the project, as well as step-by-step activities for each task, with a timeline to completion. The tasking document is not set in stone; rather, the Information Institute modifies the tasking when necessary. However, the tasking document does serve to guide the overall project, help staff keep track of deliverables, and deadlines, and minimize issues regarding how tasks are meant to be accomplished.
- ***Apply lessons learned in previous projects to new or existing projects.*** The three projects described here used methodologies that the Information Institute had found reliable previously and are adaptable to various research questions and evaluation projects, such as the telephone interviews employed in the FEL Training and Marketing Assessment. By leveraging existing data collection instruments, staff knowledge, and methods and procedures, the project teams did not have to re-invent the wheel. Instead, Information Institute staff had the opportunity to use their time and expertise in innovative ways.
- ***Maintain ongoing communication with funding agencies.*** By communicating regularly with the funding agencies supporting the three example projects discussed here, the Information Institute was not hit with multiple surprises along the way. Also, regular communication allowed the project team to solicit feedback from the funding agencies to include their good ideas in project development and implementation, as well as assuring that the projects addressed the funders' concerns.
- ***Minimize project expenses by matching project activities with specific skills and knowledge of the project staff.*** If projects include concepts or methods that are foreign to project staff, considerable time, energy, and cost has to be expended educating the staff. A way to mitigate costs is to match project activities with staff who expertise in certain areas. For example, the Information Institute employs experts in usability, functionality, and accessibility, so assigning those staff to the Hurricane Web Portal Evaluation was more cost effective than assigning staff with little or no knowledge in these areas.
- ***Identify and understand a project's situational factors as best as possible before beginning work.*** Any project comes with multiple situational factors, such as the degree of access to various measures of usage for the FEL Training and Marketing Assessment. The Information Institute wanted to analyze data from the Gale-Cengage statistics portal in conjunction with Google Analytics on the individual Gale-Cengage databases; however, Google Analytics data were not available for just Florida users of the databases. By understanding the limitations cause by this situational factor, the Information Institute was able to adapt the methodology early into the project with minimal effect on workload or outputs.
- ***Understand and strategically manage, to the degree possible, the politics associated with a project.*** Evaluation projects often come with political complications, such as a funding agency's need to justify services to

the agency overseeing their efforts. Project staff need to understand these political issues as best they can in order to complete the project in a manner that is both methodologically rigorous and meets the needs of the funding agency.

In each of the three studies presented in this paper, specific strategies were in place to insure that the findings could result in improved library services, that high quality data could be collected relatively inexpensively, that small numbers of participants could provide information for significant program/services improvement, and that data analysis and reporting techniques were straight-forward and not convoluted. Further, in each of these instances the assessment findings contributed to a longer-term improvement in and impact from library services.

Conclusion

This paper reviewed three recent evaluation projects conducted by the Information Institute. The projects were conducted for different funding agencies, in varying timeframes, and utilizing multiple methodologies. All three projects included a multi-method approach, which the Information Institute prefers because of the benefits of collecting multiple types of data and the ability to compare finding from the multiple data types for a more complete picture of a problem than could be obtained from a single method. Also, each of the three evaluations cost less than \$50,000, indicating that a large budget is not necessary to conduct a thorough and effective evaluation of a library service. These three projects are detailed here as examples of how libraries can evaluate their own services, in a cost- and time-efficient manner.

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On Becoming a Process-Focused Library

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Abstract

Beginning in late 2006, the Emory Libraries began a new chapter in planning and evaluating the work of the Libraries with a more business-oriented approach to managing the organization and measuring achievement of strategic goals. As part of their plans, units developed process maps, customer segmentation matrices, and action plans and then reported on progress throughout the year.

The approach has continued to evolve over the past few years, with the arrival of a new associate vice provost and a new organizational team to support business planning. The Business Process Support Team (BPST), formed in April 2009 and consisting of membership drawn from across the Emory Libraries, worked first to streamline the planning process and develop team expertise through a variety of learning opportunities. The team was also challenged with issues such as understanding the right balance of external training and support, selecting the best structure and format for reporting on business plan progress, and establishing and reporting on meaningful metrics.

Process orientation requires a new way of thinking about our work, as well as the need to identify and focus on those key processes that create value for the Libraries' customers. As an organization, we continue to struggle with the translation of division-level business planning to full-fledged process-orientation. While planners have experienced a positive return on the time invested in business planning, and there is greater alignment of divisions' objectives with the Libraries' overall strategic goals, we continue to work to set priorities and communicate across functional areas. BPST's role in the future continues to be refined, but will involve helping the organization realize the benefits of process orientation and to facilitate progression to that level.

Background

The emphasis on business planning in the Emory Libraries began soon after the arrival of a new vice provost and director of libraries in 2006. Key features of the approach included development of annual unit business plans, a performance reporting and tracking process, and assignment of responsibility for keeping the process on track.¹ As part of their business plans, units developed process maps, customer segmentation matrices, and action plans. Quarterly reporting meetings gave managers and staff an opportunity to hear from each other. After two annual cycles of business planning, the library recognized several challenges faced in the planning process, including insufficient expertise in project management, excessive time required to complete plans, and inadequate communication of key information in reporting meetings.² More importantly, the library as a whole was not yet able to make the leap from planning to a full understanding of our work as processes; we still had a ways to go toward becoming a process oriented organization.

If we thought we were mapping and improving our processes but still not really getting it, maybe we didn't have a common definition of *process*. Hammer says, "Process is a word now widely used in the business world but often incorrectly . . . Process is a technical term with a precise definition: an organized group of related activities that together create a result of value to customers."³ Similarly, McCormack and Johnson define process as "a specific group of activities and subordinate tasks which results in the performance of a service that is of value."⁴ Commenting on Hammer's definition, Gardner says:

The definition communicates several key points. First, a process is a group of activities, not just one. Second, the activities comprising a process are not random or ad hoc, they are related and organized. Third, all the activities

in a process must work together toward a common goal. And fourth, processes exist to create a result the customers care about. These customers can be internal or external to the organization.⁵

At the organization level, a process-focused organization must look at its work in a new way. According to Jeston and Nelis, "Process-focused organizations are different from traditional organizations in several key ways: (1) they design and manage end-to-end business processes rather than tasks, (2) they measure and manage process-level results instead of departmental efficiency, and (3) they think in terms of customer goals

instead of localized functional goals."⁶ Others see a need to maintain some functional or traditional orientation along with a process orientation. "It is all about scale and balance . . . What we need is an organization that is appropriately focused upon its business processes, and yet still capable of operating from a functionally based perspective to provide the performance, management and delivery of strategic objectives, all while maintaining a successful and profitable business or maintaining the desired competitive advantage."⁷ Table 1 summarizes McCormack and Johnson's distinctions between a process view and a functional view.⁸

Table 1

<i>Process View</i>	<i>Functional View</i>
Emphasis on improving "how work is done"	Which products or services are delivered
Cross-functional coordination, teamwork stressed	Frequent "hand-offs" among functions which remain largely uncoordinated
"Systems view," i.e. entire process is managed	Pieces of the process are managed
Customer orientation	Internal/company orientation

Process Orientation at the Emory Libraries

Developing a process oriented approach to the Emory Libraries' work is not a sprint but a journey. The stages in the journey can be described in various ways. The Business Process Orientation construct looks at a four stage maturity model:

1. Ad Hoc: The processes are unstructured and ill defined. Process measures are not in place and the jobs and organizational structures are based upon the traditional functions, not horizontal processes.
2. Defined: The basic processes are defined and documented and are available in flow charts. Changes to these processes must now go through a formal procedure. Jobs and organizational structures include a process aspect, but remain basically functional. Representatives from functional areas (sales, manufacturing, etc.) meet regularly to coordinate with each other, but only as representatives of their traditional functions.
3. Linked: The breakthrough level. Managers employ process management with strategic intent and results. Broad process jobs and structures are put in place outside of

traditional functions.

4. Integrated: The company, its vendors and suppliers, take cooperation to the process level.⁹

After two years of business planning, library divisions had gained greater understanding of divisional processes, and some coordination was happening as a result of the reporting meetings. Still, an impetus was needed to move from the initial stages of this model to the breakthrough "Linked" level. In early 2009, a new position of associate vice provost was created and filled by Xuemao Wang. Wang's position included organizational oversight of business planning for the Emory Libraries. In April 2009, he formed a new team to serve as a resource for the organization and move planning and implementation forward.

Business Process Support Team

The Charter for the Business Process Support Team (BPST) charged the team with coordinating and supporting implementation of the Emory Libraries Strategic Plan, which drives all units' business planning. The team members represented administrative, operational, and

service units within the University Library as well as the Business and Health Sciences Libraries, and the team members were embedded throughout the organization. BPST members were expected to be a resource to their individual divisions as well as to be a conduit back to the team for information that would impact cross-divisional activities. Specific services to the organization provided by BPST were set forth in the Charter to include planning, review, support, and training, though it was also understood that there would be an initial period of establishing buy-in from library division leaders as a key stakeholder, as well as the staff as a whole.

Accomplishments

In its first year, BPST made progress towards delivering on its charge. Significant accomplishments that we will highlight here include: streamlining the business plan documentation; reviewing business plans; and supporting the division-level business planning and reporting work. The team also increased members' knowledge through reading and training (see Appendix).

Business plan documentation. FY10 was the first planning cycle after BPST was formed. The team focused on simplifying the business plan workbook, which units had used for the past two years, as well as adapting some of the tools (customer segmentation, process maps, etc.) to better meet the library's needs. For FY11, the team further streamlined the workbook by adapting the documentation to a web-based format. This also enabled live links to online planning resources. In both years, BPST benefited from prior years' experience with the plan workbook and was able to include exemplary samples of previous work to inform other units' planning. Planners also provided BPST with valuable feedback on the workbook, both in terms of what was working and what wasn't. Planners' feedback informed changes to the workbook, for example, greater flexibility in plan templates.

Business plan review. In FY10, BPST performed cross-checking of divisional business plans to identify gaps. This was largely in response to a known problem of a lack of complete alignment between divisions' plans but also provided an opportunity for BPST to begin to identify major cross-divisional activities and initiatives

happening in the library.

Business planning and reporting support. BPST members provided support to division leaders in the preparation and submission of business plan and reporting documents.

Knowledge-building. As a group, BPST members read and discussed books on performance measurement and planning, including books by business consultants David Parmenter¹⁰ and Mark Graham Brown.¹¹ From those resources, the team worked to gain a greater common understanding about performance measurement. BPST members attended a meeting of the Georgia Oglethorpe, the state arm for promoting and training in the use of the *Baldrige Criteria for Performance Excellence*. This meeting provided the opportunity to hear first hand from organizations using the Baldrige approach.

The team also worked to improve members' knowledge of how to develop, track and report on performance measures. Again we found resources outside the library community to build this knowledge. Stacey Barr is a self-described "performance measure specialist" and an author and frequent contributor to webcasts and other accessible media. BPST used her "Performance Measure Blueprint Audio Program"¹² to do some self-training and further develop a common understanding and language.

Finally, BPST members attended training in PDCA (Plan-Do-Check-Act) provided in the library by an external consultant, Jerry Spight of Concepts Plus Inc. Spight's training materials and the simulations involved in the training provided a significant boost to the use of process mapping and process thinking among BPST and other library staff who participated in his workshops, particularly the planners.

Challenges

While making progress on some fronts, BPST has also faced several challenges. Key challenges that we will highlight here include: determining the right balance of external training support (consultants); identifying optimal ways to support the Senior Management Group (SMG); developing knowledge about metrics, both among the team and throughout the organization; determining the format, audience and purpose of

business plan reporting meetings; and collecting useful data and making those data available and accessible.

External support. The Emory Libraries had previously brought in an external consultant to work with a Core Team to help draft the original business plan workbook and reporting template. In some ways a continuation of the Core Team, BPST's initial meeting included this consultant in order to facilitate the transition of work from the past team to BPST. About six months after BPST's formation, the Emory Libraries brought in Spight, as an expert in the area of process/organizational change and PDCA methodology. Spight met with BPST, and BPST members later participated in training that Spight provided for groups of library staff, including planners and team leaders.

Working with the external consultants provided BPST with valuable knowledge and insights. However, BPST struggled in some ways to take the lead on disseminating that knowledge throughout the organization. Many staff were adopting methods and practices introduced in Spight's training, but other tools shared had to be adapted for the library environment. BPST went back and forth about how much adaptation was appropriate—on the one hand, the team did not want to reinvent the wheel, but on the other, it was sometimes difficult to see complete alignment between the consultants' approach and the library.

Supporting senior management. BPST's charter states that BPST will provide support and consulting services to members of SMG. During BPST's initial year, the library underwent a reduction in force, and there was also a re-examination of the mission, core values, goals, and priorities. Clearly, SMG's plate was full. BPST has supported SMG insofar as each SMG member is responsible for a large division and leading that division's business planning. BPST has provided summaries of units' business plans for SMG's review and solicited and responded to feedback from SMG about the business plan workbook, planning process, and reporting format.

A key challenge has been communication, with much of the communication between BPST and SMG being indirect and mediated by the Associate Vice Provost. On occasion, one to three

BPST members have been invited to SMG's weekly meeting.

Developing metrics knowledge. From the beginning, BPST was aware of metrics as a key area in which the Emory Libraries needed to learn and grow. The team identified several factors contributing to the lack of a successful measurement program; a key factor being the lack of a common vocabulary. Terms such as *metrics*, *data*, *measures*, *counts*, *transactions* and *statistics* were at times used interchangeably. There was not a foundation of knowledge that could help the library staff collect meaningful data and report on those data in a way that resonated with the library and university leadership.

BPST first worked to develop members' own knowledge in the area of metrics through reading books, identifying useful websites and seeking out training opportunities both outside the library and self-directed (see Appendix). A sub-group of BPST members drafted a proposed measurement system for the libraries; another group worked on different dashboard templates to use to report on metrics. However, BPST continues to try to identify a unified approach that will work for all library divisions.

Reporting format. The libraries began using a formal template for its during-year reporting on business plan progress, the Project on a Page, or POP. BPST initially recommended a move away from the POP, which had been adapted extensively by some reporting units and ceased to be a uniform presentation. For FY10, the libraries implemented a quarterly reporting schedule, and BPST was charged with providing guidance to plan owners about the content and format of the reports.

Both the reporting tool and schedule presented challenges with respect to adequately conveying the right information to all stakeholders. Reporting meetings alternated between "closed-door" meetings at which only SMG members were present for all reports and an all-staff meeting in the spring. Although the POP was used, many reporters chose to use a PowerPoint presentation to highlight key points. The main difficulties were showing progress of actual activities compared with the action plan submitted as part of the business plan, presenting

meaningful data, and raising high level cross-cutting issues in a way that they could be resolved. In addition, the amount of information conveyed proved overwhelming, and follow-up on issues was impeded by information overload.

Data collection and management. As a critical component of metrics, data was a natural focus of BPST's activities. Several challenges in this area have been documented and are not unique to the Emory Libraries. The library's data collection is largely decentralized, with each unit collecting and managing its own data. Units work largely on individual schedules; there is not a holistic process for collecting data across the organization. Even where activities are comparable, for example, the main and professional libraries' research consultations, units may not collect data in the same way, making comparisons impossible. Further, data are not easily accessible to staff outside the unit. BPST also recognized that much of the library's data are self-reported, which can leave room for human error; however, an easy technological solution did not seem to exist, therefore, BPST did not focus on this challenge initially.

This summarizes the key challenges BPST experienced in FY10. The team remains open to honest assessment and will look for ways to address these and other challenges in the next year.

Organization Impact

BPST has seen the greatest impact in improved planning documents and practices over the past year. The library's business plan workbook has been refined each year to incorporate increased understanding of process thinking and to make business plan preparation more efficient for staff. The FY11 workbook migrated to an online format, which enabled better use of linked online resources for planners. The action plan template now includes a column to denote the linkage between a departmental objective and one of the library's three strategic objectives. Further, the action plan now supports objectives that are directly tied to the division's objectives rather than being a record of "everything we're doing."

For this paper, the authors wanted to better quantify BPST's impact and results from the

perspective of one of BPST's primary stakeholders, the plan owners. A survey was distributed to all plan owners, and 4 of 9 responded. Results of two questions are quantitative: First, we wanted to get a measure of plan owners' comfort level with creating the business plan. On a scale of 1—5, with 1 being "Much worse" and 5 being "Greatly improved," plan owners rated their comfort level at 3.75. BPST also had a goal of making the workbook easier to use. On the same scale, plan owners rated business plan workbook quality/ease of use at 4.25.

Responses to three questions were qualitative. All plan owners responding to the survey had asked a BPST member for assistance with the business plan, indicating that BPST is a resource for planners. When asked what kind of assistance, responses were predominantly centered on clarification and technical assistance, for example, uploading documents to the staff intranet. The comments related to the need for clarification provide useful feedback when combined with the quantitative responses: although the workbook has been improved from the planners' perspective, the comfort level is not as high as we would want, and this may be at least in part due to lack of clarity in terms of what is wanted in the business plan document.

Of three people responding to a question about BPST's impact overall, 66.7% answered that the impact has been positive. The qualitative comments center on the workbook and simplifying the process. Responses to a final, open-ended question about suggestions or thoughts about the business planning process revisit themes of the need for greater clarification in terms of requirements. One respondent wrote that s/he does see a return on the time invested in creating the business plan in that the plan is a "useful product that guides the activity of the unit."

While the low number of responses to the survey leaves room for gathering additional perspectives, the survey did inform our understanding of BPST's impact from the perspective of a key stakeholder, as well as provide guidance for BPST's future work.

Future Directions

A quick informal survey of BPST members raised the following as possible future directions for BPST:

- Further refining/facilitating the business planning process
- Supporting leaders with collecting, interpreting and presenting data
- Training staff
- Acting as change agents

As of this writing (August 2010), BPST is reviewing its work over the past year and looking for ways to take it to the next level. It is not surprising that the first year was one of “forming” and learning rather than dramatic results, but clearly there is opportunity to do more.

One possibility lies in developing business plans at the project level, or around strategic priorities or major processes. Discussion among some leaders has led to the observation that the division and unit level business plans are not really organizationally engaging and don’t raise cross-cutting issues. In many ways, developing business plans and reporting for such broader business processes or initiatives is much more complex and challenging than the unit plan, but it is in keeping with the process oriented approach, which looks at complete, end-to-end processes. There could be a role for BPST in facilitating the mapping of cross-cutting processes, and with some experience under our belts, perhaps this would be manageable in a relatively short time.

Another potential direction for BPST involves working to integrate the library’s business planning process into WEAVEonline, a web-based software application being used in the university’s assessment process and primarily associated with assessment and accreditation. The software walks the user through development of objectives, measures, assessment on progress, and closing the loop, and requires alignment among university, unit and sub-unit planning. Since the Libraries are already required to submit assessment plans through WEAVEonline, the potential use of the software to create better linkages of strategic and business planning is very exciting. There is a considerable body of very good documentation and training resources relating to WEAVEonline that can be generalized

and useful in any area of planning and assessment.

Finally, the library may further explore Baldrige as a framework to guide our progress. The director and vice provost of libraries came to Emory from a library that had won the 1997 and 2000 Quality New Mexico “Roadrunner” awards in organizational performance excellence. His view of the benefits of using the Baldrige Criteria is clearly based in the success that was achieved at Los Alamos. The Baldrige Criteria evaluate organizations as they progress through the different levels, ranging from “no systematic approach” to “an effective systematic approach.”¹³ For the coming year, the Library is committed to completing the initial self-assessment components of the Organizational profile, and the “Are We Making Progress” survey. BPST or a subgroup will likely have a role in the work of gathering and synthesizing the data.

Conclusion

BPST came into existence to support strategic and business planning in the Emory Libraries. This has been a year of coalescing, forming, and learning on the part of individual members of the team. Members ranged between some who were new to the organization to some who were longer term employees who had been involved in the business planning work in previous years. The team was challenged to develop common language, common understanding, and to work together coming from a variety of backgrounds, experience, and viewpoints. The results seen in the first year are primarily clustered in streamlining, simplifying, and providing technical assistance with respect to the business planning process. More work lies ahead to move from division-level planning to full-fledged process focus. The organization’s experience over the past few years of planning provides a foundation. In the coming year, we expect BPST to continue to draw and build on a variety of tools and resources in order to develop knowledge and expertise needed to advance the Emory Libraries’ process focus.

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Notes

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Appendix

Key Learnings from Tools/Resources: Annotated Bibliography

Among the various tools, resources and experiences that BPST members learned from during the course of the year, some provided new insights or shined new light on old learning. This cafeteria-style approach has informed the work but has not resulted in the adoption of a single methodology.

Jerry Spight, *PDCA Elite: The Practice of Process Change* [Training].

The PDCA three day training that the group experienced made a number of valuable contributions to understanding and to work that was already underway. Simulations involved process improvement exercises and gave attendees practice in analyzing, reporting, and taking action on findings. The training also provided a more streamlined approach to process mapping than the one that was described in earlier versions of the business plan workbook. As a result, more process mapping seems to be taking place, and the guidance in the FY11 Workbook invited more flexibility for developing process maps. The Importance/Satisfaction matrix that was discussed in the training has been utilized in report outs and as an aid to understanding the library survey data.

Stacey Barr, *Performance Measure Blueprint Telecourse* [Training].

The Stacey Barr materials were used within BPST to help the group gain greater understanding of metrics, an area in which Library progress has been slow. They were resources for BPST learning, but not as a whole rolled out to the Library. Some of the most helpful information in the actual Blueprint came from the: Measure design template; Results map; Resources related to reporting out on performance data. As BPST spent time trying to develop a few test performance measures, it was clear what a challenging exercise it was to do the work thoroughly and so that you “begin with the end in mind.” Some of the suggested steps and questions are available on the Balanced Scorecard Institute website,¹⁴ along with a webcast that provides general information about Stacey’s approach and potential integration into Balanced Scorecard.¹⁵ One particularly valuable insight involves the idea that as you are developing performance measures that will be covered in reports and reporting meetings, you should think at the beginning about the kind of chart, graph, or visual display of the results you will use. While it is certainly true that sometimes the display is informed by the data, the idea of not using default Excel graphs is helpful. If a metric is important to track, you should have defined its meaning, explored the purpose for tracking it, and have in mind the story you want to tell and how that story might inform decisions. That means that well before the time comes to report on the measure, you have already determined the kind of visual display that would tell that story best.

Harvard Business Publishing, *Harvard ManageMentor*, www.harvardmanagementor.org.

This website has been added as an informational item to the resources and tools for business plan developers. Although Library units have been working on metrics development for at least three years, there is still confusion over definitions, how to craft measures, and what different kinds of measures are. The Performance Measurement area of this site was provided as a resource because there is a set of definitions, structured training, and helpful worksheets. The worksheets cover: understanding key performance indicators, deciding which performance aspects to measure, setting performance targets, and tracking performance results.

David Parmenter, *Key Performance Indicators: Developing, Implementing and Using Winning KPIs* (Hoboken, NJ: Wiley, 2007).

Parmenter provides several worksheets that an organization could use to walk through the process of developing performance indicators. His methods are consistent with the Balanced Scorecard and provide guidance for thinking about indicators for different levels of the organization, from team up. A possible drawback is that his book is so worksheet and checklist heavy that it can seem daunting to fully implement the program. However, the book offers useful examples that help make indicators real, such as the example of British Airlines, which experienced a complete turnaround just by focusing on a single KPI of delayed planes, as well as diagrams to provide visual representation of key concepts.

Mark Graham Brown, *Keeping Score: Using the Right Metrics to Drive World-Class Performance* (New York: Productivity Press, 1996).

A key takeaway from Brown's book is the emphasis on measuring *fewer* things. It seemed at times in the library that we were collecting any data we could possibly collect "just to have it" or because it was available. Brown sets a limit of 20 measures and suggests basing measures on what is important to your customers and/or stakeholders. This is very much in keeping with the process oriented approach, in which all of the organization's processes result in value for the customer. Brown also raises the possibility that measures can—and should—change over time, that is, we should not collect certain data just because we've always collected it, but because it tells us something about a key factor for our success in the present and future.

Developing a Library Value Indicator for a Disciplinary Population

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Abstract

Three different ways of documenting library value were presented to fourth year landscape architecture students in the UNLV School of Architecture: a contingent valuation survey, a library calculator, and a survey to rate importance and impact of library services and features. Students used the three approaches, then discussed their experiences with the author. Their input suggested improvements in the instruments and provided feedback on possible positive and negative consequences of inviting this kind of valuing. Working with a focused collection and population provided a relatively safe environment to explore concerns about negative consequences.

Introduction

Value has been a topic of high interest to libraries and library organizations in the past several years. There have been workshops, conference sessions, and a growing number of publications.¹ ACRL commissioned Megan Oakleaf to produce a report that is expected to add substantively to the literature on this topic.²

Return on Investment (ROI) is a subset of the value literature. ROI studies have been done in public libraries to prove the value of their libraries to the individual and to the community.

Academic libraries in general have been slower to engage in these types of studies, although there have been notable exceptions such as Luther's study relating grant funding and ROI.³ One type of ROI studies in academic libraries looks at faculty time and dollars saved.⁴ An in-progress ROI study is a three-year, IMLS grant-funded study involving the University of Illinois at Urbana-Champaign, University of Tennessee, and the Association of Research Libraries.⁵ One of their stated goals is to "develop a model for ROI and tools that implement this model which can be used by other academic libraries."⁶

The study reported here is related to both the value literature and that on ROI. It is a modest investigation, using a small population (ten students), of several methods for eliciting feedback on library value: a value survey, a calculator, and a contingent valuation survey. Although calculators and contingent valuation methods have been used somewhat widely in public libraries, few academic libraries have explored these approaches. One source of reluctance might be a concern that once students know the costs of the library's collections and services they will lobby to decrease campus spending on the library—especially in the current fiscal climate. The purpose of the study was to elicit response both on the methods and the specific instruments used, as well as to observe any positive or negative reactions to the valuing exercise.

Population and Context

In spring 2010, the study's student population was in their final year of the landscape architecture program at the University of Nevada, Las Vegas. Their instructor was a supporter of the library, effectively incorporating many types of research, including library research, into the studio. The Architecture Studies Library (ASL) is in the same building as the School of Architecture, and prides itself on being welcoming and inviting, as well as providing research assistance.

To obtain descriptive information on the population, I asked several questions on frequency of library use, both physical and virtual. When asked how many times they used the Architecture Studies Library per month, the response range was 1-20. When asked how frequently they used the library website per month, answers for the most part mirrored the physical use, with one notable exception. The

person who was the most frequent user of the physical library, at 30 uses per month, was also

the least frequent user of the virtual library, at 5 uses per month.

Respondent number ->	1	2	3	4	5	6	7	8	9	10
Use of physical library per month	1-2	4	8	10	10-15	10-15	13	15-20	20	30
Use of virtual library per month	2-4	4	10	6	10-15	10-15	15	10-20	20-30	5

Students were also asked to rate their skill in using the physical and virtual library environments compared to their peers. Seven of the ten felt they were above average in ability. Two felt they were above average in using both the physical or virtual library. Two indicated they were above average in use of the ASL webpage. Three said they were above average in their skills in using the physical ASL. Only one indicated being below average in using either the physical or virtual spaces; he indicated being below average in “knowing what is on the ASL webpage and being able to navigate the page easily.”

Students also rated themselves—compared to peers—on eight other skills. Only three indicated they were below average on any skill: one (use of both physical and virtual space is 10-15 times per month) said he was below average in “being able to select terminology and use discipline-specific vocabulary to get targeted search results”; one (ASL use 8 times per month; library web use 10 times per month) indicated being below average in “being able to search print and electronic sources for images of a particular project or works of a particular landscape architect”; and one (uses web and ASL both 4 times per month) admitted being below average in three skills: using the ASL web pages (mentioned in the previous paragraph), selecting terminology, and “knowing the major journals in landscape architecture.”

It is important to have a sense of how often the students use the library and its website, and how confident they are in their skills in order to put their response to various valuing methods into context. Overall these are students who are confident in their information skills and moderate in the frequency of library use. Seven (70%) use the ASL ten or more times per month. Six (60%) use the website 10 or more times per month. Only one student (10%) reported using the library

enough times (30 times) to be a daily user of the ASL, and one (10%) similarly for the website. This use is less frequent than that of the overall School of Architecture student population as indicated by LibQUAL+® respondents. In the UNLV Libraries 2009 LibQUAL+® administration, the disciplinary analysis showed those reporting daily use of the ASL constituted 30% of architecture school student respondents, with 22% reporting daily use of the library’s web pages.

Study Process

Students were surveyed during a class period. They were first given the survey asking them to rate themselves on ten information skills in comparison with their peers (total time 2-5 minutes). The value survey was given next (total time 5-12 minutes). The contingent valuation sheet followed, taking 2-3 minutes. Lastly they were asked to complete the calculator sheet (3-5 minutes). Discussion followed on each of the instruments. A week later, the students were sent three follow-up questions via email. They were subsequently provided a variant form of the contingent valuation survey.

Value Survey

The value survey was composed of 12 questions, exclusive of demographic information. The first set of questions asked respondents to rate the importance of various service and resources items on a 1-5 scale, with an additional option of IO (“important to others, not to me”). The items were grouped into five categories: library content, library space, people, convenience, and tools (each a separate question with multiple subparts). The remaining items were open-ended ones: the impact of the library on their education, the consequences for them personally should the ASL close, the most important benefit of the physical library and the digital library for them, and lastly an opportunity to offer additional comments.

The items on the value survey were selected based on formal and informal feedback from School of Architecture students over the 13 years the architecture branch has been open. Multiple past surveys in the ASL have explored what students consider important, what they like, and what they use. From this input, in addition to standard aspects of the library such as books and staff help, I selected elements such as whiteboards and scanners.

Contingent Valuation

Contingent valuation seeks to determine how much someone is willing to pay for a service, possibly indicating marketplace value. Students were asked how much they would be willing to pay for seven services, including hours between 8-10 pm, weekend services, access to a staff person to answer questions, etc. The final question was "Think about the library as a paid membership. How much would you pay for a membership?"

Calculator

The calculator as used in this study provided both cost information and an opportunity to indicate monetary value to the individual. The calculator listed eight items, including books, journals, databases, computers, interlibrary loan, etc. For each item there was an explanation of costs. For example, for the item "Having access to the books you want" is the explanation that "The average cost of an architecture book is \$50, although individual titles can be much more costly." Students filled in a column labeled "Value to you" and another labeled "Number of uses per month."

The calculator was roughly based on the one on the University of Hawaii Manoa (UH) webpage.⁷ However there are several key differences. The University of Hawaii Manoa created separate documents for costs and how the costs were derived⁸ rather than incorporating that information into the calculator. For the calculator in this study costs (derived from local data e.g. average cost of an architecture book, and Kinko's charges for computer access; or, in the case of interlibrary loan, the national average) were included as part of the calculator although the method of determining the costs was not. Another difference is that the UH calculator automatically supplies a monetary value based on number of uses and the library's determination of

cost/value. For this study the respondent supplied the value and there was no automatic computation of value based on number of uses.

Student Comments on the Instruments

After the instruments were administered, I posed a series of questions concerning each instrument. These are the questions which applied to all three instruments:

- What did you think about length?
- Would most students take the time to complete the instrument?
- Are there items that you'd suggest be deleted?
- Are there questions you'd suggest we add?
- What was confusing (if anything)?
- Do you see any unintended consequences in asking students to complete these surveys?

Questions which applied to just one instrument were:

- On the value survey: comment on the format of the survey, did you find the option "important to others, not to me" a helpful or confusing option?
- On the contingent valuation survey: What do you think about this method?
- On the calculator: was it helpful to have information on the costs of different services? Why or why not? What do you think about this method?

Comments applying to all three methods:

- "The best way to administer in order to get participation is by administering surveys in class. There might possibly be participation if a person handed it out in the library and explained it as 'saving the library.'" E-mail was seen as the least productive method of administering the instruments. A couple felt that incentives might increase response.
- The length of each instrument was seen as "manageable."

Comments on the value survey:

- "Liked best of three, for format."
- "Liked the category 'important to others'—gave a chance to weigh in even if don't use something personally."
- "More honest on this one—it was the 'safest' of the three."

Comments on contingent valuation form:

- “Scary—afraid of another fee. In fact, if they take the library away they need to pay the students, since it is an expected part of college.”
- “Putting value is hard, suggest phrasing it as percentage of tuition.”
- “Might ask instead ‘what would you do without it.’ ”
- “Title of form—‘Help us put a value to library services and collections’—is confusing.”
- “For the item ‘how much would you pay to have’—‘have’ is confusing. Does it mean access? Or having on the shelf next to my desk in studio?”
- “‘Pay to find right book’ also confusing.”
- “Difficult to answer as do not know how much things cost. Maybe use a scale, e.g. \$5-\$250.”
- “This might give the school the idea of charging!”
- “Consider asking how much it is worth, rather than how much would you pay.”

Comments on the calculator:

- “Like number of uses per month in the chart—helpful in thinking about value.”
- “Explanation of price helpful, and addressed the problem in the contingent valuation form of not knowing how much things cost.”
- “Liked having the average costs for a baseline.”
- “Separate Avery and full-text databases.” [Author note: some indexes are critical to certain disciplines, and for those in the School of Architecture the *Avery Index to Architectural Periodicals* is essential.]

Comments referring to both the contingent valuation form and calculator:

- “Prefer calculator to contingent valuation method.”
- “Need comment space.”

Indications from the Quantitative Data

There would seem to be some relationship between the amount someone is willing to pay and the rating given to importance, although it is

inconsistent. Supporting the relationship are these two examples. One student who was willing to pay the least (\$0.50) for a staff member to answer a question, also rated “help from staff on projects” a “3” in importance—the lowest rating assigned. This low rating was given by only two students. The other student giving the item a “3” was willing to pay \$1 for staff assistance, an amount on the low end of the range (\$20 was maximum).

On the other hand, looking at all three methods of collecting feedback, there are obvious discrepancies. This is apparent in the chart below, especially for DVDs. Respondent number three, for instance, rated DVDs lower in importance than books or journals, appears not to use DVDs at all, yet assigned it a monetary value higher than books or journals on the calculator. Similarly respondent number one assigned DVDs the highest monetary value of any item on the calculator, although he does not use DVDs and has assigned it a neutral importance rating.

Use also does not align with monetary value. Items in order of uses, with the most frequent first, are: access to journal databases, downloading journal articles, access to a computer, journals, books, ILL, access to study rooms, DVDs.

On the calculator the student’s assignment of monetary value aligned more closely with the average costs provided on the calculator than with importance ratings. Looking at the items in order of student-assigned monetary value, the following items are listed in order of average monetary value: journals, books, ILL, journal downloads, DVDs, access to study rooms, access to computers, access to databases. Items in order of the cost as indicated on the calculator—using the low end of the range—with the most costly listed first—are books (\$50 average), DVDs (\$30-\$300), journal downloads (\$30), journals (\$20-\$650), ILL (\$17.50), access to computers (\$5-\$20), and access to databases (\$0.13-\$1.06). Obviously something can be important and/or well-used without necessarily being costly, such as access to databases.

**Feedback by respondent from Value (Importance) Survey, Calculator,
and Contingent Valuation (Would Pay)**

	Book Importance rating	Journal importance rating	DVD importance rating	Book would pay	Journal would pay	Book calculator value	Journal calculator value	DVD calculator value	DVD uses per month
#1	4	5	3	\$2	\$5	\$5	\$5	\$10	0
#2	Important to others	5	3	\$1	\$5	\$1	\$2	0	0
#3	5	5	4	\$5	\$5	\$10	\$5	\$30	0
#4	5	5	3	\$3	\$2	\$10	\$15	\$5	1
#5	5	5	Important to others	\$5	\$2	\$50	\$20	\$10	0
#6	5	5	3	\$5	\$5	\$5	\$10	\$1	0
#7	5	5	4	\$2.25	\$2	\$30	\$25	\$1	1
#8	5	5	4	\$10	\$5	\$30	\$30	\$1	1
#9	5	5	3	*	*	\$50	\$200	\$30	0
#10	5	5	Important to others	\$1	\$5	\$60	\$40	0	0

*My fees already cover this. [Author note: student response on contingent valuation form.]

Indications from the Qualitative Feedback

Feedback from the participants on the contingent valuation form highlight a potential negative reaction to asking students how much they would pay for services. Two comments, one labeling it as “scary” and one expressing worry this was leading to additional fees, indicate that heightened anxiety was produced during the contingent valuation part of the exercise.

On the other hand the comments provided in the value survey were extremely positive. The open-ended questions on the value survey instrument, which invited respondents to comment on library impact and how closure of the library would affect them, provided rich positive documentation lacking with the calculator and contingent valuation instruments (which unfortunately lacked a place for comments). Examples of these comments include:

- “I would not be able to do my senior research paper without the help of the ASL.”

- “Without the library I would rely on the Internet, which would lower my knowledge of my major.”
- “The ASL is needed for landscape architecture students to learn the current trends in the profession.”
- “Without the ASL I would not be able to research things relating to my major in a tangible setting. I get most of my inspiration and knowledge from the plethora of books in the library.”
- “If the ASL were closed I would be devastated. As School of Architecture students we need convenient access to resources. The main library does not provide an area where we can convene as students of similar interests.”
- “Not having the library would be detrimental to my education.”
- “If the ASL closed it would make research much more time-consuming. Also it would lead to fewer students seeking scholarly data.”

- “If the ASL closed I would have to spend more time and money to get books. It would lessen my educational experience.”

All comments were similar in tone.

Follow-Up Questions for the Student Group

Approximately one week after the three instruments were administered, additional questions were sent via email to the group. Only three responded by email. Additional responses were gathered in a visit to the studio. Below are the questions and the student responses.

1. What is the impact of knowing the cost of the library services per item (cost per book, journal index, etc.)?
 - a. “We understand the economic implications of the outstanding library services.”
 - b. “I feel that if anything it will cause users to take better care of the library items.”
 - c. “It helps in knowing how important each book and journal is.”
 - d. “Eye opening. Helped me realize what I’m paying for or what is being provided free of cost.”
 - e. “Help realize how important these things are.”
 - f. “Gives them more worth to me.”
 - g. “Knowing the cost serves as a reason why we do not have access to more online articles.”
 - h. *“Knowing the cost of the services in the library can alarm the students in taking more part in the library or to tell the library staff which item they feel needs to have more budget attention.”*
 - i. “Greater appreciation of the resource.”
 - j. “It would make me realize how important different items are.”
2. Would knowing how much it costs increase your use?
 - a. “I’ve known the cost for some time. Need dictates my use, not cost.”
 - b. “Personally it would not increase my use of these items just by knowing the costs. I am still going to do my research in the same way. *But it would increase my response to the library if the items I used were not as high of a priority in the budget.*”

- c. “Yes.”
- d. “More than likely yes ... it would open my eyes to how important they actually are.”
- e. “Probably not. I like to use services that are easy and high quality.”
- f. “I don’t feel that knowing the cost of an item will increase my use of it. The only thing that would increase my use would be school related projects that called for use of these items.”
- g. “Knowing the cost wouldn’t increase my use but it would increase the quality of info I pull from each source.”
- h. “Most likely.”
- i. “Most likely.”
- j. “Yes.”

3. Would knowing how much it costs increase your appreciation for the service?
Responses: No; Yes; Yes; Yes, for sure; Yes it would; Yes; Yes; Yes it would; Yes; Yes

The responses, even of such a small group, begin to form a picture of possible student response to strategies such as calculators and contingent valuation. Italicized answers above indicate possible negative consequences of placing monetary value on library services: increased budget scrutiny and more active input into library priorities. On the other hand, is increased involvement—even if it is to challenge library decisions—a bad thing? Do we want patron involvement at a budget and allocation level? For most students, knowing costs would tend to increase their appreciation of services provided. This is an important positive result.

Modifications to Instruments

Students suggested several changes in the instruments. For the value survey, in addition to the option of “important to others, not to me,” or perhaps instead of that option, they suggested adding “Not currently important but the option of future use is important.” For the calculator, instead of combining the Avery Index (not full-text but the most important index for the discipline) with other databases, they suggested making it a separate item. For the contingent valuation form, feedback indicated that the confusing title would need to be revised, and several of the questions re-worked. In addition, a range of amounts they might be “willing to pay”

is preferred to a blank for the respondent to fill in. For both the calculator and the contingent valuation forms, they suggested that space for comments should be added, which might result in valuable qualitative feedback.

Several modifications are suggested based on the analysis of results. Items listed in each instrument should carry over consistently on each instrument if they are to be analyzed as a package (e.g., add a staff and hours item to the calculator, and electronic resources and services to the contingent valuation form). In addition, the average or range of costs included in the calculator should clarify whether it is the cost for the library to provide an item or an indicator of the cost to obtain the service or resource from an alternative source. Lastly, for both the calculator and the contingent valuation, a disclaimer should be included to attempt to allay fears of fee increases.

Contingent Valuation Reprise

Students in this study suggested alternate approaches to “filling in the blank”: that value be phrased as a percentage of tuition and that a range of values be given from which to choose. Another approach would be to ask the student to indicate willingness to pay in the context of other student fees. This approach was taken by Harness and Allen⁹ in their use of contingent valuation of reference services.

I created a contingent valuation form that asked students to insert the library’s value among other campus fees and asked them to complete it during studio. Six students contributed responses. Several commented that they liked this approach. They mentioned that there are many fees for things they don’t use, why not one for something they use the most.

The student fee scale puts costs in the context of familiar campus services. The results were encouraging. On the range of student fees from \$1 (recycling fee) through \$50 (parking) and \$70 (health fee) to \$150 (recreation center fee), four of the students inserted the library at the \$100 or \$150 level, one at \$70, and one at \$25. One caveat: this could lead to confusion about costs, since fees only *contribute* to the costs of a service.

Limits of the Study

This is an exploratory study. The number of participants is quite small. The intent was to test the responses of a group who might be expected to appreciate the library. In this environment the study could be “safe” for the library, protected by student support of the library from the consequences of unforeseen negative reactions.

Future Research Questions and Considerations

Assigning quantitative value to the library, and to library offerings, may have a different outcome when attempted with students having neither a close link to the library nor a strong disciplinary perspective. Would such students react similarly or is this approach best used only with library branch (or equivalent) users? Do we want to focus the valuing process on those we *know* value the library? How do we balance the possibility of negative feedback with the power of potentially positive feedback?

If a student doesn’t use the library, what would they think about institutional money going to library? For students who don’t use books—will they protest that too much money is going to books instead of online journals, or otherwise question budgetary decisions? What about the possibility that results will show students valuing place but not high-priced librarians? These potentially negative results should be tested. Even students who use the library and consider it important fear the addition of fees. Would explaining in more detail how results would be used effectively negate this fear?

Additional factors could be explored for potential impact on library valuing. It is possible that the need for specialized librarian expertise (as is the case for music, law, business) enhances the perception of high library value. As well, information behavior outside the mainstream, such as with art and other visually-oriented disciplines, might lead to a perception of high library value. Is how much someone is willing to pay aligned with how much money they have? Might willingness to pay be related to personal spending habits and comfort levels rather than (or in addition to) worth or value.

What are the positive consequences of soliciting feedback from patrons on value? Although this study touched on the issue, additional investigation should be directed to verifying consequences of the valuing process. Do they result in increased appreciation of library services, as is indicated with the landscape architecture students? Do they result in an aware group that could be targeted for advocacy? Do they lead to positive involvement of patrons in library decisionmaking?

Lessons Learned

Each of the three approaches had strengths. I found that the value survey in particular provided effective qualitative feedback on the value individual students place on the library and what it contributes to their academic life. If I had to choose just one to demonstrate value to campus administrators this would be the one I would choose. Nonetheless, the calculator proved most effective in raising student appreciation of the library's value. Lastly, the second contingent valuation form was useful in putting library value in a campus context.

Using all three types of instruments together allowed triangulation of results. It guarded against putting too definitive an interpretation on the dollar amounts respondents supplied. For students, unlike faculty with grant funding and unlike public libraries with a tax base, the open ended questions in the value survey on importance and impact provided a critical balance to monetary valuation.

Although the results of these types of approaches can be powerful, the specific population to be addressed and potential negative consequences should be considered. The content of each instrument consisted of items or areas of perceived importance to landscape architecture students. The students themselves were familiar with the library and its value. Knowing one's audience and using multiple methods may be the key in gathering persuasive value feedback on the library while avoiding unintended consequences.

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Cultural Heritage Informatics and the GSLIS Digital Curriculum Laboratory: A Cyberlearning Platform for the Evaluation of Digital Asset Management Systems in the Context of Student Learning Outcomes: A Progress Report

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Abstract

In 2009, the Graduate School of Library and Information Science at Simmons College received funding from multiple sources (IMLS, NHPRC, Pottruck Technology Resource Center at Simmons College) to build a hands-on cyberlearning laboratory for archival, preservation, and museum education under an umbrella cultural heritage informatics curriculum. The Digital Curriculum Laboratory (DCL - <http://gslis.simmons.edu/dcl/lab>) is an organized, open, non-proprietary digital space providing integrated access to digital content, content management tools, standards, curriculum-based scenarios, and a workspace for learning modules tied to class outcomes. There are several opportunities for evaluation and assessment within the DCL.

- Student learning outcomes assessment
- Evaluation of cyberlearning case studies, scenarios, and courses within the DCL
- Evaluation of the suitability of competing digital asset management systems for specific digital content, audience, standards, and web usability
- Evaluation of competing standards for metadata.

This progress report presents examples of each type of evaluation or assessment within the DCL environment using scenarios. The scenarios have been created out of existing or new courses, and are tied to the context to the course for their meaning. This report will focus specifically on the potential for the DCL to compare different evaluation systems for implemented digital asset management systems within a controlled pedagogical environment and within the context of student learning outcomes.

Introduction

This paper is a progress report of the development of the Digital Curriculum Lab at Simmons Graduate School of Library and Information Science. Various opportunities for evaluation are possible in this environment, and this paper will survey what is planned, briefly report on what has been done, and explore several of the evaluation or assessment models in some depth. As the content materials become increasingly digital, education and training in cultural heritage informatics, archives, preservation, records management, museum studies, and libraries will be pressured to provide the same type of environments for practice and experience as educators have provided in the analog environment. The balance between theory and ethical practice in contemporary library and information science, archival, and museum education can be debated endlessly, but the students need both to learn effectively. Active learning with real-world systems and tools enhances the learning of the students, and prepares them to be the leaders that the faculty at Simmons GSLIS anticipate they will become. The Digital Curriculum Lab is the Simmons GSLIS solution to acquiring real-life experience using digital artifacts, and to make education and training more relevant to what the students need to succeed. Teaching students about the evaluation of digital collections in the broadest sense, particularly in the area of cultural heritage informatics, will benefit both the profession and the institutions that hire the students graduating from this curriculum.

This paper will report on the present directions in evaluation and assessment education, focusing on the following areas:

- Student learning outcomes assessment

- Evaluation of cyberlearning case studies, scenarios, and courses within the DCL
- Evaluation of the suitability of competing digital asset management systems for specific digital content, audience, standards, and web usability
- Evaluation of competing standards for metadata.

Since the DCL is an ongoing test bed for current digital asset management systems (DAMS), it can model evaluation methods applicable to digital collections. Because of the flexibility of the DCL, new open source, digital asset management systems can be installed, taught, and evaluated in a controlled environment subject to a variety of current evaluation and assessment models and best practices. For example, the process of evaluation demonstrated by “Brief Survey for Library Technology” (http://mblog.lib.umich.edu/blt/archives/2010/07/brief_survey_of.html) or “Comparing Digital Library Systems” (<http://beanworks.clbean.com/2010/04/comparing-digital-library-systems/>) can be replicated by the students, but with functioning systems and content. If the students ask for a new system to be installed into the DCL, it can be done. Although the cultural heritage informatics direction of the program is clearly mapped and the curriculum is planned, the DCL has a refreshing spontaneity, driven by the needs of the faculty to create scenarios to achieve student learning outcomes within their courses and by the curiosity of the students to explore possibilities. Through its success, the DCL environment also encourages faculty to increase the experiential practice within their courses.

Background of project

In 2009, the Graduate School of Library and Information Science at Simmons College received funding from multiple sources to build a hands-on cyberlearning laboratory for archival, preservation, and museum education under an umbrella cultural heritage informatics curriculum.¹

The Pottruck Technology Resource Center of Simmons College awarded a Curriculum Technology Support Grant for planning the Digital Curriculum Lab, as it later came to be called. The Institute for Museum and Library Services funded the 4Cs grant proposal,

Curriculum, Cooperation, Convergence, and Capacity, (Grant Number: 113 2435 20 400129), part of which was the development of the Digital Curriculum Lab, (<http://gslis.simmons.edu/dcl/imls>). This grant supported the hiring of one part-time programmer for three years to work on the Lab. The National Historical Publications and Records Commission funded a two year grant, *The Archives and Preservation Digital Curriculum Lab*, that also supported the hiring of one part-time content and interface specialist to work on the Lab, (<http://gslis.simmons.edu/dcl/nhprc>). Although this paper focuses on evaluation and assessment in the Lab environment as a cyberlearning platform, the Lab is part of a larger, more theoretical framework, to develop an understanding of cultural heritage informatics, which is defined as:

... the study of and the creation of added cultural value by the linking of disparate digital data sets, stored either locally or remotely according to accepted standards of description, arrangement, and metadata for archives, records management, museums or cultural materials, (<http://gslis.simmons.edu/dcl/culturalheritage>).

Cultural heritage informatics brings together data and data sets relating broadly to social or cultural activity, and tries to break down some of the boundaries between archives, preservation, libraries, museums, and records management, by examining their commonalities in the digital environment. The cultural heritage informatics curriculum is specifically designed to address the digital convergence of cultural heritage institutions—libraries, archives, and museums. This initial curriculum includes three courses: the first, a general introduction to cultural heritage institutions as well as the issues posed by their convergence; the second, a course in digital stewardship designed to prepare students to recognize, analyze, and implement digital solutions to these issues; the third, an internship in partnership with six cultural heritage institutions in New England, each of which will develop and pursue a convergence case study in conjunction with an internship team.²

Digital Curriculum Lab

The Digital Curriculum Laboratory (DCL) (<http://gslis.simmons.edu/dcl/lab>) is an

organized, open, non-proprietary digital space providing integrated access to digital content, content management tools, standards, curriculum-based scenarios, and a workspace for learning modules tied to class outcomes. It will be open to other archival, preservation and museum programs, initially the two partners of the NHPRC grant, the Archives programs at New York University and the University of Wisconsin at Milwaukee, and an international partner, the Archives and Information Science program at Mid Sweden University, Härnösand, Sweden, which although not part of the original grant, has agreed to participate in the Simmons project. The DCL is used to facilitate scenario-building, problem-solving, and evaluation and tool utilization by making it possible for students to apply and assess a variety of online archival and preservation procedures and techniques. The design of the DCL is flexible and extensible to allow new content, tools and scenarios to be added as they evolve. In this laboratory users are able to experiment with and evaluate new applications and developing standards. The DCL contains a variety of digital content, provides an array of digital asset management systems for describing, preserving and managing this content,

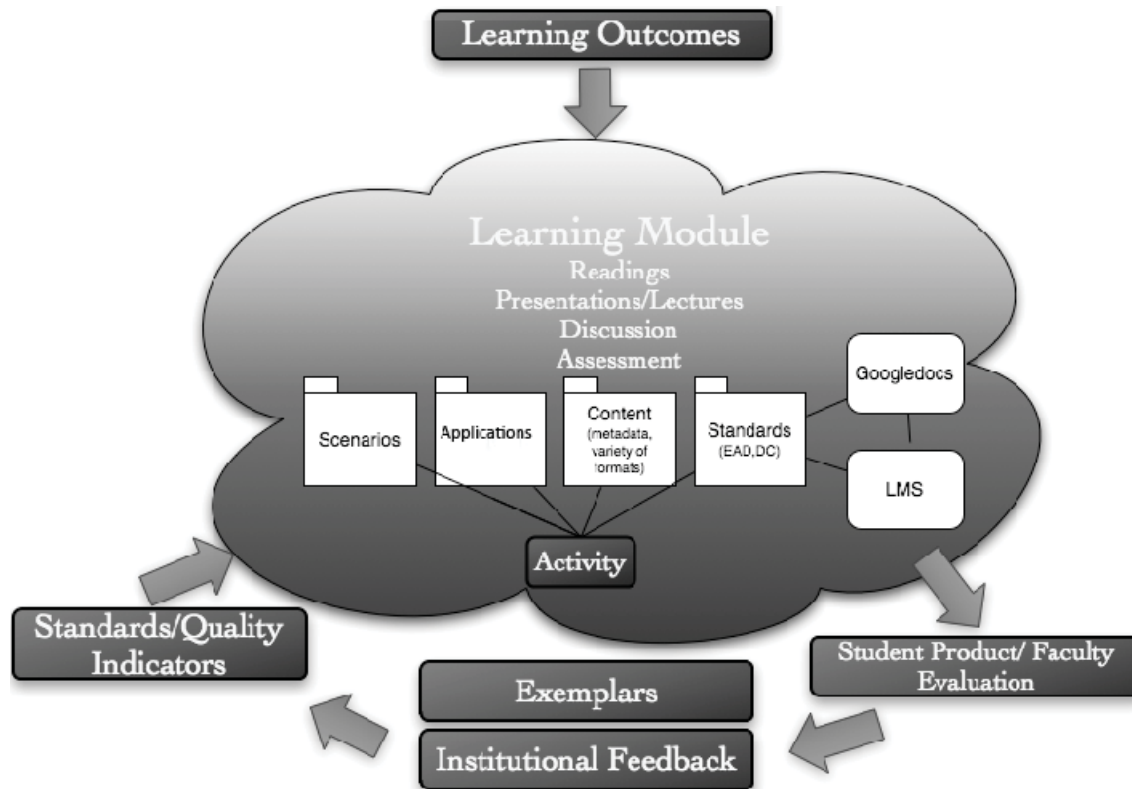
offers sets of descriptive, content, structure, and data value standards, and has an evolving set of instructional learning modules to prepare students for today's professional environment in cultural heritage informatics.

The DCL is not not unique. Similar initiatives are underway the University of Michigan School of Information (<http://blog.si.umich.edu/2010/01/30/neh-funds-virtual-lab-for-digital-humanities/>), University of North Carolina School of Information, University of Arizona's School of Information Resources and Library Science, Digital Information Management "DigIn," (<http://digin.arizona.edu/IMLS.html>), and the Mid-Sweden University at Härnösand, Sweden. These initiatives and the GSLIS DCL demonstrate a common awareness of the need for hands-on practice in education for digital curation, cultural heritage informatics, and other library, archive, and records management environments using digital content.

The DCL framework within the Cultural Heritage Informatics learning outcomes is given in Figure 1.

Digital Curriculum Lab Framework Using Cultural Heritage Informatics Learning Outcomes

Figure 1. DCL Lab Model <http://gslis.simmons.edu/dcl/lab>—Graphic developed by Kirstin Kay.



The LMS or Google Docs section of the DCL represents an authenticated space for students to place their work and to collaborate. Because the DCL is to be shared to other education institutions, the students will be using the DCL within their respective courses and institutional learning management systems. Therefore, the DCL is not really an open education model nor are the scenarios modularized for use by everyone. It is a shared education model, and the courses provide context. The faculty evaluation will take place in an authenticated space restricted to the class or institution. As the DCL matures, institutional exemplars will be contributed to the DCL, to add, for example, to the scenario repository. Feedback from faculty and students within an educational institution will make the DCL better. Interestingly, the class authenticated space or Google Docs for group work and faculty evaluation has proven insufficient for the needs of the faculty, and an authentication wrapper is now

contemplated for the entire DCL. The authentication for the applications will most likely use Central Authentication Services, although individual applications are compatible with LDAP, a common authentication system used by most universities.

The DCL is staffed by two technical specialists: Mary Bennett, Technology Assistant and Molly Duggan, Content and Interface Assistant. The DCL exists on two physical Mac servers, and two virtualized linux servers, all named, in the Simmons tradition, after strong women. The databases behind the applications are MySQL and Oracle. Although the applications are for pedagogical purpose only, there is of course pressure to go to production, that is, to host real digital libraries. At present, the DCL nurtures digital library content, but the expectation is that the application and the content will move somewhere else for production. It is also

becoming apparent that students want to install the applications. The DCL is looking into virtualizing sandbox spaces for students to run DAM system installations, and authenticating the sandbox for security purposes and to prevent hacking.

The following table represents the current state of the DCL. There are ten DAM applications at present, which represent the results of considerable discussion. Because the DCL is designed to be shared, it is limited to open source applications. As other scenarios are developed,

other appropriate applications will be installed. The content includes TIFFs of manuscripts and MODS records, generously shared by Rob Cox and Aaron Rubinstein of the W.E.B. Du Bois—Verizon Digitization Project at the University of Massachusetts Special Collections and University Archives. The standards are a list of standards with FAQs and best practices manuals linked, and specific help files for the scenarios.

Digital Curriculum Lab support for Cultural Heritage Informatics

Table 1: Functions and content on DCL Lab as of September 2010.

Scenarios	Applications	Content	Standards
<i>Preservation 1</i> File formats Handling old files Checksums	Alfresco Archivists' Toolkit Archon CollectiveAccess Dspace	10,000 TIFFs Art images Uncertain IP	CDWA Dublin Core EAD METS MODS
<i>Preservation 2</i> Evaluate DAMS Evaluate metadata Evaluate representation	Fedora Eprints Greenstone 3 Omeka ResourceSpace	1,000 TIFFs Manuscripts 1,000 MODS records 200 TEI records	PREMIS VRA Core 4.0.
<i>Trust</i> Catalog art TIFFS in CDWA Ingest into 3 DAMs Evaluate – 5 domains		50 disk images with files created 1985-2000 using word processors and database software	
<i>Digital Libraries</i> Set up teams Evaluate DAMs Implement Digital Library Evaluate implementation			
<i>Records Management</i> Integrate analog & case studies into Alfresco Design organization Create documents Evaluate case studies			
<i>CHI Internships</i> Students use DAMS in Lab to solve real world problems at 6 museum or archive sites			

Scenarios, Assessment and Evaluation

The scenarios are at various levels of specificity although all involve learning outcomes. They range from very detailed preservation modules with step by step instructions to the more open DAMS evaluation, in which the criteria as well as the evaluations are generated by the students. This section will outline the current scenarios and will describe several in some depth.

Student learning outcome assessment

The two preservation scenarios, developed by Ross Harvey, are examples of scenarios developed to teach preservation concepts, and they assess student learning outcomes relevant to preservation (<http://gslis.simmons.edu/dcl/lab/scenarios/preservation1> and <http://gslis.simmons.edu/dcl/lab/scenarios/preservation2>). The first scenario describes a donation from a faculty member collection that

includes three-and-a-half inch diskettes and Zip disks created from the 1985 to about 2000. The exercise is intended to develop skills in identifying file formats, identifying and using software to open files (which include database and word-processed files created in DOS-based applications), determining files formats appropriate for preservation purposes and saving files to them, and using associated applications such as disk imaging and checksum software.

Evaluation of cyberlearning case studies, scenarios, and courses with the DCL

The management of electronic records courses at GSLIS has developed eight case studies for teaching records management concepts. These case studies focused on different problems within different environments, including an imaging project at a college, the potential for sensitive data on personal smart phones and devices by company executives, a content management website with important records at a university, a course management system and wikis at a college, departmental administrative records at a college, product sales records at a small manufacturing company, patient records at a hospital, and personnel records at a large consulting firm and think tank. Each case study has different learning outcomes. Although the case studies are creative, entertaining and as realistic as possible, they are by nature hypothetical and not grounded in real-world systems. To paraphrase one teacher, when the students need additional information about the scenario, we just make something up.

The most appropriate DAMS for electronic records management within the DCL is Alfresco. All of these print case study organizations will be folded into a large university environment with a complex organization that will be reflected in the organization within Alfresco. The electronic documents will be acquired for this new university environment, or may be written by the students. The students will then be able to use records within a functioning electronic records management system to understand the realities of the case studies, and to gain a practical understanding of records management concepts, in addition to achieving the learning outcomes of the original case studies. The over-arching university organization is sufficiently complex to permit the development of additional case studies and scenarios.

Evaluation of suitability of competing digital asset management systems for specific digital content, audience, standards, and web usability

This type of evaluation is found in the second preservation scenario, where the various DAMS are evaluated for preservation functions. The scenario leads the student through some of the relevant criteria by which to evaluate and finally select a digital asset management system. Another course, Digital Libraries, designed by Candy Schwartz, takes a more inclusive, semester long approach toward building a real digital library that is available on the web at the end of the semester. The class is divided up into the following teams:

- Project manager
- Content (Biographical information, background, history, teaching resources, and project)
- Database and server applications
- Digitization
- Environmental scan
- Evaluation and usability
- Intellectual property
- Marketing and fundraising
- Preservation (digital)
- Quality control
- Web and IA

The database and the Web/IA teams take the lead, along with the project manager, to set up the process to evaluate the various DAMS for the class project. The project consists of digitizing a Simmons alumna scrapbook from the Simmons Archives. These scrapbooks are usually complex, in need of preservation, and present a number of digitization or scanning challenges. They are far more than simple, flat photographs.

This course has been going for a number of years, and the Notable Women of Simmons College Digital Scrapbook Collection is found at: <http://www.simmons.edu/library/archives/exhibits/372.php>. In the past the scrapbooks had been placed in Greenstone 2 and Omeka. The students had little choice for the DAM for the scrapbook. Now, with the DCL, the students can develop criteria for evaluating DAMS within a variety of domains (content, metadata, preservation, etc.), and the students have more choices for the system in which their digitized scrapbook will be offered. The various teams have

input into the choice of the systems. One of the learning outcomes is that many DAMS are possible, some are better than others for certain content and audiences, and the libraries or archives should look beyond the most convenient or available.

Three new courses, Concepts in Cultural Heritage Informatics, Digital Stewardship, and Practicum for Cultural Heritage Informatics use the DCL to teach students how the convergence of libraries, archives, museums, and preservation is really being accomplished. The first of these courses is offered in fall 2010. This curriculum is described by Bastian, Cloonan, and Harvey.³ The DCL is supporting the students in their internships at six sites. Each site is using a different DAMS (some sites have several systems) and has very different content, audiences, and technical expertise. In some sites, interoperability between systems is an over-riding issue, and in some sites, determining the best system to meet the needs is the most important task. With the DCL the students will be able to experiment with solutions without using or breaking the site internship host's systems. In most cases the DCL can replicate the systems used by the site for the students, so the students can explore possible solutions. Thus, the internships will be much more than free labor or advice based on readings. The teams of interns can offer real world solutions, tested in the DCL, that have some reasonable expectation of success, a far more satisfying arrangement for all.

Evaluation of competing standards for metadata

The scenario is under development, and involves competing standards for metadata, in addition to the more global evaluations of DAMS, which of course include evaluations of the appropriateness of certain metadata standards, is called the trust scenario, although perhaps it should be called the distrust scenario, and was initially presented at the FARMER Conference in July 2010.⁴ In this scenario, the student learns to distrust the default decisions of the DAMS and to question whether certain systems are appropriate for certain content and audiences. The student:

- Describes a set of digital objects using a commonly accepted description framework.
- Ingests the same objects and metadata into several different DAM systems.
- Analyzes how the DAM system treats description, display of records, retrieval, and

the display of retrieved records, and compares them to each other.

- Discusses how the assumptions and defaults of the system bias use and the user.

The students are asked to catalog digital images of works of art, TIFFs found in the content repository of the DCL. The students use CDWA Lite, the core of Categories for the Description of Works of Art. CDWA Lite combines CDWA and Cataloging Cultural Objects (CCO). As the J. Paul Getty Trust site states, CDWA Lite is

... an XML schema to describe core records for works of art and material culture based on CDWA and CCO. CDWA Lite records are intended for contribution to union catalogs and other repositories using the Open Archives Initiative (OAI) harvesting protocol. http://www.getty.edu/research/conducting_research/standards/cdwa/introduction.html

This assumption of universality is tested by the students when the metadata and the digital objects are ingested into the DAMS. The three systems that were chosen for this assignment are CollectiveAccess, DSpace, and Omeka. One of the questions the student must answer is, what happens to the CDWA description and metadata once in the system. Most DAM systems support Dublin Core or some sort of extended Dublin Core. The CDWA standard is much more complex and without a careful crosswalk, the students can see that information is lost, an important learning outcome. For example, as of this writing, CollectiveAccess support Dublin Core, PBCore, and SPECTRUM out of the box, but has a configuration library.

The search function is then tested with the digital object and the metadata. With some creativity, students can observe that different results are returned using the search strategies likely to be employed by patrons. The results of the searches are even more instructive when an expert audience is assumed. The student answers the question: Do the searches differ from system to system with the same digital objects and the same description data available? What fields are being indexed? Then the students examine how the search results are presented: are the same fields displayed in the retrieved record, is the image

included as a thumbnail or as a more complete image, what are the effects of the default setting over a more customized settings? When patrons browse the DAM system contents, what do they see? For example, CollectiveAccess has a public access module with a search and browse interface to collections data, called Pawtucket. How does Pawtucket effect searching and display over other possible interfaces? Omeka uses Dublin Core, but DSpace will display Dublin Core XML tags using the full record display. Who is the audience for this feature?

Finally, the students would be asked to write up their findings as a commentary on trust, what the system can be trusted to do with the access to content from the patron's point of view. In this exercise the students learn several metadata standards. They learn that different systems treat the metadata and digital objects in different ways. They learn that despite the adherence to metadata standards, the search functions in different systems retrieves different results and displays those results in different ways. Students also discover that individual records are displayed differently in different systems. Finally, the students realize that each DAM system brings its own biases and interpretive contexts, some of which the archivist, librarian or museum curator may want and trust and some not.

Conclusion

The Digital Curriculum Lab is an organized, open, non-proprietary digital space providing integrated access to digital content, content management tools, standards, curriculum-based scenarios, with a workspace for learning modules

tied to class outcomes. Because the DCL supports courses, it is constantly being evaluated as to its usefulness, but within the context of the courses it supports and the scenarios developed using its resources. It is not sufficiently far along to be evaluated as an entity separate from the courses. Student and faculty evaluations are planned as the DCL assumes a larger role in making digital content real for students and faculty.

—Copyright 2011 Terry Plum, Jeannette Bastian, Ross Harvey, and Martha Mahard

Notes

1. J. Bastian, R. Harvey, M. Mahard, and T. Plum, "Building a Virtual Archives and Preservation Curriculum Laboratory at Simmons College: A Case Study in Collaborative Construction," *JELIS: Journal of Education for Library and Information Science* 51, 4 (October 2010): 241-250.
2. J. Bastian, M. Cloonan, and R. Harvey, "From Teacher to Learner to User: Developing a Digital Stewardship Pedagogy," *Library Trends* (forthcoming).
3. Ibid.
4. J. Bastian and T. Plum, "Learning to Distrust: Issues of Community, Trust and Identity," Paper presented at *Questions of Trust? Archives, Records, and Identities*, FARMER—UK and Ireland Forum for Archives and Records Management Education and Research, Wolfson College, Oxford, UK, July 5-6, 2010.

Interdisciplinary Collection Assessment Model

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Abstract

As the academy increasingly takes a multi- and inter-disciplinary approach to scholarship and faculty organization, the question of how libraries can understand and assess their collections for interdisciplinary research grows in its importance. However, little research has been conducted on methods of collections analysis for interdisciplinary scholarship. This paper will present a model for interdisciplinary collections assessment, employing methods based on the publication landscape.

Introduction

This project's aim was to approach interdisciplinary collection assessment by measuring what we currently purchase compared to what we do not purchase. The goal was to produce a model for interdisciplinary collections measurement.

The research focuses on the area of Environmental Studies, primarily due to the fact that there is no single liaison librarian responsible for this area, but materials are selected by several different liaison librarians. The Collections Development Committee at the University of Alberta Libraries was not concerned with measuring the Environmental Studies collection (ESC) against peer institutions; rather, the Committee wished to gain a picture of what the interdisciplinary collection looks like across subject areas.

In response, the practicum student, working under the supervision of the Assessment Librarian, investigated the feasibility of several methods for interdisciplinary collections assessment.

Two broad categorizations of collections assessment have been defined by the National Library of Australia:¹

- Client-Centred Assessment measures how the collection is used by library users. Examples

of these techniques are circulation studies, interlibrary loan statistics, shelf availability studies, and various user studies.

- Collection-Centred Assessment examines the content and characteristics of the collection to determine the size, scope, and/or depth of a collection, often in comparison to an external standard. Examples of these techniques include checking lists, counting holdings, and expert evaluation.

The model presented here refers to various sources of client-centred and collection-centred assessment; however, one process was fully defined, in the area of collection-centred assessment only. See Appendix A for a larger model of both types of methods based on the Australian categories.

Serials Assessment Process

- Used JCR Science edition 2007 to create a list journals in the Environmental Science subject area.
- Sorted by impact factor, we kept the top 50 serial results
- Checked if we have access to these publications in catalogue
- If not found in either database, does the UofA have ready alternate access?

The results of this search are located in the EnviroSciPeriodicals.xls file (attached); conclusion: serials coverage appears adequate.

Monograph Assessment

With no Environmental Studies liaison librarian to consult, and not clear guidelines of what does (and does not) fall into the environmental science/studies discipline, we began looking at options that would allow us to compare what we do have with some kind of control list (external

verification) that we (and future liaisons) could easily consult. After looking at the various tools and a brief literature search, we determined that LSCH terms, LCC numbers, or general LC ranges would be most applicable.

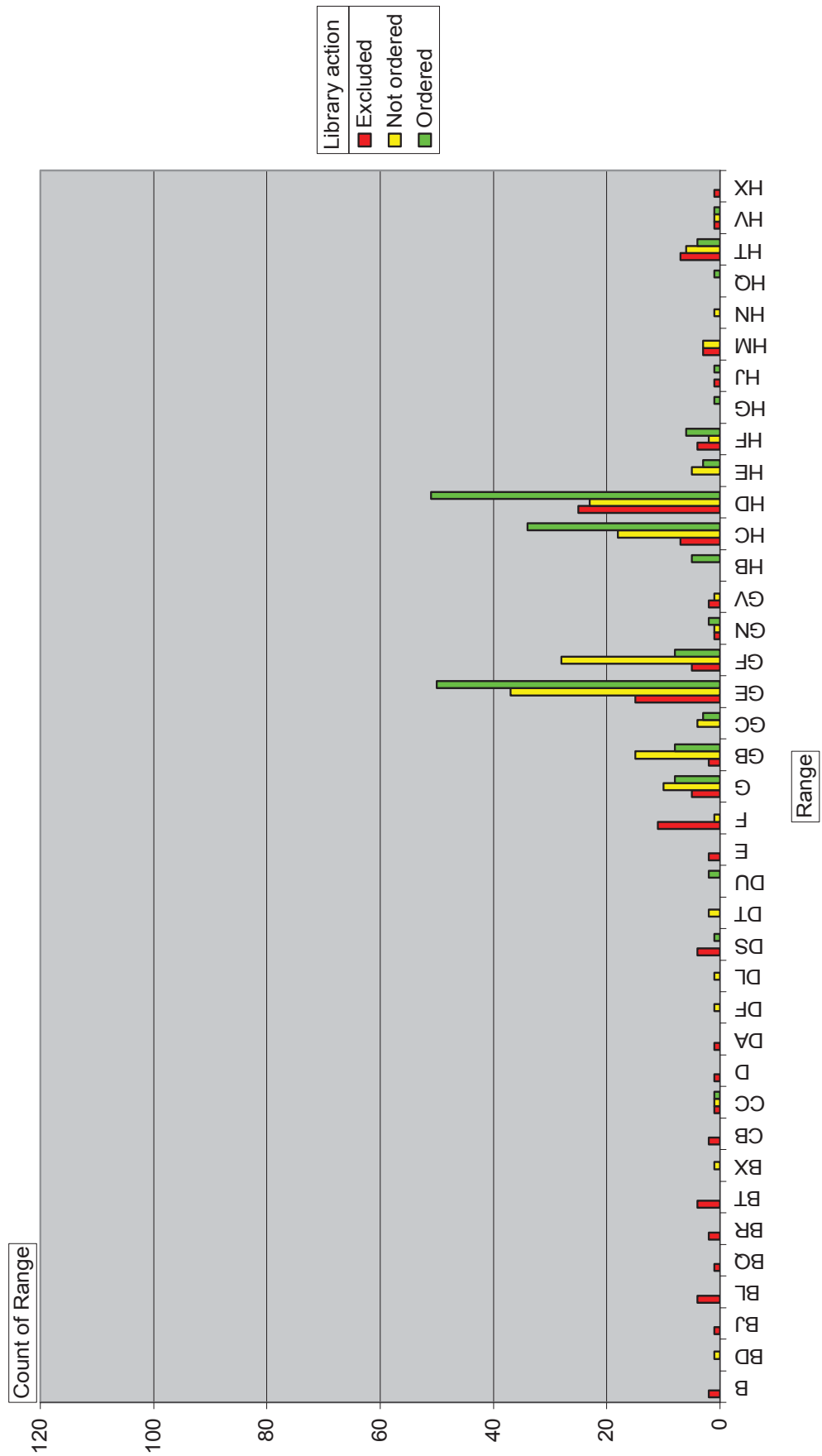
The chart below notes the different tools available to UAL and the benefits and drawbacks of each. The team chose vendor reports as the simplest and most relevant method of assessment in this case. Appendix B outlines the specific steps in conducting this assessment.

TOOL	COMPARISON	SCOPE	BENEFITS	DRAWBACKS	CONCLUSIONS
OCLC Collections Analysis	- holdings of other institutions	Current and historic	- provides big picture of collection - may include interdisciplinary reports in future - relatively simple and fast	- does identify subjects but call numbers only	Not appropriate for interdisciplinary measurement unless specific categories developed
Director's Station	n/a	Current and historic	- provides big picture of collection - relatively simple and fast with good visualization capability	- less-precise call number breakdown allows for some interdisciplinary analysis; - doesn't ID subject headings	Call number breakdown would have to be investigated to determine whether appropriate
Vendor reports: monos ordered, not ordered, and excluded	- current published works	Current	- relatively simple and fast - good visualization tools with excel charts - ability to make comparisons with the current publishing output	- limited to vendor's stock - may have to combine reports if more than one primary vendor - limited to monographs - cannot be used to measure historically	Appropriate for current assessment, but not historic

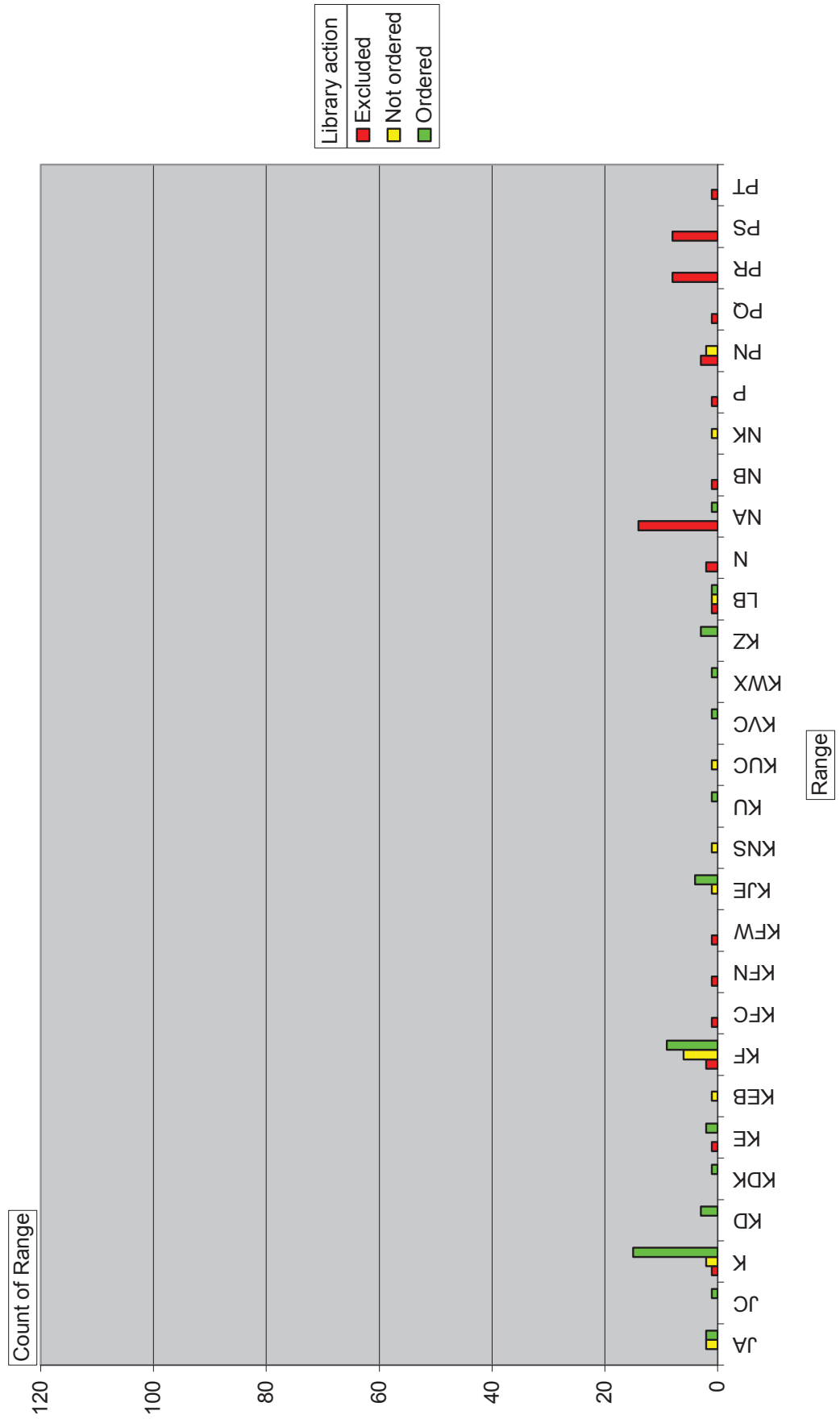
The following charts show the results of comparing vendor reports in three categories: Ordered (items for which slips were sent), Not Ordered (items for which the library was sent slips from YBP but not ordered), Excluded (items for which no slips were sent). This provides a proportional view of the current publishing output in Environmental Studies (as defined by

the vendor), and the areas in which UAL is receiving or not receiving. From here, Environmental Studies areas in which UAL is "under collecting" can be easily identified, and CDC, working with the subject specialist in that sub-area, can determine whether the collection should be enhanced.

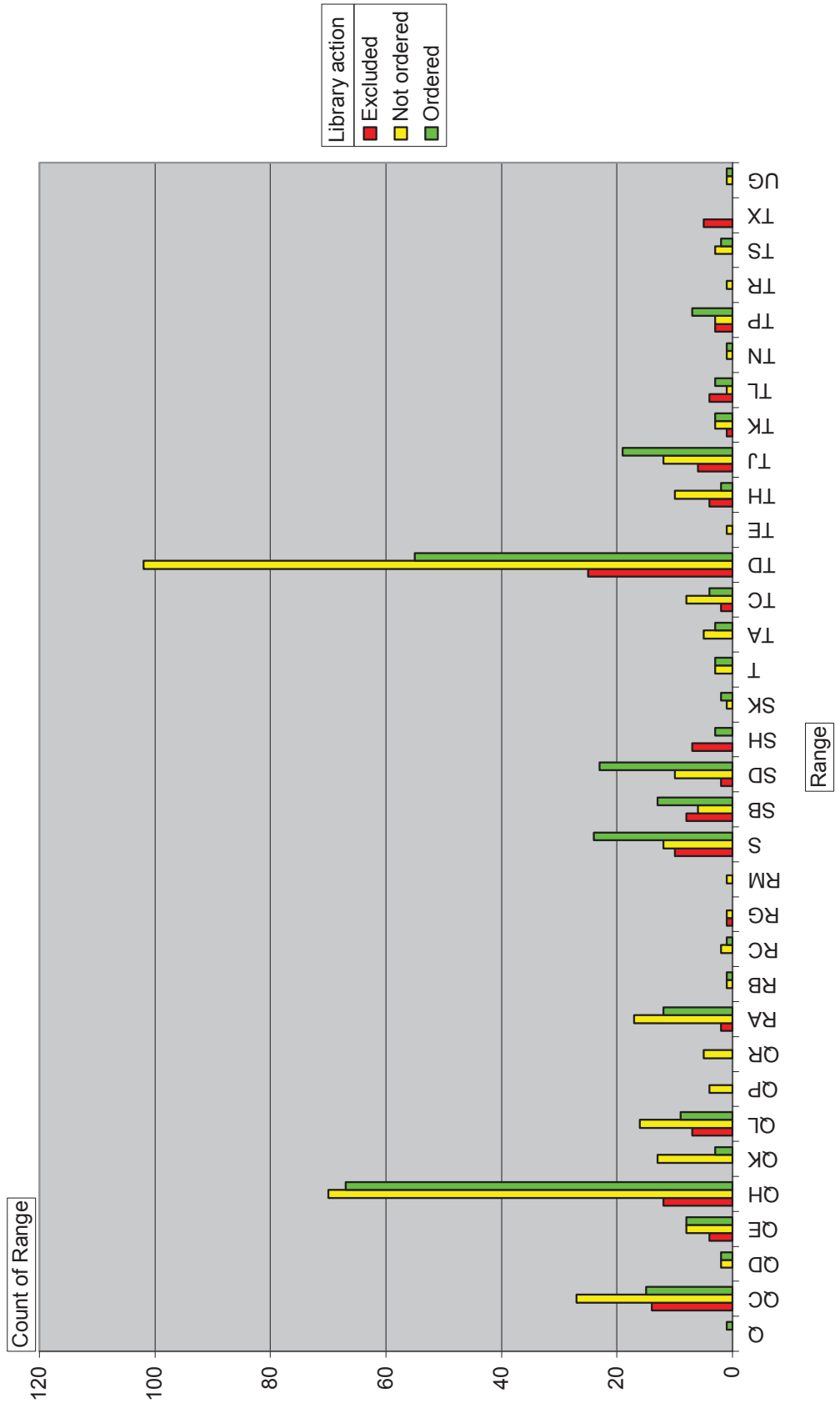
Fiscal 2008 Books B-HX



Fiscal 2008 Books J-PT



Fiscal 2008 Books Q-Z



The following considerations and limitations are important to remember with this model:

- Using vendor reports is feasible only if interdisciplinary categories are defined, in which CDC are confident of appropriate coverage
- The vendor report method can only assess the previous two years of publishing activity
- CDC may wish to investigate the model in more depth for other aspects of assessment; these could include:
 - historical interdisciplinary collections
 - subject specialists' awareness of and collecting activities for interdisciplinary collections (this was proposed as a method by the working group but was not conducted)

investigating the other major vendor (Coutts) for its publishing activity in the humanities

Conclusion

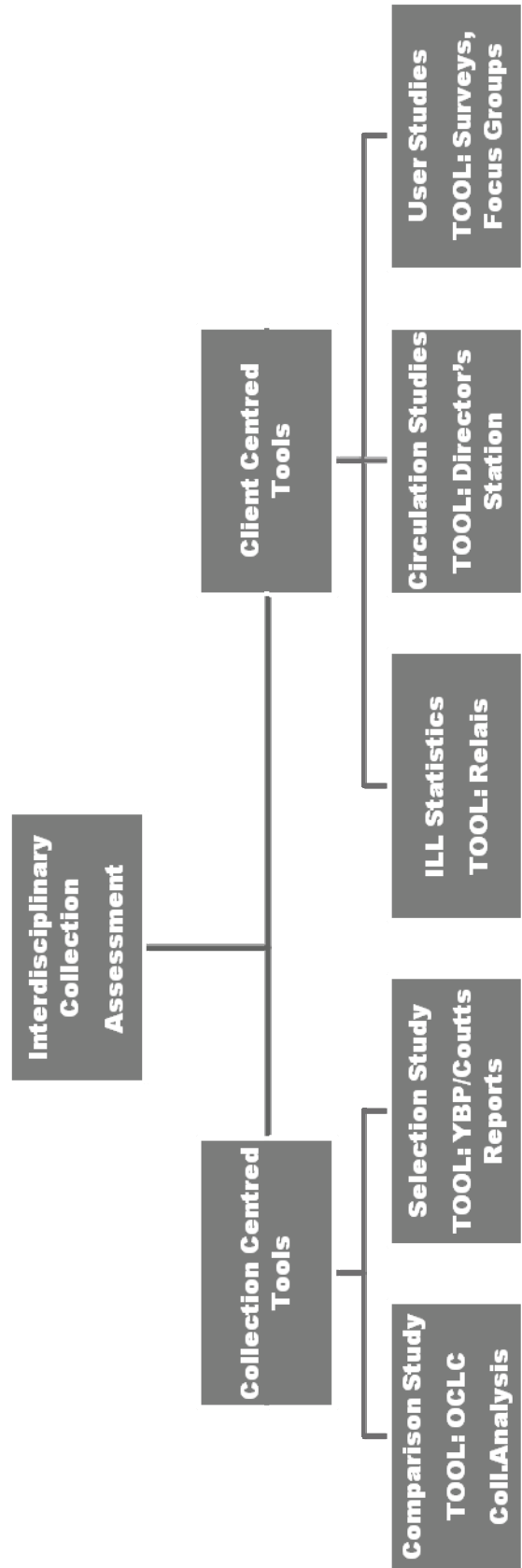
While it is not an exhaustive, singular measure of collection strength, this method does provide a feasible approach for collection measurement with respect to contemporary publications.

—Copyright 2011 Allison Sivak and Richard Hayman

Note

1. National Library of Australia, "Guide to the Collection Assessment Process Webpage, 10 Aug. 2004," <http://www.nla.gov.au/libraries/help/guide.html#outline>.

APPENDIX A: MODEL FOR COLLECTIONS ASSESSMENT



APPENDIX B: Interdisciplinary Collections Assessment Steps

Data Manipulation and Charting

Revised 12 Dec.2008

You need GOBI reports covering three categories

- Ordered: the items ordered in the specific subject area (eg. Environmental studies)
- Not ordered: the items for which slips were sent, but which selectors chose not purchase
- Excluded: the list of items for slips were not sent, as they did not meet the UofA's approval plan

Generating reports in Gobi

New Method – after consultation with Michael Zeoli of YPB, we were able to streamline the process used to generate the reports. Here is the revised method.

All sets: Items ordered, not ordered, and excluded

1. Log in to GOBI
2. Search > Advanced, opening the advanced search page
3. Set your parameters and search
NB: the GOBI system will time-out on searches that generate 1000 or more hits. To avoid this, we recommend searching by various date ranges that cover your wanted period. We also strongly suggest that the search be broken into two parts, books only, then e-books only.
4. For books only
 - a. Set the **Deliver** area to a new folder of your choosing.
 - b. Set the **Universe** to YBP, L&C, and Out of print by marking the appropriate check-boxes
 - c. Set the **Binding/Format Preference** to either cloth or paper (does not matter which, this only helps remove duplicates)
 - d. Set the **eBook** area to exclude ebooks my marking the appropriate check box
 - e. Set **My Library's History** to check all four areas. DO NOT check the box that only shows in-stock items
 - f. In **Compose Query**, select 'and' and 'interdisciplinary descriptors'. The list of descriptors will appear. Select your chosen topic by highlighting it in the list, and then click the arrow to the right of this area to move the topic into the **Terms in Query** box.
 - g. The **Primary Sort** and **Secondary Sort** functions can be left alone.
 - h. The **Date Range** is a required field. Use the **Date Profiled** pull-down menu and set it to search by range. Populate the two given text boxes with the start and end of your range. (Remember what we said earlier about limiting your range o keep your hits under 1000.) Leave the **Pub Year** blank.
 - i. The settings for **Content Level**, **Select Profiling**, and **Core Titles** can be left alone, as can the **List Price**.
 - j. Your **Terms in Query** box should already contain the interdisciplinary descriptor set earlier.
 - k. Run your search by clicking **Go** on the left-hand side of the page.

5. For eBooks only (a similar process)
 - a. Set the **Deliver** area to a new folder of your choosing.
 - b. Set the **Universe** to YBP, L&C, and Out of print by marking the appropriate check-boxes
 - c. Set the **Binding/Format Preference** to eBook only
 - d. Nothing in the **eBook** area needs to be changed
 - e. Set **My Library's History** to check all four areas. DO NOT check the box that only shows in-stock items
 - f. In **Compose Query**, select 'and' and 'interdisciplinary descriptors'. The list of descriptors will appear. Select your chosen topic by highlighting it in the list, and then click the arrow to the right of this area to move the topic into the **Terms in Query** box.
 - g. The **Primary Sort** and **Secondary Sort** functions can be left alone.
 - h. The **Date Range** is a required field. Use the **Date Profiled** pull-down menu and set it to search by range. Populate the two given text boxes with the start and end of your range. (Remember what we said earlier about limiting your range o keep your hits under 1000.) Leave the **Pub Year** blank.
 - i. The settings for **Content Level**, **Select Profiling**, and **Core Titles** can be left alone, as can the **List Price**.
 - j. Your **Terms in Query** box should already contain the interdisciplinary descriptor set earlier.
 - k. Run your search by clicking **Go** on the left-hand side of the page.

6. Review and sort results
 - a. Open the folder containing your results.
 - b. On the left side of the page, click 'Sort'. In the pop-up window, set the **Primary Sort** to library history and the **Secondary Sort** to library note, the click OK. This sort will group like items together.
 - c. You can change the number results displayed per page using the pull-down menu at the top of the results list.

7. Filter your results and export
 - a. The different groupings collected by the sort function tell you what category the item belongs. Look at the library note for each item, and compare with the following:
 - i. Approval book for series = Ordered
 - ii. Preparing to ship = Ordered
 - iii. Shipped = Ordered
 - iv. Slip sent = Not ordered
 - v. No note = Excluded
 - vi. Order cancelled = check the item to be sure by clicking on the note itself. Items that were cancelled do not belong in the Ordered category (since we don't want them, we don't consider them ordered).
 - b. Marked items for a certain category should be moved to a new folder. Click on the Add to Folder link on the left side of the page. In the pop-up, put the marked

- items in a new folder of your choosing. You will end up with three new folders, corresponding to the three categories: Ordered, Not ordered, Excluded.
- c. Continue through results, marking as you go for one of the three categories, and moving the results to the
 - d. Once you have categorized all of the results, you can export the contents of the category folder. To export, open the folder, then use the link on the left side of the page to 'mark all'.
 - e. Click 'save to disk' on the left side of the page. In the pop-up window, select 'Tab delimited' as your filetype and save as 'full' records, then click 'save to disk'. This will allow you to save the file to a location on your computer.

Import and isolate useful data

1. Open MS Excel
2. All three report categories are imported using the same method
 - a. Data > Import external data > Import data, then the file you need
3. Once imported, look for the column with the LC numbers (the heading usually reads LC/NLM/Dewey_Class)
4. Copy the column to a new worksheet or a new workbook.
5. Sort the data so it is arranged in ascending order
6. Delete duplicates by using Data > Filter > Advanced filter, select 'unique records only'
7. Save your work!

This new column now contains a list of unique LCC numbers for specific ranges. To get to the level of ranges, and item counts within those ranges:

1. Separate the letters from the numbers
 - a. I did this using the 'find and replace' feature. I replaced every occurrence of the digits from 0-9 with an asterisk
 - b. Use the Data > Text to Columns feature, setting the asterisk as my delimiting character
 - c. This leaves the first column with only LC ranges. The other columns can be deleted
2. This list of ranges can now be used to generate charts using the Charting wizard features of Excel.
 - a. Data > Pivot table and chart report > PivotChart report > Layout, put Call number range in the data table.
3. Combine multiple sets of data to create a comparison chart.
4. Save your work!

Visuals: Settings for Books

GOBI3

Quick Search:

Advanced Search

*denotes a required field

Select Cart

Clear Form

Retrieve Parameters

Go

YBP Library Services

Deliver

In GOBI

To a new folder named:

up to 25 chars

To folder:

Universe*

YBP

L&C

Out of print

Forthcoming

Binding Format Preference

No preference

Prefer cloth

Prefer paper

Prefer eBook

eBook only

eBook

Exclude eBooks

Only show downloadable items

Date Added

mmdyyyy

Supplier

EBL

ebrary

IGI Online Content

NetLibrary

SAGE Online Content

Primary Sort

Class - LC/NLM

Ascending Descending

Secondary Sort

[none]

Ascending Descending

Date Range*

Date Profiled

Range

mmdyyyy

mmdyyyy

Pub Year

yyyy

Content Level

Include

Juvenile

Popular

Basic Studies

General Academic

Advanced Academic

Professional

Select Profiling

Include

Basic Essential

Research Essential

Basic Recommended

Research Recommended

GOBI3

Quick Search:

> Standard Search
> Advanced Search
> Slip Search

Site Map Help Contact Us Log Out

Search Notifications Folders Reports Options Library Quick Links

Advanced Search

*denotes a required field

SAGE Online Content

My Library's History

- Already acquired or on order
- My library has received notification slips for
- In series on standing order
- In series blocked on approval

Stock

- Only show YBP in-stock items

Core Titles

- Basic Recommended
- Research Recommended
- Specialized
- Supplementary
- Not a Select Title

Core Titles

- Include
- YBP Core 1000
- L&C Core 300

List Price

- US Dollars (USD)
- UK Pounds (GBP)

=

Compose Query

- and LC Classification
- and Geographic Descriptors
- and **Interdisciplinary Descriptors**
- and Non Subject Descriptors
- and Publisher
- and Subject Headings

Distance Education
ESL
Economic
Educational
Environmental
Ethical
Ethnic Studies
Family Studies
Film

Terms in Query

and Interdisciplinary Descriptors:
Environmental

GOBIPROD1 2.02.016.A

Settings for Ebooks

http://www.gobi3.com/hx/gobi.ashx?location=searchadvancedparms

GOBI3 Quick Search:

> Standard Search
> Advanced Search
> Slip Search

Site Map Help Contact Us Log Out

Search Notifications Folders Reports Options Library Quick Links

Select Cart

Clear Form
Retrieve Parameters
Go
YBP Library Services

Advanced Search

*denotes a required field

Deliver

In GOBI
 To a new folder named:

up to 25 chars
 To folder:
Envir Apr2007

Universe*

YBP
 L&C
 Out of print
 Forthcoming

Binding/Format Preference

No preference
 Prefer cloth
 Prefer paper
 Prefer eBook
 eBook only

eBook

Exclude eBooks
 Only show downloadable items

Date Added

>=
mmddyyyy

Supplier

EBL
ebrary
IGI Online Content
NetLibrary
SAGE Online Content

Primary Sort

Class - LC/NLM
 Ascending Descending

Secondary Sort

[none]
 Ascending Descending

Date Range*

Date Profiled

Range to
mmddyyyy
06302007
mmddyyyy

Pub Year

>=
yyyy

Content Level

Include

Juvenile
 Popular
 Basic Studies
 General Academic
 Advanced Academic
 Professional

Select Profiling

Include

Basic Essential
 Research Essential
 Basic Recommended
 Research Recommended

GOBIPROD3 2.02.016.A

GOBI3

Quick Search:

> Standard Search
> Advanced Search
> Slip Search

Site Map Help Contact Us Log Out

Search Notifications Folders Reports Options Library Quick Links

Advanced Search

*denotes a required field

My Library's History

- Already acquired or on order
- My library has received notification slips for
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Stock

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Basic Recommended

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- Supplementary
- Not a Select Title

Core Titles

- Include
 - YBP Core 1000
 - L&C Core 300

List Price

- US Dollars (USD)
- UK Pounds (GBP)

=

Compose Query

- and LC Classification
- and Geographic Descriptors
- and **Interdisciplinary Descriptors**
- and Non Subject Descriptors
- and Publisher
- and Subject Headings

Description and Travel
Developing Countries
Distance Education
ESL
Economic
Educational
Environmental
Ethical
Ethnic Studies

Terms in Query

and Interdisciplinary Descriptors:
Environmental

GOBIPROD3 2.02.016.A

Recruiting for Results: Assessment Skills and the Academic Library Job Market¹

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Abstract

Over the past decade, academic libraries have made a commitment to promote a culture of assessment within their organizations and to pursue data-informed decision making regarding strategic priorities, but little is known about the degree to which libraries have promoted organizational capacity for assessment through the recruitment of professionals with the knowledge, skills, and abilities associated with assessment. This paper reports the results of an exploratory content analysis of academic library position descriptions posted between 2004-2009 in order to determine the degree to which assessment skills are identified as required or preferred qualification for hire, as well as the degree to which assessment responsibilities are noted as components of the positions. This study suggests that, despite the increased call for assessment in academic libraries over the past decade, there is little evidence that we are recruiting new professionals into our libraries with a clearly articulated responsibility for designing, implementing, or reporting the results of assessment activities. The paper concludes with a discussion of the manner in which other higher education professions recruit for assessment skills, and with suggestions regarding how to enhance academic library position descriptions with an eye toward “recruiting for results” that may promote the continued development of the culture of assessment in academic libraries.

Introduction

In 2004, Lakos and Phipps published their seminal work, “Creating a Culture of Assessment: A Catalyst for Organizational Change.”² In this article, Lakos and Phipps call for the establishment of a “culture of assessment” in

academic libraries—a culture in which assessment data forms the basis for making decisions about library services, collections, and policies. More than half a decade later, how far have academic libraries come in establishing such a culture of assessment? As importantly, what have we done to build a community of professionals within our libraries with the knowledge, skills, and abilities required to design, implement, and report the results of assessment activities that can inform decision making at the strategic and operational levels?

For a culture of assessment to thrive within an organization, all members of the organization must view assessment, evidence, and decision-making in new ways. It is not enough for senior leadership to change their views; all library professionals must shift their thinking in order to establish and promote the continued growth of a culture of assessment. As Lakos and Phipps note, “Assessment cannot be seen as a separate ‘management activity’, but must be appreciated and valued by all members of the culture and assumed to be a part of their regular work.”³ However, as Wright and White found in their study of assessment programs in ARL libraries, while library administrators are committed to the idea of assessment, “there is a perception that this commitment is not shared by all staff . . . [who] do not have the skills or rewards needed to carry out assessment projects.”⁴

Problem

If one accepts the assumption that many librarians are not currently committed to a culture of assessment and that one reason for this lack of commitment is a dearth of discrete assessment skills among the professional community in a

given library, then one might surmise that addressing librarians' assessment skill deficits could overcome a critical barrier to the establishment and promotion of a culture of assessment in one's library. There are at least three ways to address skill deficits within the professional community:

- 1) offer professional development opportunities for practicing librarians to develop assessment skills;
- 2) broaden educational options in library and information science degree programs to include assessment content; and
- 3) encourage librarian job candidates to obtain and demonstrate assessment capacity as a component of the recruitment process.

Increasingly, library professional associations are addressing the first solution to the assessment skill problem; both ARL and ACRL have led the way by establishing the Library Assessment Conference and the Assessment Immersion program as well as other professional development offerings. Library professionals may also take part in broader professional development opportunities in the area of assessment, e.g., the annual Assessment Institute in Indianapolis, which is promoted as "the nation's oldest and largest event focused exclusively on Outcomes Assessment in Higher Education," <http://planning.iupui.edu/conferences/national/nationalconf.html>.

Library schools are confronting the second solution by working to produce graduates with assessment competency; more than 20 schools responded to a recent informal survey stating that they either offer or require courses that include the study of assessment, e.g., in areas such as collection development, reference and information services, information literacy instruction, and library administration.

To date, however, little is known about the manner in which academic libraries are pursuing the recruitment of professionals with assessment skills into their organizations. Wright and White provide an overview of the way in which positions providing leadership for assessment programs are shaped, e.g., Assessment Librarian, Assessment Coordinator,⁵ but, if a culture of assessment can thrive only in an organization in which assessment is a component of everyone's

responsibilities, there is a critical question left unanswered by previous studies: to what degree are well-defined responsibilities for assessment integrated into all professional positions in academic libraries, and how well are we recruiting for the skills that will result in our new colleagues being successful in meeting those responsibilities?

To begin to address this gap in the literature, the present study was designed to explore the following questions:

- Are academic libraries recruiting for assessment skills?
- If they are, are they doing so in a meaningful way?
- If they are not, how might they begin to engage in better recruiting practices for the skill sets they need to establish a culture of assessment?

Methodology

To explore the degree to which academic libraries are recruiting professionals with well-defined responsibilities for assessment as well as the knowledge, skills, and abilities required to successfully meet those responsibilities, the authors undertook a content analysis of 395 academic library position descriptions published in *College and Research Library News* between 2004 to 2009. These position descriptions were taken from the print version of *C&RL News* during three 6-month intervals in 2004, 2006, and 2008.

While content analysis of position descriptions is a familiar approach to questions of changes in the library profession, it is important to note that human resource practices have changed swiftly and significant during the time period considered in this study. Some position descriptions could not be included in the sample because they were ephemeral in nature, appearing solely on electronic discussion lists or on Web sites that are no longer accessible for review. In addition, the authors' personal experience in the recruitment of library professionals during this time suggest that position descriptions are only one artifact of the hiring process, i.e., responsibilities for assessment may not appear in the published position description, but may appear as a topic for presentation during a campus interview, or may be a competency explored during a search

committee meeting. Owing to these limitations, the results of this study are exploratory in nature, and may raise questions suitable for one or more future studies rather than present definitive evidence generalizable to the field, as a whole.

The position descriptions included in the study were analyzed to determine the degree to which assessment skills were included as required or preferred elements in the recruitment process. Using as a model for “evidence of organizational commitment to building a new, professional capacity across the organization,” the example of position descriptions for instruction librarians and coordinators, the authors looked for the following elements in the position descriptions under study:

- Does the position description identify assessment as a general or specific responsibility for the position?
- Does the position description note as a required or preferred characteristic for the successful candidate any specific experience in designing, conducting, or reporting the results of assessment in libraries and/or higher education?
- Does the position description note as a required or preferred characteristic for the successful candidate general knowledge of the field of assessment in libraries and/or higher education?
- Does the position description identify any areas of specialized assessment skills required for success in meeting the responsibilities of the position, e.g., assessment of student learning outcomes?
- Does the position description describe how the required or preferred assessment skills will be employed in pursuit of the promotion of library goals, programs, or professional development?

Results

Content analysis of 395 position descriptions revealed that only 16% (n=65) included any description of responsibility for assessment or identification of specific assessment skills required for professional success. Of these 65 position descriptions:

- 37% mention collection evaluation or use statistics
- 18.5% mention information literacy assessment

- 15% mention assessment of “services”
- 12% mention assessment as an element of responsibilities for strategic planning

In addition, each of the following phrases is included in 1 position description included in the study sample:

- Needs assessment
- Assessment of library publications
- Assessment of operations
- Assessment of outcomes
- Assessment strategies
- Oversight of assessment and evaluation

In some cases, more than one type of assessment skill is included in the same position description, but, in general, the phrases used to describe professional responsibilities for assessment in academic libraries are quite vague. In a few cases, assessment wording is slightly more descriptive, but still lacks the substantive detail that we might expect (and that we routinely find in the description of more “established” positions in academic libraries, e.g., for subject specialists, instruction librarians, and administrators at the department, program, or library level). For example, one position description (Subject Specialist) states that the successful candidate will “provide, promote, measure, and assess the delivery of high-quality programs, services, and collections.” Another (Head of Reference) suggests that this position is responsible for “leading planning and assessment efforts.” A third (Associate Dean) states that the successful candidate will provide “leadership in planning, implementing, managing, and assessing programs related to serving users.” One example emphasized assessment in a manner more consistent with the way in which traditional professional responsibilities are described: a description for a Head of Instruction to be charged with: 1) planning, developing, marketing, and evaluating library instruction; and 2) representing the library on campus in regard to initiatives like student learning assessment. Another example included “experience with LibQUAL+® or other assessment tools” as a preferred qualification (although, ironically, no mention of assessment was included in the general description of responsibilities for this position). Although these examples show a bit more detail than the vast majority of position descriptions studied, there were few position

descriptions in the sample pool that cited specific and detailed assessment skills as either a required or preferred qualifications for hire, and none in which defined responsibility for assessment (even vaguely defined) was tied to specific experience with assessment or competency in discrete areas of assessment as a requirement for recruitment.

Discussion

Clearly, evidence suggests we are not doing all we can to promote the culture of assessment in academic libraries through the recruitment of library professionals who see assessment as a well-defined component of their professional responsibilities, or as a component of professional responsibility met through the acquisition of discrete professional skills. Few position descriptions mention assessment skills at all, and when they are mentioned, it is most often in the (important, but limited) context of collection evaluation. Indeed, it is unclear whether even the position descriptions that refer to a responsibility for conducting collection evaluation and collecting statistics on use are truly reflective of the broader vision of library assessment skills found in the discussion of the “culture of assessment.” Rather, references to collection evaluation may in fact refer to use counts exclusively, not outcomes-based assessment or the collection of data designed to promote data-informed decision making.

Spurred by the paucity of assessment skills included in academic library job descriptions, the authors began an exploration of assessment skills included in higher education position descriptions outside of librarianship. One conclusion the authors drew from this brief foray into the literature of higher education is that librarians are not alone in finding a gap between the discussion of the need for greater professional capacity for, and commitment to, assessment activities, and the manner in which new professionals are recruited into the organization. Seagraves and Dean, for example, found that student affairs professionals reported that assessment skill expectations were communicated informally, rather than formally, were not routinely included in annual review processes, and may or may not have appeared at all in position descriptions.⁶ Even so, a brief review of higher education position descriptions advertised in the Chronicle of Higher Education during a

two-month period in 2010 identified ten positions that clearly delineate assessment skills needed to establish a culture of assessment. While these are not academic library position descriptions, they supplied several assessment skill descriptions librarians might find helpful as they word future position descriptions in an effort to hire candidates with the assessment skills necessary to establish and promote a culture of assessment in their organizations.

Basic assessment skills found in higher education position descriptions include the ability to:

- Define and refine outcomes
- Create an assessment plan
- Identify data needs
- Develop studies to respond to data needs
- Select appropriate assessment measures
- Analyze and interpret assessment results
- Communicate and report assessment results
- Demonstrate skill in data analysis, presentation, and organization
- Prepare data for decision-making processes

These skill descriptions might be added to any academic library position, with specific connections to tasks, tools, and campus efforts aligned to area of professional responsibility, e.g., collections, reference, instruction, scholarly communications, information technology, etc. An “assessment-enhanced” position description for a reference librarian, for example, might include statement such as the following:

The successful reference librarian candidate will design and promote a program of reference services, instructional offerings and collection services. . . . will deliver and assess reference, instruction, and collection effectiveness by identifying relevant outcomes, participating in the development of strategic assessment plans, and analyzing data . . . will communicate assessment results to interested stakeholders and use them for continuous improvement. Requirements include: background or experience in evaluation and assessment; familiarity with assessment planning and data systems; awareness of institutional assessment and accreditation activities; ability to plan, design, implement, and assess library programs and services, including reference, instruction, and collections; familiarity with reference service

assessment tools and techniques, e.g., the READ scale.

Higher education position descriptions also supply wording for more advanced assessment skills, including the ability to:

- Develop, implement, and manage an assessment program to support the organizational or institutional mission, vision, and strategic initiatives
- Consult with units or departments; work with academic and administrative leaders to develop, maintain, and conduct assessment activities
- Monitor assessment activities across the institution
- Train faculty and staff in assessment skills
- Provide technical expertise in a selection of assessment measures
- Develop, implement, and maintain systems for collecting, analyzing, and interpreting assessment data
- Employ assessment management methodologies and applications
- Prepare data for decision-making processes, communication with external stakeholders, and accreditation purposes

These skills might be reasonable to seek in library assessment leadership or supervisory positions, and might be considered in conjunction with the position descriptions included as part of the Wright and White study.

Conclusion

In order to establish a true culture of assessment in academic libraries, librarians at all levels must acquire and enact the assessment skills required to participate in such a culture. Practicing librarians can develop their assessment skills by participating in professional development and pre-service librarians can enroll in courses designed to teach these skills. However, a third solution to the lack of librarian assessment skills is

in order—assessment skills can be integrated into academic librarian position descriptions and performance expectations. Currently, few librarian position descriptions include assessment skills and virtually none include assessment skills as required or preferred qualifications during the recruitment process. To bolster the presence of these skill sets in academic libraries, librarians can look to other higher education position descriptions for inspiration, mining them for both basic and advanced assessment skills. Once academic libraries explicitly set expectations for librarians to have assessment skills, they can advance the development of assessment cultures in their organizations.

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Notes

1. This paper was originally presented as part of the 2010 Library Assessment Conference held in Baltimore, Maryland. The original conference presentation is available through the IDEALS institutional repository at <http://hdl.handle.net/2142/17375>.
2. A. Lakos and S. Phipps, "Creating a Culture of Assessment: A Catalyst for Organizational Change," *portal: Libraries and the Academy* 4, 3 (2004): 345-361.
3. *Ibid.*, 351.
4. S. Wright and L. White, *SPEC Kit 303: Library Assessment* (Washington, DC: Association of Research Libraries, 2007), 14.
5. Wright and White.
6. B. Seagraves and L. A. Dean, "Conditions Supporting a Culture of Assessment in Student Affairs Divisions at Small Colleges and Universities," *Journal of Student Affairs Research and Practice* 47, 3 (2010): 307-324.

Using an Availability Study to Assess Access to Electronic Articles

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Abstract

Purpose

How does a library assess the availability of its electronic journals? In most cases, the library can identify problems with access only when a patron asks for assistance. The Oregon Health & Science University (OHSU) Library wanted to identify barriers to access proactively, so we modified Kantor's availability study methodology to evaluate access to electronic articles via our link resolver and catalog. Using this methodology, we hoped to identify major barriers to access so that we could direct our limited resources where they would have the greatest positive impact on our users. In this paper, we discuss how we used an availability study to evaluate access to electronic articles.

Design/Methodology/Approach

Our link resolver vendor, Innovative Interfaces, Inc., was able to provide us with log files containing URLs of articles that patrons had attempted to access via the resolver. These log files included complete openURLs, as well as any full text or other links the user clicked in the link resolver window. We analyzed logs of link resolver activity on 6 different days between November 3 and November 30, 2009, and on 5 different days between March 4-18, 2010. We tested a random sample of 414 log entries. For each item, we accessed the openURL in the log file and attempted to retrieve the article via both the link resolver and the library catalog. We recorded whether or not we were successful and, if not, the reason for the failure. We also recorded general information about the article, such as publication year.

Findings

Of 414 articles tested, 310 were available electronically, and an additional 21 were available in print, for an overall availability rate of nearly 80%. Of the 83 unavailable articles, 73 were

unavailable because the library's subscription did not include them. The link resolver introduced additional points of failure. Of the 310 articles available electronically via the library catalog, only 261 were available via the link resolver with no problems. An additional 19 were available but with at least one problem, and 27 could not be retrieved via the link resolver. The majority of link resolver problems were related to incomplete metadata.

Practical Implications/Value

Providing a user-centered experience is the highest priority defined in the OHSU library's strategic plan. One way to do that is to give our users the information they want, when and where they want it, via electronic delivery tools. Our experience shows that an availability study can help libraries assess user access to electronic collections and focus resources on the problems that will most improve that access, thereby improving the user experience. We hope that other libraries can replicate or modify our work in their own settings.

Introduction

In an academic health sciences library, journals are the most heavily-used and most expensive part of the collection. Collection management staff at the Oregon Health & Science University Library have collected copious amounts of usage data, which is reviewed carefully when collection decisions are made. What we did not have, however, was information on which articles our users are attempting to access, how successful they are, and what gets in their way. Interlibrary loan requests can indicate demand for articles the library does not own, but we suspected that many users do without a desired article rather than paying and waiting for an interlibrary loan. Requests for help can indicate problems with existing subscriptions, but again, we suspected

that many users gave up when they were unable to retrieve an article rather than contacting the library for assistance. What we needed was a way to look over the shoulders of users to see which articles they wanted and what happened when they tried to get them. We needed an availability study.

Literature Review

An availability study is a method, first described by Kantor¹, for evaluating how well a library satisfies user requests. Traditionally, users were asked to write down information about the book or journal article they were seeking and whether or not they found it. Library staff would then attempt to track down items the user could not find and document why they could not be found. Many availability studies of print materials have been published in the library literature, most of which are discussed in two comprehensive review articles: Mansbridge² reviews availability studies published up to 1984, while Nisonger³ reviews those published since then. Nisonger also explains availability studies very well: what they are, what can be learned from them, and how to do them. In a later article,⁴ he applies the availability study methodology to electronic articles, evaluating 500 citations chosen "to simulate the needs of researchers on Indiana University's Bloomington campus."⁵ As of this writing, no availability studies of electronic articles in academic health sciences libraries have been published, though the results of one unpublished, undated study have been reported by Squires, Moore, and Keese.⁶

Because our study addresses the performance of the library's link resolver, it is worth noting a few key articles related to this topic. In 2006, Jayaraman & Harker⁷ compared the performance of two different link resolvers at the UT Southwestern Medical Center Library. They found a success rate of over 89% for one and just 58% for the other, suggesting that performance can vary considerably from one link resolver product to another. Wakimoto, Walker, and Dabbour⁸ surveyed users, conducted focus groups with librarians, analyzed usage statistics, and tested sample citations to evaluate expectations and actual experiences with the SFX link resolver. More than half of the users in their study said that the resolver did not meet their expectations,⁹ and about 20% of the citations they reviewed contained errors.¹⁰

As of this writing, no availability studies have been published which evaluate electronic articles actually sought by users; nor have any articles been published which evaluate the role of the link resolver in article availability. We hope this study will begin to fill those gaps.

Background and Setting

Oregon Health & Science University (OHSU), the only publicly-funded academic health sciences center in Oregon, offers degrees in medicine, dentistry, nursing, basic sciences, and biomedical engineering. The library serves the faculty, staff, students, and patients of OHSU, as well as health practitioners throughout Oregon. All journals, print and electronic, to which the library subscribes are listed in the library catalog, which runs on the Millennium software from Innovative Interfaces. The library shares a catalog with two other academic health sciences libraries in Portland, the National College of Natural Medicine and the University of Western States, and journal holdings from all three libraries appear in the catalog. Electronic holdings, however, are available only to users of the subscribing library. We also use Innovative's Electronic Resource Management system and WebBridge, Innovative's link resolver. The electronic resources management system and link resolver share a knowledge base of information on electronic holdings; these holdings are also displayed in the catalog. Most of the holdings data is maintained by the library staff directly rather than purchased from a vendor, though the library does purchase holdings data for free/open access titles from EBSCO via their A-Z product. The library uses EZproxy to provide remote access to electronic resources. Together, these systems provide both the user interface and backend management tools that allow the library to deliver electronic articles to users.

Methodology

Users access OHSU's journal collection via both the link resolver, which is integrated into the library's databases, and the catalog. Hence we evaluated access via both tools to identify and quantify points of failure involved in retrieving electronic articles. We used the basic techniques of an availability study—attempting to access specific library resources and documenting the success (i.e., availability) rate and reasons for failures—but analyzed and reported results using

Pareto charts and tables that illustrate the significance of our results.

To make our results as relevant as possible, we wanted to analyze the availability of articles sought by users rather than creating a sample set of articles ourselves. Fortunately, our WebBridge link resolver logs each user request. Each time a user clicks on the link resolver button in a database or other origin, WebBridge records the date, time, and openURL for the request in a temporary log file. If any links are clicked from the resolver menu, e.g., a link to full text, an additional entry is made in the log. When the log file reaches a maximum size of 1 MB, the oldest half of the file is discarded. This file is not normally accessible to the library, but the vendor, Innovative Interfaces, agreed to send the contents of the file every Tuesday and Thursday between November 3-30, 2009, and again between March 4-18, 2010. We cleaned up the log files in Microsoft Excel 2007 to remove extraneous entries, e.g., for web page elements such as cascading stylesheets or images.

Sampling and Data Cleanup

A random sample of 414 entries was tested. Only entries representing journal articles were tested; entries for electronic books or other materials were skipped. Obvious duplicates (the same openURL accessed multiple times within a few minutes) were also skipped. Later, as results were analyzed, errors in coding were discovered for four articles. They were rechecked in August, 2010. Correct coding could be determined for two of the four, and the remaining two were deleted from the sample.


We used an Excel spreadsheet to record the following general information about each article request in the sample: origin database (i.e., the

database the patron was using when accessing the link resolver), journal title, year of publication, and whether or not the user clicked any links in the link resolver window (as indicated by the presence or absence of additional log entries for links clicked). We then attempted to retrieve the article in question using both the link resolver and library catalog. Most testing was done from workstations in the library, but some was done using a laptop located outside the campus network, with staff logging in via EZproxy to access resources. Results were recorded in the spreadsheet, along with the nature and cause of any problems, using the codes listed in Appendix A.

Testing retrieval via the link resolver

To test via the link resolver, staff copied the openURL in the log file and pasted it into a web browser window, thereby displaying the link resolver menu of retrieval options as shown in Figures 1 and 2. If one or more full-text, article-level links (i.e., links to the specific article rather than the journal home page) were offered, as in Figure 1, staff clicked the first one. If the article could be retrieved electronically, in either PDF or HTML format, staff coded availability as indicated in Appendix A and tested retrieval in the catalog as described in the next section. If unsuccessful, staff repeated the procedure with any other available article-level links until the article was successfully retrieved, or no more article-level links were available. Staff then proceeded to journal-level links (i.e., links to the journal home page rather than the specific article), if available, following a similar procedure until the article was successfully retrieved or all full text links had been tested. If the article could not be retrieved, staff attempted to retrieve the article using a link to the catalog or other option offered by the link resolver, as shown in Figure 2.

Figure 1: Menu of article- and journal-level links from link resolver

Find It@OHSU Library 

- Help
- Customer Support

Title: *Road safety in drivers with Parkinson disease.*
Author: Uc
Source: **Neurology** (ISSN 0028-3878) 2009 73 (24): 2112-

Link to article - OHSU only

Full-text available through LWW
LIB HAS 01-01-1999 -

Full-text available through Total Access (Ovid)
LIB HAS 01-01-1995 -

Browse journal - OHSU only

Journal available through MDConsult
LIB HAS 01-01-1996 -




Having trouble finding what you need? Contact the library using our online form or call  503-494-3462 .

Figure 2: Menu of full text and other retrieval options from link resolver

Find It@OHSU Library 

- Help
- Customer Support

Title: *Minamata disease: Catastrophic poisoning due to a failed public health response.*
Author: Tsuda
Source: **Journal of Public Health Policy** (ISSN) 20090301 30 (1): 54-

Check for Full-Text - OHSU only

Full-text access through EBSCOHost
LIB HAS 03-01-2006 - 08-30-2009

Library Catalogs



OHSU/SEL/NCNM/UWS Library Catalog (Journals only)
Search to see if library has *Journal of Public Health Policy*

Interlibrary Loan

Request article through Interlibrary Loan

Web Resources

Try a **Google Articles** search to see if the author has archived a pdf copy of the article

Having trouble finding what you need? Contact the library using our online form or call  503-494-3462 .

We recorded the test results, indicating whether or not full text was available via the resolver using article- or journal-level links. When there was a problem with a link, we recorded the source of the problem (resolver, origin, metadata, etc.) and its nature. In some cases, multiple problems were associated with a single article. A complete list of problems and codes is included in Appendix A.

Testing retrieval via the catalog

For each article, once testing in the link resolver was completed, staff tested retrieval via the catalog. We began by searching for the journal title in a subset of the catalog that contains only journals (see Figure 3 below).

Figure 3: Journal search page in library catalog

OHSU | OHSU Library | Science & Engineering Library | NCNM Library | ONPRC Library | UWS Library
Main menu | OHSU Library Catalog | Science & Engineering Catalog | NCNM Catalog | ONPRC Catalog | UWS Catalog
CUSTOMER SUPPORT

Keyword Title **Journals** Author Subject Reserves Other

Journal Search

Search PRINT AND ELECTRONIC JOURNAL TITLES (not articles)

JOURNAL TITLE BEGINS WITH:

annals of internal medicine

Enter the first word or abbreviation of the JOURNAL TITLE.
Example: Journal of Biological Chemistry or J Biol Chem.
Expand search by using KEYWORD search below.

KEYWORD SEARCH:

Search for title, subject or publisher by KEYWORD.
[Tips on limiting searches](#)

SUBJECT SEARCHES:

Select search from list

OHSU licensed online journals
A | B | C | D | E | F | G
H | I | J | K | L | M | N
O | P | Q | R | S | T
U | V | W | X | Y | Z

Free online journals (A-Z) | [MedBioWorld](#)

[RSS](#) OHSU print journals received today | [What is RSS?](#)

Problems accessing an ejournal or article? Contact [Library customer support](#).

[Search for only OHSU journals](#)

OHSU/ONPRC/NCNM/WSCC Libraries
My Library
▷ Your patron record
▷ Your ILL Express record
▷ Renew materials
▷ Suggest a purchase

Other catalogs
▷ Summit | What is this?
▷ New Summit catalog FAQ
▷ WorldCat | What is this?
▷ Digital Resources Library

About the library
▷ Library services
▷ Library hours

[Help](#) [Ask a Librarian](#)

If that search was unsuccessful, staff searched the journal collection using title keywords. If that failed, they searched the journal's ISSN. If all of those searches failed, the process was repeated searching the entire collection rather than limiting the search to journals. If those searches also failed, we assumed that the library had no holdings for the title.

If a record was found, the tester reviewed the holdings statements to determine whether the library's subscription(s) to the title should include the requested article (see Figure 4 below for an example of a record with holdings statements). If the catalog indicated that electronic access was

available, the tester clicked the first appropriate link and navigated to the article on the full text site. If the article could be retrieved, in PDF or HTML format, the article was considered to be available electronically. If the article could not be retrieved, the tester recorded the reason for the failure.

If the library had some electronic holdings for the title, but not the specific article requested, testers noted how the requested article related to existing electronic holdings: older, newer, part of a gap in holdings, or missing. Problems not related to the range of electronic holdings were also noted. See Appendix A for a complete list of conditions noted and codes used.

Figure 4: Catalog record for journal, showing electronic and print holdings

Record: [Prev](#) [Next](#)

Title	New England journal of medicine	
Imprint	Boston, Massachusetts Medical Society.	
Continues	Boston medical and surgical journal	

Copy Status Find Similar Items Full Record

Electronic Access:

<u>Full text available to Oregon Health & Science University from Massachusetts Medical Society</u>	Jan. 01, 1993-	Terms of Use
<u>*FREE* Full Text available from Free Medical Journals *FREE*</u>	Jan. 01, 1993-Feb. 18, 2010	Terms of Use
<u>*FREE* Full Text available from Free Access Journals (Highwire) *FREE*</u>	Jan. 01, 1993-Feb. 18, 2010	Terms of Use
<u>Full text available ONLY to University of Western States users from Massachusetts Medical Society - No off campus access</u>	Jan. 01, 1993-	Terms of Use

University of Western States is the new name for Western States Chiropractic College

<i>Location</i>	NCNM JOURNAL STACK
<i>Identity</i>	NCNM
<i>Lib Has</i>	v.340:no.1 (1999)-
<i>Latest Received:</i>	August 12, 2010 v.363 no.7
<i>Location</i>	OHSU MAIN - PRINT JOURNALS
<i>Lib Has</i>	v.198 (1928)-
<i>Latest Received:</i>	August 19, 2010 V.363 N.7

This process was repeated with any additional full text links, until the article was retrieved successfully. If the article could not be retrieved successfully via any electronic links, the tester examined any available holdings statements for print copies (see Figure 4). If the catalog indicated that print holdings were available, the article was considered to be available in print only. Testers did not attempt to retrieve the article from the journal stacks. If the article could not be retrieved electronically, and the catalog did not indicate that print holdings were available, the article was considered to be unavailable.

It should be noted that this study represents a hybrid of a real and a simulated availability study as described by Nisonger,¹¹ in that we used items which real users attempted to retrieve, but we did not involve users or user behavior directly in the study, primarily because it would have been logistically challenging to do so.

Results

We analyzed the results in Excel to answer the

following questions:

- What was the availability rate for articles via the link resolver and the catalog, and how do they compare?
- What problems were encountered when trying to retrieve articles via the link resolver and catalog? How common were they?
- How were other factors or characteristics of article requests related to availability?

Availability Rates via Catalog and Link Resolver

We considered an article to be available if it could be retrieved using full text links found in the library catalog, which serves as the master source of holdings information for the OHSU Library. Of the 414 citations tested, 310 were available electronically (74.88%), and an additional 21 were available only in print (5.07%), for an overall availability rate of 79.95%. Only 261 (63.04%) were available electronically via the link resolver with no problems. An additional 19 (4.59%) were available via the link resolver but with at least one problem. So, as shown in Table 1, 27 articles were

available electronically via the catalog but could not be retrieved via the link resolver, which

suggests that access to articles via a link resolver involves additional points of failure.

Table 1: Summary of availability via catalog and link resolver

Availability via link resolver	Availability via catalog		
	Available electronically	Available in print only	Not available
Available with no problems	261	0	0
Available with problems	19	0	0
Not available	27	21	83
Availability unclear due to incomplete data	3	0	0
Total	310	21	83

Problems Encountered When Retrieving Articles via the Catalog

In keeping with the purpose of an availability study, we analyzed the data to identify barriers to accessing full text via both the catalog and the link resolver. But we reported the results in a different format from that used by Kantor,¹² using Pareto charts to illustrate the percentage of problems caused by each factor. These charts make it easy to see which barriers are most common, so we can allocate resources in the most effective ways. Pareto charts were created in Microsoft Excel using instructions found online.¹³

Table 2 and Figure 5 show the reasons why requested articles were not available electronically via the catalog. Lack of holdings was the biggest barrier to access. This problem is broken down into several subcategories:

- No electronic or print holdings for any issues of the journal
- Article is available in print only; no electronic holdings
- No electronic or print holdings for the article,

but the library has other electronic holdings for the title. The article is not available because:

- The article is more recent than available holdings
- The article is older than available holdings
- The article falls into a gap in holdings

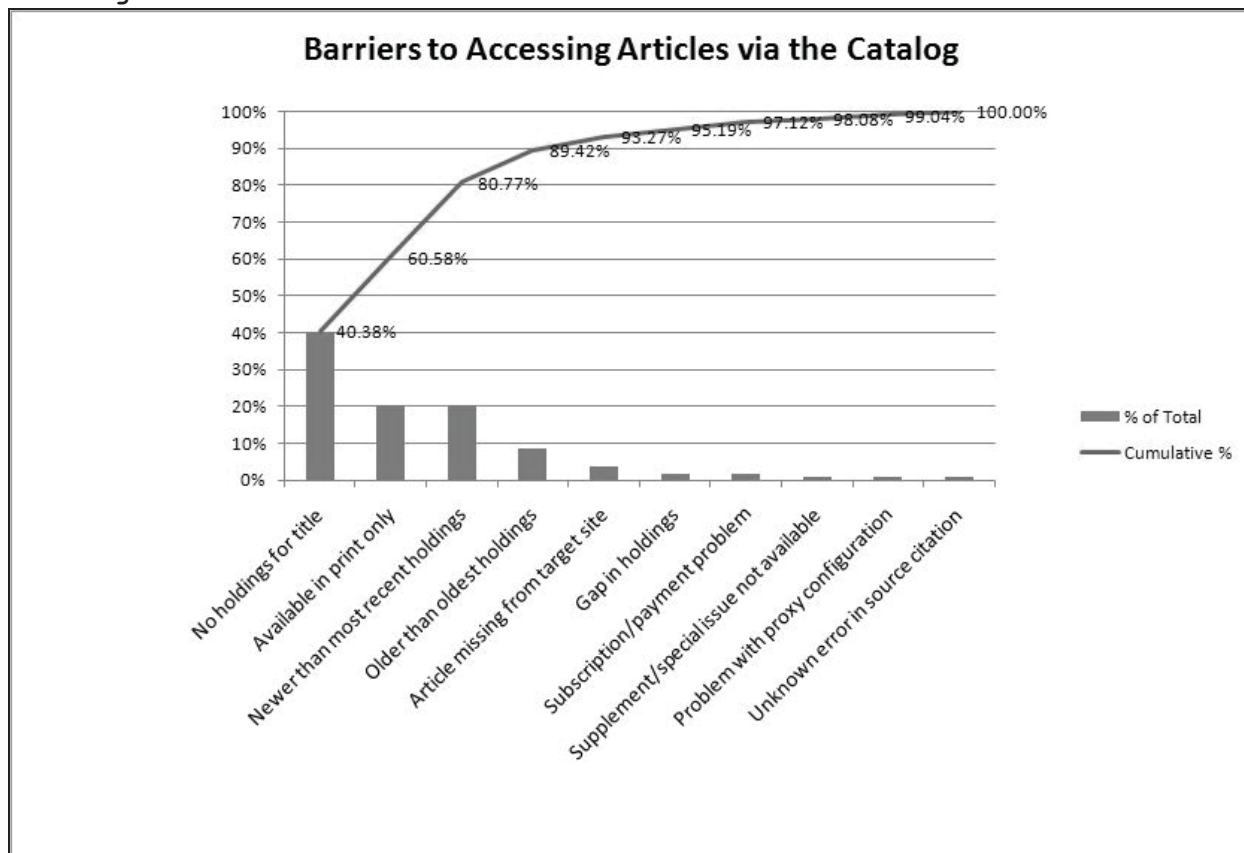
Problems not related to holdings accounted for less than 8.5% of problems:

- The article falls within the library's holdings, but it is missing from the provider's site.
- The article is not available because of a problem with the subscription or payment.
- The article is in a supplement or special issue that is not available electronically, and the library does not have print holdings either.
- The article cannot be retrieved, because the proxy server is not configured correctly.
- The article cannot be located because information from the journal site does not match information in the source citation (i.e., the citation is probably incorrect).

Table 2: Barriers to Accessing Articles via the Catalog

Problem	Count	Percent
No holdings for title (print or electronic)	42	40.38%
Available in print only	21	20.19%
Article newer than most recent holdings	21	20.19%
Article older than oldest holdings	9	8.65%
Article missing from target site	4	3.85%
Gap in holdings	2	1.92%
Subscription/payment problem	2	1.92%
Supplement/special issue not available	1	0.96%
Problem with proxy configuration	1	0.96%
Unknown error in source citation	1	0.96%
Total	104	100.00%

Figure 5: Pareto chart showing barriers to accessing articles via the catalog



Problems Encountered When Retrieving Articles via the Link Resolver

Testers coded problems with the link resolver in two situations:

- The resolver offered a link to full text that did not work correctly
- The resolver did not offer a link to full text, but full text was available and therefore a link should have been offered.

In each of these cases, we indicated the nature of the problem. In some cases, a single article generated more than one problem, because the resolver offered more than one full text link for

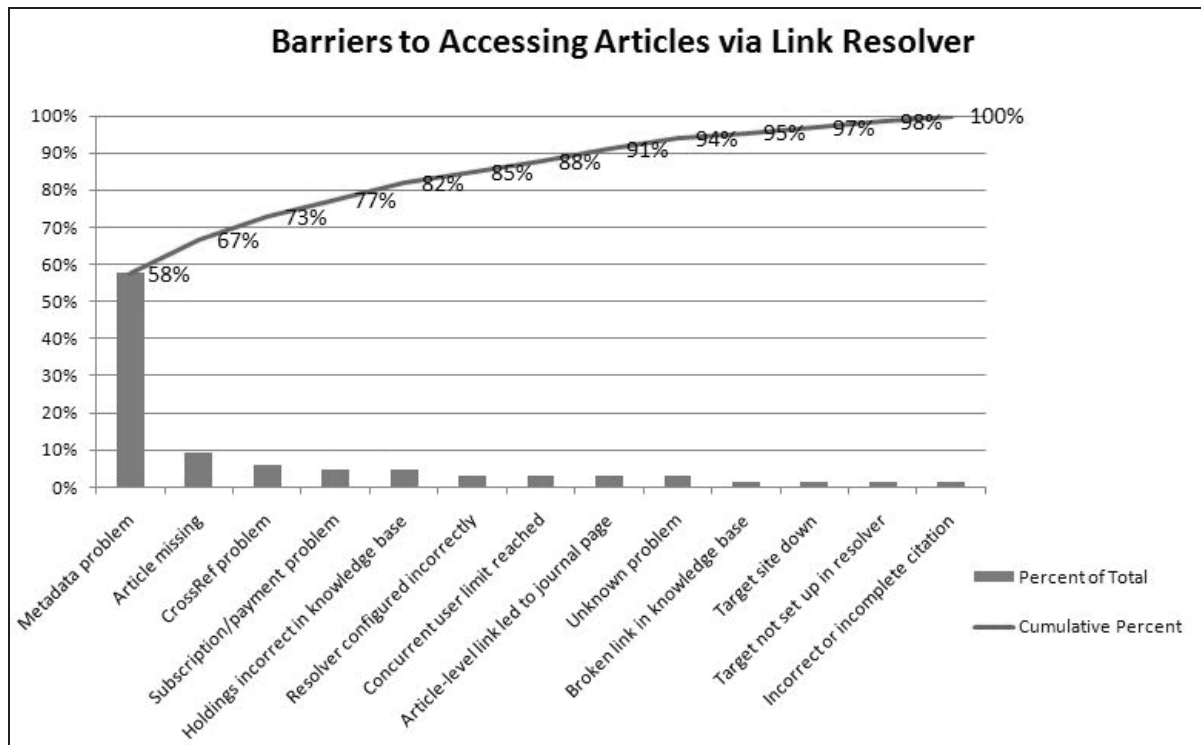
that article.

Table 3 and Figure 6 show the reasons why requested articles were not available electronically via the link resolver. More than half of the 66 problems were related to incomplete or inaccurate metadata in the openURL generated from the origin. Most commonly, the target required a piece of metadata (e.g., issue number) that was not included in the openURL. Missing articles were the next most common problem, causing 6 problems (9% of failures), and problems with the CrossRef service accounted for 4 more problems (6.06% of failures).

Table 3: Barriers to accessing articles via the link resolver

Problem	Count	Percent of Total	Cumulative Percent
Incomplete or inaccurate metadata	38	57.58%	57.58%
Article missing from provider site	6	9.09%	66.67%
CrossRef down or unable to process request	4	6.06%	72.73%
Subscription/payment problem	3	4.55%	77.27%
Holdings incorrect in knowledge base	3	4.55%	81.82%
Resolver configured incorrectly	2	3.03%	84.85%
Concurrent user limit reached	2	3.03%	87.88%
Article-level link led to journal page	2	3.03%	90.91%
Unknown problem	2	3.03%	93.94%
Broken link in knowledge base	1	1.52%	95.45%
Target site down	1	1.52%	96.97%
Target not set up in resolver	1	1.52%	98.48%
Incorrect or incomplete citation	1	1.52%	100.00%
Totals	66	100%	

Figure 6: Pareto chart showing barriers to accessing articles via the link resolver



It is also worth noting the problems that we expected but that did not occur. No problems were caused by origins configured incorrectly, proxy server issues, or supplements not available electronically. Interestingly, problems with the proxy server and with supplements did occur—rarely—when accessing full text from the catalog. We did not document the reasons for these anomalies, but it is possible that full text was accessed from a different source when using the link resolver than when using the catalog. Many of our journals are available electronically from more than one source, and sources sometimes appear in a different order in the link resolver window than they do in the catalog.

Availability Related to Publication Date

We analyzed the availability rate by publication date in order to identify patterns that could inform collection development decisions. These results are summarized in Table 4. As shown, articles published prior to 1990 made up only 5.80% of requests, but the availability rate of 66.67% is significantly lower than the overall rate of 79.95%. This discrepancy most likely reflects patterns in publishing and library purchasing.¹⁵ Having this data by publication year will enable the library to make data-driven decisions about purchasing electronic backfiles.

Table 4: Availability by publication date range

Publication Year	N	Available electronically	Available in print only	Overall availability rate
2005-2010 ¹⁶	277	217	4	79.78%
2000-2004	68	52	5	83.82%
1995-1999	28	22	2	85.71%
1990-1994	17	9	4	76.47%
Pre-1990	24	10	6	66.67%
Total	414	310	21	79.95%

Availability Related to Origin

We also analyzed the availability rate and rate of problems by the database in which the request originated, known in openURL parlance as the origin. As shown in Table 5, the availability rate varied considerably by origin, most likely due to the origin's scope of coverage. Scopus has broad coverage across the sciences and social sciences, and OHSU's Ovid platform includes PsycInfo and other social sciences databases. Because OHSU is

a standalone biomedical campus, its holdings focus on the biomedical sciences and are, therefore, less comprehensive in other areas. The big surprise, however, is the high availability rate for Google Scholar, which also includes broad coverage of fields outside of biomedicine yet has the highest availability rate of any origin in our study. Further research would be required to determine why the availability rate from Google Scholar is so high.

Table 5: Availability by origin database

Origin	N	Available electronically	Available in print only	Overall availability rate
CINAHL	46	36	0	78.26%
Google Scholar	31	28	1	93.55%
Ovid ¹⁷	79	50	4	68.35%
PubMed	229	178	16	84.72%
Scopus	18	10	0	55.56%
All others ¹⁸	11	8	0	72.73%
Total	414	310	21	79.33%

Because the origin of a link resolver request is the primary source of metadata for processing the request (the other source being the resolver's knowledge base), and the majority of link resolver errors were caused by incomplete or incorrect metadata, it was important to analyze the number and nature of link resolver errors by origin. The results are shown in Table 6, which was generated after removing:

- One request for which the origin was unknown
- Problems clearly unrelated to the origin (e.g., missing articles, subscription/payment problems)
- Origins from which there were fewer than ten requests

Table 6: Link resolver problems by origin

Problem	EBSCO: CINAHL	Google Scholar	Ovid	PubMed	Scopus	Total
Metadata incomplete, inaccurate, or incompatible between origin and full text target	3	9	6	18	4	40
CrossRef down or unable to process request	1	0	1	2	0	4
Resolver configured incorrectly	0	0	2	2	0	4
Article-level link led to journal page	0	0	0	1	0	1
Unknown problem (not recorded)	0	2	0	1	0	3
No error	40	19	69	203	12	343
Total Requests	46	31	79	229	18	403
Total Errors	4	11	9	24	4	52
Error Rate (Total Errors/Total Requests)	8.70%	35.48%	11.39%	10.48%	22.22%	12.90%

As shown in Table 6, the error rate varied considerably across origins. Requests generated from Google Scholar had the highest error rate, and all but 2 errors were caused by metadata problems. Scopus requests also generated a high error rate, with 4 errors in 18 requests, all caused by metadata problems. This analysis suggests that the quality of metadata from the origin is a key factor in the success of link resolver requests.

Discussion

Availability issues

We were not surprised to find that the biggest barrier users face when retrieving articles is the lack of electronic holdings. Libraries certainly cannot buy everything, and as interdisciplinary work in the health sciences increases, we can expect more requests for articles outside of core biomedical disciplines. This finding, however, does suggest that additional electronic subscriptions should be a top priority. Even though they were not surprising, our results provide data to inform decisions about allocating scarce resources (i.e., time and money). For example, occasionally we hear complaints from users (and sometimes staff) that the link resolver “doesn’t work.” As a result, some staff have suggested replacing our current resolver with a different product. The results of this study suggest that the vast majority of access problems have little to do with the specific link resolver we use. Hence a different resolver would be unlikely to improve the user experience, and scarce budget dollars would be better spent on additional journal subscriptions or backfiles.

Our results also suggest that embargoes may be a significant barrier to access. Publishers sometimes embargo current issues, especially when making their content available through third-party full text aggregators (e.g., EBSCOHost, ProQuest). During the embargo period, which can range from a few weeks to two years following publication, the journal articles are not available in the aggregated database. In our study, just over 20% of access problems occurred when the requested article was newer than the most recent electronic holdings. In these instances, we did not document whether or not the problem was the result of an embargo. But since we purchase considerable content from aggregators, we suspect that embargoes are the culprit in many of these cases. Further study would be required to

determine the extent to which embargoes prevent our users from accessing the articles they need.

Another 20% of access problems were associated with articles available in print only. Traditional availability studies would count these articles as available (assuming they were in fact on the shelves, which we did not verify), and we also counted them as available when calculating the overall availability rate. However, that user expectations suggest that print is not an acceptable substitute for electronic access. Results of web usability testing at the OHSU Library in 2006 suggest that if the link resolver does not link directly to the full text of an article, users perceive it as broken. Squires, Moore, and Keesee report similar results from usability studies at the University of North Carolina at Chapel Hill Health Sciences Library. They report that their users favor electronic access and often eschew articles that are not available electronically. They write, “Participants in the HSL’s 2006 usability studies report that they often use articles only if they are available electronically and, if a citation they wish to access is not represented by a quick link to full text, they will look for full text using PubMed’s related articles feature rather than search for the article by first locating the journal title in the online catalog.”¹⁹ Similarly, in a review article on use of electronic journals, Rowlands cites several articles indicating that use of print journals has declined rapidly, whether or not those journals are available electronically. He comments, “Users are now so dependent upon convenient desktop access that content that isn’t online might as well not exist.”²⁰ So, while this study treats articles available in print only as available, some evidence suggests that users may not do the same.

Link resolver issues

In many ways, link resolvers simplify access to full text. They allow libraries to create and maintain a single knowledge base of holdings, which are made available via the resolver in all of the library’s databases. They also allow libraries to offer a menu of additional options (e.g., print holdings, interlibrary loan request form), which is especially important when full text isn’t available electronically. But retrieving full text via a link resolver involves many potential points of failure. An origin database sends openURL metadata to a link resolver. The resolver then uses its

configuration rules and knowledge base of library holdings to present a menu to the user and construct links to full text targets, or in some cases, intermediate services such as CrossRef. These links contain metadata that lead the user to the full text of an article on the target site—if nothing has gone wrong along the way. Unfortunately, as our results indicate, things go wrong more often than we would like, with the majority of problems related to the metadata passed from origin to target via the link resolver. The OpenURL standard defines the structure of an openURL but does not specify the behavior of the link resolver or the full text target. Nor does it specify which pieces of metadata must be included in an openURL.²¹ Without a standard, metadata can vary from one origin database to another, and libraries often have little or no control over the way an origin generates an openURL. Similarly, linking syntax varies considerably among full text targets, with some requiring certain pieces of metadata (e.g., issue number) that may not be sent by the origin. Again, libraries have little to no control over the way full text targets process requests.

Given this situation, it is not surprising that over half of the link resolver problems in our study were caused by incomplete, inaccurate, or incompatible metadata. Further study is required to identify error patterns associated with each origin. It would also be useful to document the full text target of each request, to see if error patterns are associated with particular targets or origin-target combinations. If patterns were identified, we could share that information with the database and full text vendors and lobby for improvements.

Conclusions

This study provides useful results that the OHSU Library can use when making decisions about its electronic collections. It is important to note, however, that other libraries would likely get results that differ from ours, possibly significantly, because many factors affecting our results (e.g., scope of collection, origin databases, data management practices) vary from library to library. Repeating this type of study in other libraries likely would provide more useful and generalizable information about the barriers library users face when attempting to retrieve journal articles. In other words, our findings may

not be useful in other settings, but our method should be. An availability study is a relatively low-cost method for learning a great deal about the experience of retrieving articles from a library's collection. It provides data to help allocate scarce resources effectively when developing and managing electronic collections. It also exposes library staff to the experience of retrieving large numbers of articles, which may differ from their expectations.

In this time of diminishing budgets, stakeholders and funders are demanding accountability, and libraries are expected to assess outcomes and make data-driven decisions. An availability study is a powerful tool in the assessment toolbox.

—Copyright 2011 Janet Crum

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12. Kantor.
13. Michele McDonough, "Creating Pareto Charts with Microsoft Excel," Bright Hub, <http://www.brighthub.com/office/project-management/articles/8708.aspx>.
14. This finding should not be considered a criticism of the CrossRef service; rather, it highlights the fact that an intermediate service such as CrossRef, while providing many benefits to library users, also introduces a potential point of failure into an already-complicated process. If CrossRef could not resolve a request due to a problem external to it (e.g. missing or inaccurate metadata), the problem was not coded as a CrossRef problem but was instead coded to reflect the underlying issue. Only problems related to CrossRef itself were coded as such.
15. Articles published after 1990, and especially after 1995, are more likely to be published electronically. Also, like many libraries, the OHSU Library greatly expanded its journal holdings beginning in the mid to late 1990s by purchasing large packages of titles electronically.
16. Note: As explained in the Methodology section, about half of the requests were taken from November 2009 log files, and the other half taken from March 2010. So the data set would not completely reflect user demand for articles in either 2009 or 2010.
17. Includes all Ovid databases to which Oregon Health & Sciences University subscribes: MEDLINE, PsycInfo, Health and Psychosocial Instruments, Global Health, EBM Reviews, and AARP Ageline.
18. Six additional origins were represented in the data, all with < 5 requests from each.
19. Squires, Moore, and Keese, 4.
20. Ian Rowlands, "Electronic Journals and User Behavior: A Review of Recent Research," *Library & Information Science Research* 29 (2007): 369-96, 376.
21. The OpenURL framework for context-sensitive services. Bethesda, MD: National Information Standards Organization, 2005.

Appendix A: Instructions for Coding

This section contains the codes and instructions used by the staff who tested citations for this study.

Catalog Availability		
Code	Meaning	Details
E	Electronic full text available for article	From the catalog record, you are able to access electronic full text of the article in question using any of the available full text links (i.e., if the first link doesn't work, try the next one).
P	Article available in print only	Use this code if no electronic full text is available, if electronic coverage does not include the article in question, or you can't retrieve the article BUT print holdings are available. Try to retrieve the article electronically if electronic holdings indicate that it should be available, but use holdings information in the catalog to determine availability in print (i.e., you do not have to find the article in the stacks to prove it's available in print). Count it as available in print if the article is available in the print holdings of any library in the catalog (including NCNM and WSCC). If electronic access is available for the title (but not the specific article), code problem with electronic access in Catalog: Problem field using instructions in the next section.
none	No holdings available electronically or in print	Use this code if you are unable to find a catalog record for the journal via WebBridge or catalog searches by title, ISBN, and keyword (in the entire catalog, not just the journal scope) OR if the print or electronic holdings don't include the article in question.

Catalog Availability Detail		
Code	Meaning	Details
Too_old	Library subscribes to title electronically, but article is older than oldest available coverage indicated by the holdings statement(s).	Look at all available electronic coverage. Use this code if date of article is earlier than the earliest available coverage
Too_new	Library subscribes to title electronically, but article is more recent than the most recent coverage indicated by the holdings statement(s).	Look at all available electronic coverage. Use this code if date of article is more recent than the latest available coverage.
Gap	Library subscribes to the title electronically, but the specific year/article is not available	Use this code if the article is outside the stated coverage but neither too old nor too new (i.e., there's a gap in coverage, either from a single provider or across multiple providers).
Missing	Library subscription should include article, but it's missing from journal site	

Catalog Access Problems		
Code	Meaning	Details
1	Catalog says electronic full text is available, but it isn't	Try all full text links that indicate they include the article in question. Assign this code if the article can't be retrieved with any of them.
2	Electronic subscription doesn't include desired article	Library has an electronic subscription, but it doesn't include the desired year/volume. Examples: article older than start of electronic holdings, library has gaps in electronic holdings. For embargoed articles, use next code
3	Article is embargoed	Use when the subscription term covers the article in question, but it falls within the provider's embargo period. Note: Embargo information was not recorded consistently, so results were discarded.
4	Article missing from provider site	Library's electronic subscription includes the desired article, but article is missing from provider site. If article is in a supplement, use next code
5	Supplement/special issue not available electronically	Article is in a supplement rather than a regular issue. Based on publication date, it falls within the library's electronic subscription and is not embargoed, but the supplement is not available electronically.
6	Subscription/payment problem	We should have access, but provider hasn't processed our subscription/payment correctly and is therefore not allowing access
7	Problem with full text target: Target site is down	Publisher/provider site is down or malfunctioning
8	Problem with proxy access to full text target ¹	EZproxy error, proxy not configured correctly for target, etc. <i>Note: Everyone who tests citations for this project should do so from a machine that sends all requests through EZproxy.</i>
9	Other problem	Explain in detail in Notes/Additional Information

Link Resolver Problems		
Code	Problem	Details
1	Resolver or link problem: link resolver not configured correctly	Origin or target not set up or set up incorrectly; link syntax wrong.
2	Resolver or link problem: Holdings incorrect in resolver knowledge base	Link presented because Coverage Database indicates (incorrectly) that library has access to article
3	Resolver or link problem: Broken/incorrect link	e.g., URL has changed
4	Problem with origin: Origin not configured correctly	Not sending to correct resolver, not sending the right metadata fields, etc. Use this code if the problem is due to the way the origin is configured by the library. <i>Use the next code if the problem is hard-coded in the origin itself and cannot be fixed via configuration.</i>
5	Problem with origin or between origin and full text target: Incomplete or inaccurate metadata; Metadata incompatible between origin and full text target (or intermediate service, e.g., CrossRef) ²	Examples: page numbers sent in format different from what target requires, title abbreviation sent when target requires full title, print ISSN sent when target requires EISSN, target requires metadata elements not provided by origin; links to wrong article (e.g., b/c 2 articles have same starting page but are in different issues of same volume). Use this code if the problem is hard-coded in the origin itself. <i>Use the previous code if the problem can be fixed by changing the way the origin is configured.</i>
6	Problem with full text target: Intermediate service (i.e., CrossRef) down or unable to process request	Use for DOI problems too (e.g., DOI not found), but only after making certain that the error isn't caused by bad metadata.
7	Problem with full text target: Subscription/payment problem	We should have access, but provider hasn't processed our subscription/payment correctly and is therefore not allowing access
8	Problem with full text target: Article missing from provider site	Library's electronic subscription includes the desired article, but article is missing from provider site. If article is in a supplement, use next code

Link Resolver Problems		
Code	Problem	Details
9	Problem with full text target: Supplement not available electronically	Article is in a supplement rather than a regular issue. Based on publication date, it falls within the library's electronic subscription and is not embargoed, but the supplement is not available electronically.
10	Problem with full text target: Target site is down	Publisher/provider site is down or malfunctioning
11	Problem with proxy access to full text target	EZproxy error, proxy not configured correctly for target, etc. <i>Note: Everyone who tests citations for this project should do so from a machine that sends all requests through EZproxy.</i>
12	Link not offered: target not set up in WebBridge	Full text target has not been set up as a resource in WebBridge
13	Link not offered: link resolver not configured correctly	A full text link (article- or journal-level) should have been offered but wasn't, because origin, target, or other component of link resolver not configured correctly. <i>Note: assign this code only after completing the catalog section and thereby determining that full text is available for the article.</i>
14	Link not offered: Holdings incorrect in resolver knowledge base	A full text link (article- or journal-level) should have been offered but wasn't, because Coverage Database indicates (incorrectly) that library does not have access to article. <i>Note: assign this code only after completing the catalog section and thereby determining that full text is available for the article.</i>
15	Link not offered: Incomplete or inaccurate metadata	A full text link (article- or journal-level) should have been offered but wasn't, because of problems with metadata from origin (e.g., issue is missing, but WebBridge is configured to require the issue before offering full text link for that target). <i>Note: assign this code only after completing the catalog section and thereby determining that full text is available for the article.</i>
16	Other problem	Record in detail in Notes/Additional Information column

Link Resolver Availability		
Code	Meaning	Details
AOK	FT avail. thru link resolver (article level)	At least one of the article-level links works.
JOK	FT avail. thru link resolver (journal level only)	No article-level links are available. At least one journal-level link works.
JnoA	Article-level link(s) don't work; journal-level link works	Article-level links are available, but none work. Journal-level link works. Code problem associated with each article-level link in Problem columns, following instructions in next section.
NoFT Works	Article- and/or journal-level links available; none work	Code problem(s) associated with each article- or journal-level link in Problem columns, following instructions in next sections.
NoFT	No article or journal level links available; catalog link works	Use this code if the catalog link takes you to the catalog record for the journal (or to the right place in the index), whether or not you are successful in viewing full text. That aspect will be coded under Availability via Catalog.
No WB Link	No WebBridge link is offered	
None	No article or journal level links available; catalog link doesn't work or isn't available	Use this code if you cannot get to the catalog record by using the WebBridge link or if there's no WebBridge link to the catalog
Other	Other problem	Explain in comments. Code Article or Journal Problem as appropriate.

Appendix Notes

1. The library routes all requests for electronic resources through EZproxy. On-campus users do not have to log in, but in some cases a proxy server problem can interfere with access even on campus.

2. Our link resolver is configured to route many requests through CrossRef for resolution, simplifying the linking syntax but adding a potential point of failure.

Focus on Circulation Snapshots: A Powerful Tool for Print Collection Assessment

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Abstract

The primary function of a research library collection is to support the teaching and research functions of the affiliated institution. Assessment of the value of collections should measure their success in supporting the advancement of scholarship. Traditional collection assessment techniques based on data analysis have emphasized profiling the collection by subject and generating usage statistics such as circulation and in-house use. Such measures can reveal a collection's completeness or uniqueness, and indicate what and how often specific items are being used, but say little about how a collection is being used.

Surveys and interviews can be more effective in determining value, but are also significantly more time consuming and labor intensive. More refined analysis of automatically collected data is possible, but can come into conflict with core library values such as user privacy and confidentiality. This paper examines an automated collection analysis technique based on the merging of circulation data and user demographic data that provides significantly greater insight into the connection between users and collections while maintaining user confidentiality.

Introduction

Like many of its peers, since the economic downturn of 2008, Cornell University Library has been responding to pressure to reduce operating expenses. A strategic planning task force examined options, and concluded that the library system, working with reduced resources, could maintain either its current infrastructure or its current collecting ambitions, but not both.¹ The final plan, which is still in the process of being implemented, will result in a library with fewer branches, less physical space, a smaller staff, and fewer print volumes stored in browsable stack

collections on central campus.

The materials budget has been largely spared, but is still under substantial pressure from inflation and the burgeoning volume of scholarly content being published in all formats. Uncertainty about the role of print going forward and limitations on the availability of open stack bookshelves point to a need for a close examination of the use of the print monograph collection. To that end, a Print Collection Usage Task Force was formed in late 2009, with a charge to "conduct a wide-ranging study of the use of the circulating print collections of the Cornell University Library."

As a further backdrop to this study, while the circulation of print research materials has been generally trending downward,² resistance by faculty and students to facility closures, and to the removal or transfer of collections,³ makes clear that the scholarly community is not uniformly prepared to let go of print. Therefore the task force was interested in exploring any methods that would shed new light on the use of and interest in the print collection.

There are numerous techniques for assessing the quality and usefulness of collections.⁴ Quality is often assessed by benchmarking for completeness against lists of published material in particular subjects, or for uniqueness against the holdings of other institutions. Usage is frequently used as a surrogate for usefulness. But these measures do not necessarily guarantee a good fit between the collection and the user population at a particular institution.

Examination of interlibrary loan data and citation analysis can help identify gaps between what users want and what the collection provides. Direct questioning of faculty and students and use of surveys can also steer collecting policies toward

user priorities, but these techniques are time-consuming.

What we sought was an automated usage data collection process that could be supplemented with user data, revealing not just which volumes are circulating, but who is using them. This would promote recognition and understanding of usage patterns according to the users' status, field of study, and departmental affiliation, and provide more insight into how to adapt collecting strategies to the evolution of new disciplines and research interests.

Cornell's historical circulation data, in keeping with standard library practice, is almost completely devoid of user data. In seeking a workable compromise between the enhancement of circulation data with borrower information, and the need to maintain user confidentiality, we were inspired by the University of Washington Libraries work with circulation snapshots.⁵ A circulation snapshot captures the records for all items in use at a particular moment in time. As described at the 2008 Library Assessment Conference, Washington has been taking quarterly circulation snapshots that include basic bibliographic data as well as some patron demographic data, then loading the data into a database for production of reports and running of custom queries.

This paper describes the adaptation of the circulation snapshot technique at Cornell, while exploring in more general terms its mechanics, characteristics, utility, limitations, and potential enhancements.

Circulation snapshot: The basics

The concept of a circulation snapshot is quite simple, and in and of itself, is not new. It is essentially just a current materials usage report. Since such a report has obvious utility for identifying the number and characteristics of items currently in circulation, it may be a standard reporting option in the ILS (Integrated Library System). Every ILS will have some mechanism for generating a snapshot report.

Nevertheless, it's not possible to provide a blueprint for preparing a snapshot that incorporates user data. Given the diversity of ILS products in use at research libraries, and local variations in installation and practice, both the

procedure for creating such a report, and the nature of the available data, will vary from institution to institution. At the University of Washington, it appears that the ILS records for currently circulating items include some user data such as patron department and status that can be included as part of a current circulation report. At Cornell, patron data in the ILS is limited to a user ID, basic contact information, and a broad status identifier. Additional data about borrowers who are part of the Cornell community is stored in a human resources database maintained outside of the library. This appreciably complicates the process of creating the desired snapshot.

At the moment it is taken, a circulation snapshot provides the most up-to-date picture of what materials in a collection are in use. When it incorporates characteristics of the borrowers, the resulting dataset can be used to assemble a detailed portrait of who in a particular scholarly community is utilizing what parts of the print collection, rather than simply what materials are in use. This portrait can supply meaningful responses to detailed collection use questions such as: What are the departmental affiliations of faculty using materials in certain subject areas, languages, or dates of publication? What is the demographic profile of the borrowers of materials from particular branch or unit libraries? What materials are graduate students in certain highly interdisciplinary fields making use of? Are there unanticipated constituencies for certain materials, and do they reveal anything about new areas of research interest, or newly developing cross- or inter-disciplinary study?

Over time, multiple circulation snapshots can be used to study usage trends from both a collection perspective and a user perspective. They may also help to identify new or unusual patterns of use, giving selectors insight into gaps or weaknesses in the collection relative to current research directions. When combined with additional external data, such as faculty counts by department, and enrollment counts of students by graduate field or undergraduate major, they can provide part of the basis for discussions about allocation of the library's materials budget.

Protecting users' identities

Most sales- and service-driven endeavors place a high value on customer data. They collect it however and whenever they can. Internet media

sales outlets such as amazon.com and Netflix retain detailed records of customer transactions and even browsing behavior, and use the data to formulate additional customer recommendations.⁶ Supermarkets and department stores offer affinity cards and loyalty programs which, in effect, pay the customer (in the form of special discounts not available to non-participants) in order to track their buying habits.⁷ This data is used both individually, and in aggregate, to fine tune inventory and offers, in the hope of increasing profits.

Libraries have a very different perspective on record-keeping about patron transactions. A commitment to maintaining users' privacy and confidentiality regarding information sources consulted or received is part of ALA's Code of Ethics.⁸ At Cornell, we retain the identity of borrowers of library materials only long enough to help insure the items' safe return.⁹ Once that happens, the specific identity of the borrower, as well as nearly all data about them, is discarded. In New York, where Cornell is located, it is also state law that records regarding library users be kept confidential.¹⁰ While such a policy might be viewed as foolhardy by the commercial sector, it is an expression of a core principal of librarianship: borrowers are entitled to privacy and confidentiality with regard to their choice of reading and study material.

In most automated library systems, the commitment to patron confidentiality is actualized by severing the data link between borrower and item once the item has been returned. Thus, if any borrower data is to be captured, it must happen while items are still in circulation. The challenge in collecting such data is to retain enough to facilitate deeper analysis of borrowing patterns without compromising confidentiality.

A simple solution is to completely remove individual identifying information, including name, address, phone number, email address, and any codes that are uniquely associated with an individual. Other useful demographic information, such as department names, college affiliations, and fields of study can be retained. However, there is value to being able to track borrowing habits on an individual basis, even without knowing who those individuals are. Unique borrower data facilitates more

sophisticated analysis of circulation snapshot data, both within and between snapshots.

Within snapshots, borrower level data permits the detection of atypical usage patterns. Statistical outliers, which can significantly skew the calculation of averages (arithmetic means) can be identified, and possibly eliminated. Additional statistical measures, such as median and standard deviation, become possible to calculate.

Across snapshots, borrower level data allows the charting of behavior over time, either of individuals, or groups of individuals. For example, the rate at which an entire collection turns over from one snapshot to another, as discussed later in this paper, can only be calculated if borrower level data can be tracked over time.

Such analysis can be done without compromising borrower confidentiality if special precautions are taken. Good data security requires anticipation of a wide range of possible breach scenarios and the preparation of countermeasures to foil them. It is also prudent to severely limit dissemination of at least some details of the security measures that are in place. Therefore, the method for obscuring user identities outlined below represents only a portion of the steps we take to insure confidentiality of user data.

The basic requirement for removing individually identifiable data while retaining the ability to analyze the behavior of unique borrowers is the transformation of the original identifier into a unique replacement that cannot be converted back to the original. An untraceable identifier of this sort can be created using a secure one-way hash or encryption algorithm. These are commonly used for message authentication, secure data storage and transmission, and error detection. Widely used examples of one-way hashes are MD5 (Message Digest 5) and SHA-1 (Secure Hash Algorithm 1). For additional security, other transformations can be applied to the original identifier prior to creation of the one-way hash.

One way hash algorithms typically have the following characteristics:¹¹

- 1) They cannot easily be reverse engineered. That is, it is nearly impossible to reconstruct the original text from the output of the algorithm.

- 2) A particular input sequence will always produce the same output sequence.
- 3) Two different input sequences will virtually never produce the same output sequence.
- 4) A minor change in the input sequence (e.g., a one digit shift) will result in a major change in the output sequence.

We chose to use an Excel function named `idcode` that generates a SHA-1 hash from one or more pieces of personally identifiable information.¹² The function was originally developed to protect the confidentiality of patient records being used for research in the UK National Health Service and is well-suited for our similar application. One minor drawback is that the SHA-1 algorithm outputs 40-character codes (actually, 40-digit hexadecimal numbers), which are somewhat unwieldy. Fortunately, this has no impact on their utility for analysis, and we have not encountered any circumstances requiring that the codes themselves be included in reports.

If, at some point in the future, Cornell adopted a new ID numbering scheme, as has happened in the past, the ability to track individual usage across snapshots would be lost. However, individual usage tracking within snapshots would continue to be valid, and longitudinal data analysis could be restarted from that point forward, for as long as ID numbering remained consistent.

Mechanics of snapshot production

Creating a complete circulation snapshot that can be used for analysis may require extraction and merging of data from several sources, depending on the particular system implementation. The specifics will vary by institution. At Cornell, the main sources are the library's Voyager ILS and the university's PeopleSoft human resources management system.

ILS data extraction

Cornell uses Endeavor's Voyager for most of its automated collection management functions. The typical method for querying Voyager's data tables is through Microsoft Access. An enormous amount of data related to items currently charged out is available through Voyager. This includes bibliographic data, acquisitions data, current circulation transaction data, and historical circulation data. Since the taking of snapshots is a new data collection technique at Cornell, we are

not certain which data elements will have potential value for collection usage analysis. By definition, a snapshot is a non-reproducible event, so we have been erring on the side of caution and collecting any data that seems potentially useful. Mass storage is inexpensive, and data that proves to be of minimal value can be filtered out, and/or eliminated from future snapshots.

For Cornell's ILS, another advantage of the snapshot approach is that it facilitates retention of internal circulation details that would otherwise be lost. This includes the ability to distinguish charges to faculty studies from those to graduate student carrels, and between Borrow Direct (a fast book delivery system shared by seven Ivy League libraries) and traditional interlibrary loan. In Voyager's historical transaction data, these distinctions are lost.

A few aspects of the ILS side of the snapshot generation require special attention. For example, create dates in Voyager can indicate either when an item was acquired, or when a previously acquired item was barcoded during retrospective conversion. In order to distinguish the two situations, a separate query is run to identify older materials that were barcoded after Voyager was brought online. Separate queries are also needed to flag lost or missing items, and certain other special categories.

Human resources data extraction

Cornell's ILS circulation records contain only a small amount of borrower identifying information—an ID number and some basic contact information. For borrowers who are regular members of the Cornell community, the source of this data is the university's human resources database. However, that database contains additional data that can be used for characterization of borrowers. For faculty there is a department code and college affiliation code; for graduate school students, a field of study code, for undergraduates and graduate professional school students a college code, and for staff, a department code. For everyone, there is a status code, which is more refined than the one retained in Voyager's historical transaction archive. For example, it distinguishes academic and non-academic staff and graduate school students from professional school students (law, business, veterinary medicine).

Interpreting the codes used in the human resources databases requires the use of several code tables, which are maintained by different departments on campus. For example, the Registrar's Office maintains the graduate field of study codes, while the Office of Human Resources maintains the departmental codes. We check periodically for new versions of the codebooks.

Putting it all together

The final snapshot is created by performing a database join in Microsoft Access between the Voyager data, the human resources demographic data, and the codebooks. The resulting snapshot file is then exported to Microsoft Excel, where further refinement (including encryption of the user ID), as well as data analysis, is performed. Table 1 shows the fields, with sources, that we have been combining to create snapshot files.

Table 1. Field names, with data sources, that comprise the circulation snapshot.

Field Name	Table Source
Bibliographic ID, Title, Author, Publisher, Publication Date, Publication Place, Language, ISBN, Recon flag	Voyager Bibliographic Record
Item ID, Location, Reserve Location, Create Date, Historical Circulation Total, Historical Browsers Total, Reserve Charges Total, Item Type, Lost/Missing Flag, Hold Flag	Voyager Item Record
Charge Date, Current Due Date, Number of Renewals, Recall Date, Recall Due Date	Voyager Circulation Transaction Record
Institution ID, Patron Group, Special name (faculty study vs. carrel, ILL vs. Borrow Direct), Expired Flag	Voyager patron or patron barcode table
Category, College code, Department code, Status, Affiliation	PeopleSoft Human Resource database (see text for details of which user class each field applies to)
College Description	Registrar's Office (long version of College code field)
Department description	Office of Human Resources (long version of Department code)

Limitations of snapshots

Like all summary and statistical data, circulation snapshots have weaknesses and limitations and are subject to misapplication and misinterpretation. A fundamental limitation is that the snapshot is an instantaneous portrait. Like its photographic counterpart, it cannot necessarily be assumed to reveal anything about events that took place immediately before or after it was taken, or that occurred outside of its borders. In fact, one could question its analytical value on the basis that it captures an essentially random collection of transactions, gathered at an arbitrary time.

That objection might be valid, if the use of research collections consisted of numerous extremely short-lived events, as is characterized, for example, by the circulation of reserve items. But most books circulate for months at a time, not hours. Of the roughly 160,000 books in circulation at Cornell on a day in April 2010, the average had been charged out to the then current borrower for nearly one and half years. Of course, there was considerable variability by user status, ranging from undergraduates, with an average of 78 days, to faculty studies where the average book had been in the same hands for over seven years.

Nevertheless, despite the fact that an average of about 1700 new book circulation transactions occur at Cornell each day (with a roughly equal number of returns), our experience thus far shows that the big picture, and many of the details, change very little from day to day, or even from week to week. The biggest fluctuations across semesters are in the number of items charged to undergraduates, who have the shortest loan period, and typically return everything by the end of each semester. But at any given time, undergraduates account for only about 10% of the items in circulation, and the movement in collection use by the faculty, graduate students, and staff who comprise the other 90% is much less dynamic. As a quantitative measure of the relatively slow overall "churn" of the collection, of the 120,432 items charged to Cornell community members on January 29, 2010, 62,791, or 52.1% were still charged out to the same borrower 221 days later, on September 7, 2010. This period incorporates a span from the beginning of spring semester, through the end of that semester, graduation, summer session, and into the beginning of fall semester.

However, there is the potential for slicing the snapshot data too finely. While the change in overall book usage is slow, lower level tendencies, such as the usage behavior of a single small department, or the circulation of a particular title, are far more likely to be influenced by random factors. Care should be taken to avoid attributing too much significance to extremely granular aspects of the data.

Weaknesses that apply to other types of system generated circulation data also apply to snapshots. Circulation is only one measure of use. It does not reflect in-house browsing use, which for some subject areas may be at least as important. It ignores outgoing interlibrary loan requests, which indicate demand for items not available in the local

collection. Some of the data can be misinterpreted if viewed in isolation, so context is important. Also, the snapshot data says nothing about the quality or depth of the user's experience with the borrowed item.

Data analysis procedures

Basic analysis

The completed snapshot file could be left in Microsoft Access for analysis, but it is more convenient to export the data to a Microsoft Excel spreadsheet and create a pivot table. Pivot tables are especially suited to the summary and analysis of large amounts of tabular data especially where there are a manageable number of unique values for each field or column. The number of monographs in circulation in the snapshots taken at Cornell between January and September 2010 ranged from 120,000 and 160,000, which fits comfortably in an Excel 2007 worksheet. Many of the data fields, including bibliographic descriptors such as language, year, and place of publication, and borrower descriptors such as college and field or study, have a small enough set of possible values to make summarizing the entire snapshot both feasible and meaningful.

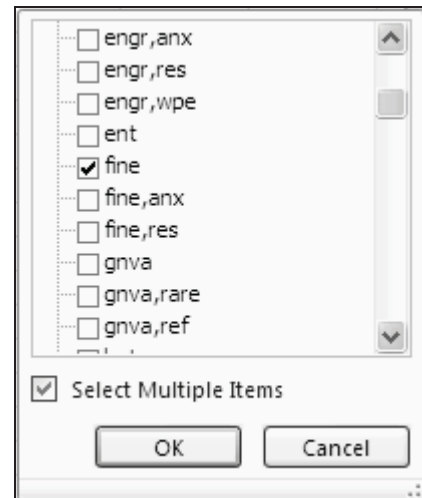
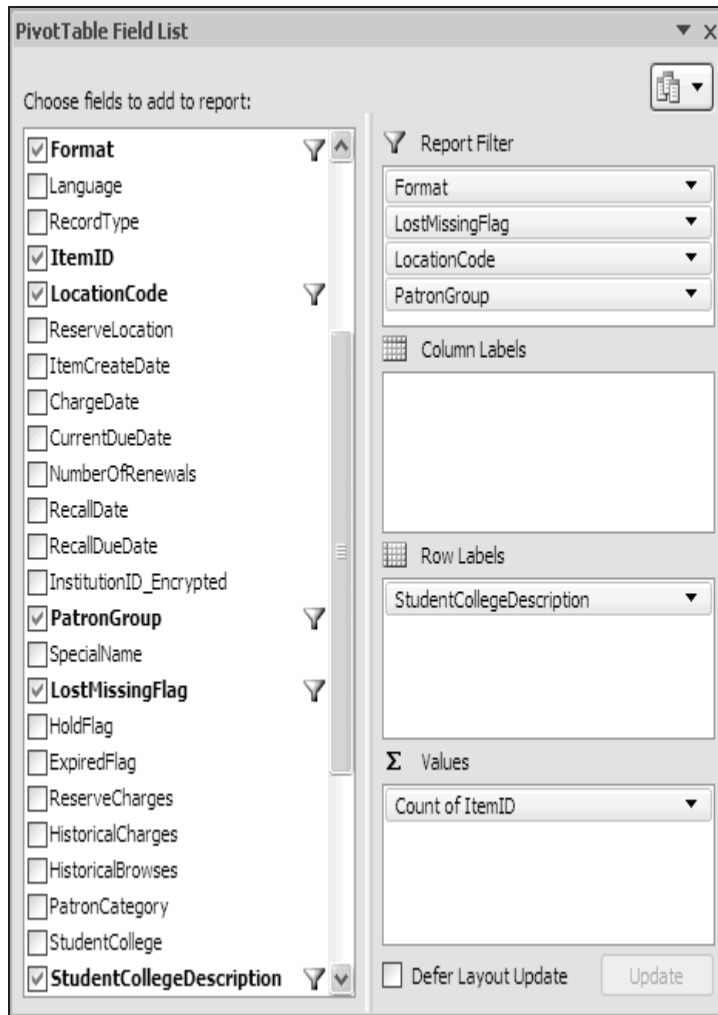
Given the richness of the data being captured for each snapshot, the array of analysis possibilities is extremely large. Items in circulation and their borrowers can be separately profiled, and there are numerous relationships and correlations between them that can be examined. Trends can be sought both within snapshots, and between them.

Using pivot tables to explore relationships within snapshots is relatively straightforward. Unlike the native query interface in Access, pivot tables in Excel 2007 utilize a reasonably intuitive interface that can be taught to staff with minimal technical skills. Fields are dragged and dropped into one of four categories: report filter, column label, row label, and value. Filtering for specific values (for example, to limit an

analysis to one or more subject classifications) is done by checking and unchecking boxes. A specific query, such as "In which fields do graduate students have the most books checked out from the Fine Arts Library?" can be constructed in a minute

or two with just a few mouse clicks and drags, and requires no use of the keyboard or special functions. Excel's response to this kind of query is essentially instantaneous. Some interface mechanics for constructing this query are shown in Figure 1.

Figure 1. A pivot table query is constructed by dragging and dropping fields into the appropriate category and filtering values by clicking on check boxes. In this case, for the query "In which fields do graduate students have the most books checked out from the Fine Arts Library?" from a September 2010 snapshot, the records were filtered to eliminate lost or missing items, to include book format materials only, to limit the location to the Fine Arts Library (shown as an example on the right), to limit patrons to Graduate School students, and to limit the list of study fields to the top ten. The funnel symbol indicates which fields have filters applied. For simple counts, any field that appears in all records can be used as the Values category (indicated with a Greek capital sigma (Σ) on the Pivot Table Field List). In this case, we've used the Item ID.



The results of the query in Figure 1 are shown in Table 2. Sorting the output from largest to smallest count required a separate, manual step. Whether these results confirm expectations, or

raise interest, would be for the relevant selectors to decide.

Table 2. Output of the query defined in Figure 1.

LostMissingFlag	(blank)	▼
LocationCode	fine	▼
Format	Book	▼
PatronGroup	GRAD	▼
Row Labels ▼		
	Count of ItemID	
Prof Masters Arch, Art & Plng	227	
Art	149	
Architecture	143	
City and Regional Planning	138	
Hist of Art, Arch & Visual Std	113	
Romance Studies	79	
Prof Masters Agri & Life Sci	62	
English Language & Literature	46	
Design & Environmental Analy	36	
Textiles	34	
Grand Total	1027	

The results of another sample query, one that requires a bit more effort, are shown in Table 3. Here, for faculty in each college at Cornell, a query was used to extract the number of books checked out that were published in 1950 or earlier. A similar analysis could be conducted, based on

subject classification and date of publication. These would provide a more nuanced basis for gauging the impact of moving certain books to off-site storage than an analysis based solely on the recent circulation patterns of specific titles.

Table 3. This table answers the query "What percentage of all books charged out to faculty in each college were published in 1950 or earlier?" This requires two separate queries—one for the total items and one for the 1950 and earlier items. The percentage calculation is also a separate step. Data is based on a snapshot taken in September 2010.

Faculty	Items published	Total	% published
College Affiliation	1950 and earlier	Items	1950 and earlier
Agriculture & Life Sciences	132	2,386	5.5%
Architecture Art & Planning	151	1,681	9.0%
Arts & Sciences	1,993	24,843	8.0%
Computer & Information Science	1	164	0.6%
Engineering	42	1,511	2.8%
Graduate Management	10	269	3.7%
Hotel Administration	21	281	7.5%
Human Ecology	29	636	4.6%
Industrial & Labor Relations	62	783	7.9%
Law School	173	1,977	8.8%
College of Veterinary Medicine	24	271	8.9%
Grand Total	2,638	34,802	7.6%

Supplemental analysis

A great deal of useful analysis can be derived from the circulation snapshot with just these kinds of simple counts. However, insight can be gained by doing additional calculations with the raw snapshot data, and by bringing in external data to provide context.

For example, since the snapshot captures the date when each item in circulation was originally charged out, we can calculate how long each item has been in use by the current borrower. That data can then be used in aggregate to analyze borrowing patterns by different borrower characteristics. Some results of just such an analysis were mentioned earlier.

External data, particularly comprehensive collection data and campus population data, can provide needed perspective on the significance of snapshot results. Circulation counts in different subject classifications have greater meaning when considered relative to the number of books available to circulate in each subject. Similarly, borrower counts at the department level should be viewed in light of the number of potential borrowers in the department.

Other uses for snapshot analysis

Several examples of potential uses for snapshot data have been mentioned, but many others are possible. In a time of declining use of print collections, user demographics will indicate more reliably than subject-based circulation data which departments are still using print monographs. Such information could be used to reallocate funds within subject areas between print and electronic formats, and between monographs and serials.

In the face of recent economic woes, many campuses are re-evaluating how many branch libraries to maintain, where they should be located, and what subjects they should incorporate. Cornell recently conducted unit library reviews that resulted in decisions to close some libraries and consolidate others.¹³ The circulation snapshots provided useful data about which constituencies are using which book collections—data that was not available by other means.

Cornell has been collecting snapshot data for less than a year, and we are still evaluating its possible role, alongside many other sources of data, in the

establishment of collection and circulation policies, and resource allocation decisions. Some uses may only become apparent over time, as we are able to analyze multiple snapshots for emerging trends.

The future

There is still a great deal to learn regarding the potential for snapshot analysis to support decision-making in different areas of collection development. More experimentation is needed to determine the reliability and applicability of the data for various purposes.

We are looking into ways to customize filtering of snapshot queries based on the range of call numbers that each selector is responsible for. Most selectors at Cornell have not yet had an opportunity to work directly with snapshot data, and to determine its value to them. A delivery mechanism for the data needs to be developed.

Even more basic questions remain. What is an appropriate schedule for the capture of snapshot data? Which external data sources should be brought in to provide context for the usage data? At what intervals is it appropriate to compare snapshots in search of long-term trends and patterns? Despite the unknowns, the circulation snapshot with user demographics has already shown its value at Cornell for a range of analyses, and justified the effort needed to develop the means for producing it.

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Monograph Duplication Analysis to Inform Consortial Collection Development

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Abstract

This paper discusses the cooperative collection development project to minimize print book duplication within the Five Colleges libraries (University of Massachusetts Amherst, Amherst College, Mount Holyoke College, Smith College and Hampshire College). Increasing interest in consortial economies, a strong history of cooperative collection policies, and budgetary constraints positioned the Five College libraries to institute a program to reduce unintentional duplication for fiscal year 2010. Duplication rates improved for each library. The total consortial duplication decreased from 60% to 51% between in FY09 and FY10.

Introduction

The Five Colleges Consortium includes four, private liberal arts colleges, Amherst, Hampshire, Mount Holyoke, and Smith, and a research-intensive public higher education university, the University of Massachusetts at Amherst. The Five College Libraries are located within a radius of 15 miles from one another. That geographic proximity enhances a deeply rooted resource sharing philosophy that has been a guiding principle for many decisions made by the Five College Librarians Council (FCLC). The Five College libraries have worked cooperatively on intra-consortium borrowing and lending, established common loan rules, and created a reliable materials delivery system that has transported materials between the schools daily for almost three decades. The consortium has shared a common catalog with patron-initiated borrowing for over a decade. Since 2006 the ALEPH system provided the consortium with the ability to analyze individual and consortium-wide monographic purchases along with the ability to analyze circulation data for those materials.

Background

The FCLC established cooperative collection

development as one of four (4) strategic directions for the Five College Libraries in early 2008. This reinforced the consortium's commitment to cross-institutional resource sharing yet there were concerns about choosing this particular area. Cooperative collection development, while perhaps perceived as the "holy grail" in library cooperation, is anything but straightforward to implement because of differing institutional missions and cultures. FCLC chose this area in part (or as a result of) due to encouragement and pressure from the Five College Presidents to increase library cooperation.

Defining the Policy

Following the adoption of the strategic directions, FCLC asked UMass to conduct an overlap analysis using OCLC's WorldCat Collection Analysis Tool (WCAT). The WCAT data confirmed that the UMass collection overlapped with the four colleges collections from 6% to 77% depending on the subject area. In September, 2008, FCLC charged the Five College Collection Management Committee (CMC) to propose a cooperative collection development pilot project for up to ten (10) subject areas. FCLC's defined parameters included:

- increase the number of titles purchased and thereby expand the depth of print books available across the Five Colleges
- utilize YBP as a common supplier
- implement the project on July 1, 2009

Formulating the Policy

The CMC recommended architecture, environmental studies, history, law and sociology as subject areas for the project in early October, 2008. The WCAT data for these areas showed an above average percentage of overlap. Focus then shifted quickly to defining the project, exploring differences in institutional mission and culture, workflow, and local commitment for the project in the absence of a larger mandate to cooperate. The

CMC in particular wanted to look beyond the WCAT data. While the overlap analysis was useful for getting the conversation started, the group recognized it would not be sufficient as a benchmark to measure future progress for a couple of reasons. First, only UMass subscribed to the WCAT. Since it was not a consortia-wide subscription, overlap could not be measured between the five libraries. Second, and more importantly, it did not contain purchase or circulation data. Monographic expenditure and circulation data were core components on which to analyze project success. Finally, the Five College libraries needed to establish a baseline against which to benchmark. The CMC suggested to FCLC that the libraries might be able to extract the data needed from the shared ALEPH online catalog. FCLC approached UMass to write an SQL query to retrieve monographic expenditures, number of titles purchased, and circulation for monographs purchased by fiscal year for each institution.

This analysis, shared with CMC and FCLC, looked at duplication between print collections for monographs published between 1998 and 2009. This 11 year review showed that duplication ranged from 36% to 79%. For example, during this time period 36% of all the titles purchased by UMass were also purchased by one or more of the other libraries in the consortium. Similarly, for all the titles purchased by Hampshire College during this time period, 79% were duplicated elsewhere in the consortium. The analysis also looked at data from FY2007 and FY2008 and found that for those two years the four colleges (Amherst, Hampshire, Mount Holyoke and Smith) spent \$1,139,116 on material that was also purchased by UMass. UMass spent \$636,066 on material also purchased by the four colleges.

Weighing the Options

The CMC continued to deliberate pilot project management options. Questions the group grappled with included the pros and cons of a shared approval plan for the defined subject areas and cost sharing. Yet while local discussions continued, the global economic crisis intervened. By January 2009, it became very clear that the libraries FY10 budgets faced very similar challenges. The Five College Presidents continued “. . . to encourage an increased level of cooperation among the libraries and to think of the libraries increasingly as one collection.”¹

Within a span of three months, October 2008 to January 2009, the scope of the project shifted from a pilot with five subjects to all print monographs purchased, with some exceptions for reference materials and rare books. Shifting gears to adapt to the new environment, the CMC proposed: “For most of our monographic purchasing, we would use a common vendor, YBP, thereby getting advance notice of one another’s orders, with the aim of purchasing only one copy of any given title among us all. We could each purchase additional copies if it was deemed to be locally appropriate, for the purposes of maintaining adequate core collections or supporting particular curricular or research needs.”²

The CMC recommended the following which FCLC adopted as a consortium policy in May 2009:

“In response to requests from the Five College Presidents and the Five College Librarians Council, the Collection Management Committee will facilitate efforts to better coordinate purchases for our book collections, in an effort to reduce unnecessary duplication, so we can increase the breadth and the strength of our combined collections. We will order additional copies only when they are clearly required to support teaching, learning, and research. This decision will be made at the local library level.”³

The CMC agreed to work with the Five Colleges Circulation Committee to continue to rationalize loan rules. The group recognized that further steps would need to be taken to determine when additional copies of monographs are needed. One solution for this was to create a list of the most heavily requested books on a regular basis. “Heavily” was defined as three (3) or more requests in a sixty-day period. The other was to identify lost books when there is only one copy in the consortium to order a replacement. By the time this policy was implemented, the overarching philosophy shifted from “one copy” to avoiding “unnecessary duplication.”

Implementing the Policy

Upon practical implementation of the policy the emphasis shifted from purchasing just one print copy to avoiding unintentional duplication. Duplication was commonly accepted as permissible in the following circumstances:

- Reserve requests

- ILL requests (if certain criteria are met)
- Faculty requests
- Books with holds
- Core to collection or research need

While local practices varied, in general, selectors at each institution used YBP's Gobi3 system to check for duplication using the Gobitween feature. Gobitween indicates "activity" meaning an order was sent, placed, or shipped on approval, etc. This activity signals potential duplication to a selector and any decision to duplicate is then intentional. Essentially the policy relied on selector compliance.

About the Data

Data on duplication, circulation and cost were extracted from a shared oracle database. Duplication was determined based on OCLC number. Print monographs were identified as a material type of "book" or "monograph." Circulation activity was calculated from the date of receipt through August 5, 2010. Standing orders were generally excluded. Variations in ordering or coding practices between libraries resulted in minor inconsistencies. These are not believed to detract from the validity of the results.

Results

In each library the percentage of duplicated materials decreased and the percentage of unique materials increased between FY2009 and FY2010. This improvement was observed whether the number of items purchased increased or decreased (see figure 1).

The total consortia duplication decreased from 60% to 51% between in FY09 and FY10. The FY10 improvement, post policy, was noted even though duplication rates between FY07 and FY09 varied (see figure 2 and 3).

The number of copies owned by three, four or five libraries saw the greatest reduction. This shift away from the original idea of "one copy" in the consortium to "intentional duplication as needed" seems to be reflected in the reduction of copies owned by three, four, or five libraries and the slight increase in the number of copies purchased by two libraries (see figure 4). This suggests a willingness to look at the five collections more holistically. On some level, there was a willingness to acknowledge the need for 2 copies of a title in the system but restraint enough to

forgo a third copy even it was an item that typically would have been purchased in the past.

The circulation rate of duplicated items will need to be monitored over time to determine whether intentional duplication results in a higher circulation rate (see figure 5). The overall effectiveness of the policy can also be monitored over time. Further data collection will allow us to examine the data in a longitudinal manner which will enhance our ability to further understand potential factors associated with duplication reduction. Ongoing analysis will also look at whether or not the number of items purchased related to duplication rates.

Services that Support the Policy and Next Steps

As mentioned above, the Five Colleges have had a book delivery service in place since the late 1970s. This is facilitated by the online catalog's patron-initiated request feature and uniform loan periods across the consortium. The delivery service delivers and picks-up materials for the requests twice a day Monday through Friday. There was initial concern the new policy would put a strain on the delivery service although to date this has not happened.

Most of the libraries implemented an interlibrary loan "purchase on demand" program shortly after the policy adoption if such a program did not already exist. Through this program, books that meet certain pre-defined criteria are purchased. The CMC philosophy was that if a patron requested an item, it would be useful for the consortium to have a copy.

The libraries recently began to share a spreadsheet of heavily requested books. The list is created each week. The CMC members and other staff in the Five College libraries have access to this information. The libraries are in the initial stages of determining a methodology for interpreting the data. One thought is the libraries could purchase an e-version of monographs that are "in demand" to be shared across the consortium.

The CMC is also exploring consortium-wide patron-drive acquisition of e-books. At present, no one model or vendor has been chosen because the market is still in flux. The group also has plans to look at currently received standing orders to examine overlap.

This shift in collection practice has implications for the way the Five College libraries view combined collections and implications for future resources sharing.

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Acknowledgment

Special thanks to statistician Dr. Pamela Matheson for assistance reviewing the data.

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Figure 1.

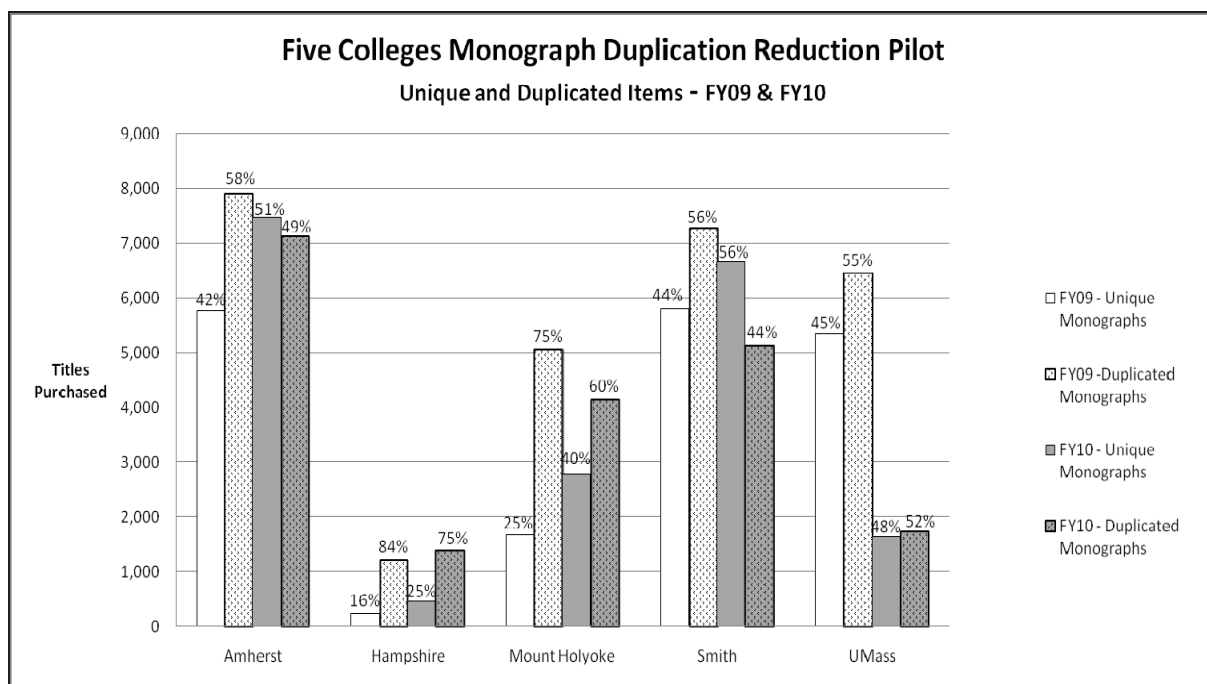


Figure 2.

Monograph Duplication within the Five Colleges Consortium						
Total % Duplication						
Year	Amherst	Hampshire	Mount Holyoke	Smith	UMass	Total
FY07	70%	76%	75%	60%	55%	63%
FY08	66%	79%	77%	59%	49%	61%
FY09	58%	84%	75%	56%	55%	60%
FY10	49%	75%	60%	44%	52%	51%

Figure 3.

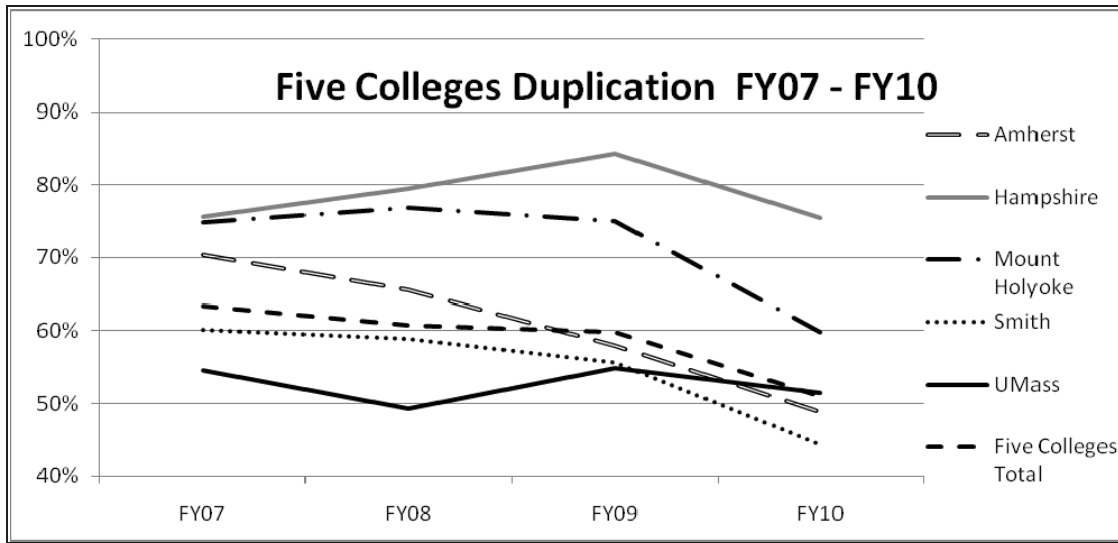


Figure 4.

Monographic Duplication within the Five Colleges Consortium				
Year	Owned by 2 Libraries	Owned by 3-5 Libraries	3-5 Libraries	Total Duplication
FY07	22%	41%	63%	
FY 08	24%	38%	61%	
FY 09	26%	34%	60%	
FY10	28%	22%	51%	

Figure 5.

Five Colleges Monograph Duplication Analysis - FY10						
	Amherst	Hampshire	Mount Holyoke	Smith	UMass	Total
FY07						
Total Titles Purchased	11,327	1,931	6,689	12,511	15,289	47,747
Cost	\$426,801	\$61,745	\$306,160	\$741,844	\$698,409	\$2,234,958
Total Circulation *	64%	78%	60%	59%	77%	67%
% Duplication	70%	76%	75%	60%	55%	63%
% Circulation of Duplicated Items	67%	81%	62%	64%	82%	70%
Cost of Duplicated Items	\$291,631	\$46,174	\$227,170	\$355,117	\$324,271	\$1,244,363
FY08						
Total Titles Purchased	14,224	2,221	6,735	16,464	16,459	56,103
Cost	\$632,767	\$62,823	\$287,672	\$973,961	\$803,419	\$2,760,641
Total Circulation *	59%	68%	59%	53%	76%	63%
% Duplication	66%	79%	77%	59%	49%	61%
% Circulation of Duplicated Items	62%	69%	61%	58%	80%	65%
Cost of Duplicated Items	\$380,043	\$51,043	\$221,652	\$473,492	\$336,953	\$1,463,183
FY09						
Total Titles Purchased	13,763	1,437	6,737	13,071	11,786	46,794
Cost	\$605,930	\$54,536	\$313,674	\$778,973	\$650,041	\$2,403,154
Total Circulation *	52%	65%	54%	48%	72%	57%
% Duplication	58%	84%	75%	56%	55%	60%
% Circulation of Duplicated Items	56%	66%	55%	52%	76%	60%
Cost of Duplicated Items	\$308,760	\$46,745	\$236,903	\$318,990	\$258,472	\$1,169,870
FY10						
Total Titles Purchased	14,601	1,850	6,925	11,979	3,384	38,739
Cost	\$671,857	\$69,373	\$304,892	\$746,400	\$165,345	\$1,957,867
Total Circulation *	37%	39%	36%	27%	60%	36%
% Duplication	49%	75%	60%	44%	52%	51%
% Circulation of Duplicated Items	42%	39%	38%	31%	70%	40%
Cost of Duplicated Items	\$351,872	\$52,293	\$166,040	\$238,891	\$68,347	\$877,443
* Total circulation is from time of purchase through 8/5/2010						

Cycling Through: Paths Libraries Take to Marketing Electronic Resources

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Abstract

This study explores the marketing of electronic resources in libraries, investigating how libraries determine the effectiveness of their marketing campaigns, looking for evidence that they have a marketing plan in mind when they embark on a campaign, and finding out if libraries have sufficient measures in place to move successfully through a cycle of marketing.

This paper reports on the results of a content analysis of the published literature in the field of library and information science about the marketing of electronic resources. The author uses the components of a typical marketing plan to guide the analysis, giving special consideration to the evaluation of marketing efforts.

Introduction

Connecting patrons to appropriate resources is a concern for libraries as more collections are removed from traditional shelves and placed in virtual spaces. The placement of a new-books shelf near the front door or the positioning of ready reference volumes in a study area of a library does not apply to the electronic resource world because there are no physical volumes to view. This research examines the marketing strategies in use by libraries to direct patrons to appropriate electronic resources.

This article reports on the results of an analysis of published literature by libraries about their marketing campaigns, using the model of a typical marketing plan to gain insight into how libraries perceive their own strategies. The author employs content analysis to identify the components of libraries' marketing plans, with special focus given to the assessment of marketing efforts, aiming to discover if evaluative steps taken by libraries in marketing electronic

resources provide actionable knowledge for the next phases in their marketing plans.

The literature

To understand how libraries are marketing electronic resources the author turned to the published literature in the field of information and library science. The review of the literature was focused specifically on marketing electronic resources, with no limitation on date, in anticipation of gathering a broad body of literature. The review of literature produced a corpus of twenty-three documents, the earliest published in 1999 and the most recent in 2009. See Appendix A for the institutions represented in this research.

The twenty-three documents were used in earlier research that identified thirty-eight marketing techniques in use at libraries, providing a summary of what kinds of libraries -- universities, colleges, medical, public—were using which techniques.¹ In addition to identifying techniques the author did a cursory review of libraries' goals, targets, budgets, and assessments. Deeper analysis of the corpus is warranted, to determine how the components of a single marketing campaign for e-resources may fit into a larger marketing plan. This new analysis focuses specifically on the components of those plans.

The earlier research on this corpus addressed four parts of a marketing plan. This analysis addresses a more complete set of components, as outlined in Dubicki: project description; current market; SWOT analysis; target market; marketing goals and objectives; marketing strategies; action plan; and evaluation.² The components of a marketing plan are usually visualized as a circle, with *project description* as the first step, with the other steps following, with *evaluation* feeding back into

project description as a new cycle of marketing begins. Dubicki describes the last step, evaluation, as a “means for measuring the success or failure of the marketing process.” This analysis expands the last component, *evaluation*, into two parts: *measurement* and *assessment*. It is important to know if libraries are using an appropriate quantitative measurement of their chosen

marketing technique(s). It is equally valuable to know if libraries are using those measurements to determine if their marketing campaigns were successes or failures, and if the measurements provide enough information for an appropriate assessment. See Figure 1 for a visual representation of the marketing cycle used for this research.

Figure 1: A marketing cycle



Organizing and analyzing the literature in ATLAS.ti

To keep organized the notations about the components of a marketing plan, the qualitative data analysis software ATLAS.ti (v5.2) was employed. The text of each of the documents was imported into the software and was then used to identify each time a component of a marketing plan (as mentioned above) was stated. This software allows the creation of codes for the marketing components. After the author coded the documents, the data was then exported and summarized.

Coding of the literature

As the documents were reviewed, the author

highlighted the contextual descriptions of the marketing plan components, giving each component a name, or code, that she created. When a passage described a particular user group that a library identified as a target for the marketing campaign, for example, it was highlighted and then coded with *target market*. If there was no mention of a target market in a document then no code was entered. All of the documents were analyzed in this manner.

Codes and definitions

Table 1 lists the codes that were created and defines their use in this research.

Table 1: Codes and their definitions

Project description	A description of the thinking behind why the library embarked on a marketing campaign
Current market	Notes if the resource currently being used, what other products are like it? Also states an understanding of the environment in which it is used
SWOT analysis	Identifies strengths, weaknesses, opportunities, and threats does the library have as a result of this resource
Target market	Identifies the user group(s) that will be the focus of the marketing
Marketing goals and objectives	What the library hopes to gain by marketing
Marketing strategies	Identifies an approach to achieve the goal as well as decides which marketing techniques are appropriate for the stated goals and how their use will be measured
Action plan	States how the strategies will be carried out (this code is not used itself but is rather comprised of timeline, staff, and budget)
Timeline	How long the marketing campaign will run or how long each component of the plan will take
Staff	Who will work on marketing campaign
Budget	How much money the marketing campaign will use
Measurement	Determines whether or not the measured effect of the technique reached the stated goal
Assessment	Determines if the measurement of the strategies provides enough evidence to take the next step in the marketing cycle

Findings

Marketing plan components

A goal of this research was to determine if libraries use the components of a typical marketing plan when embarking on a marketing campaign for electronic resources. Based on the coding it is clear that libraries do not consistently do this. Of the twenty-three documents only three report all eleven components of the marketing plan outlined here. Seven libraries report ten of the components of a marketing plan but do not mention a budget. Though the libraries represented in this research document many of the components of a marketing plan, only a few report that the components fit together as part of a cohesive effort.

Summarized here are the components of a marketing plan and the results of the coding.

Project description

Twenty-two libraries reported their reasoning behind wanting to pursue a marketing campaign for their electronic resources.

Current market

None of the libraries reported competing products for the resources they were marketing, or why their users may prefer one resource from another. The code is also defined for this research as an understanding of the environment in which they are marketing; libraries were successful at reporting this, with twenty-one summarizing the state of the library or describing their typical user groups.

The environment in which marketing takes place at this science and engineering library is described well in this quote, for example: "The S&E Library holds drop-in orientations for its users each fall.

In the earlier years, the attendance at these orientations was considerable. However, in the last few years, the attendance has declined and recently dropped to one or two people at each session, due to changing behavior regarding how users access library resources in this networked environment. Clearly, traditional methods to conduct and market library services no longer worked well. Therefore, the S&E Library decided to bring events closer to users and try aggressive marketing techniques to reach out to its research community."³

Lee asserts that understanding the current market is the essential step in a marketing plan, and describes a formal process for gathering information about the needs of the patrons in her article in 2003.⁴ She suggests that "laying the marketing foundation" by knowing what library patrons want will help to guide a library marketing plan in choosing an appropriate strategy. One of the libraries in this analysis documented doing this kind of knowledge gathering about their patrons before embarking on a marketing campaign.⁵

SWOT analysis

None of the libraries reported a full analysis of the strengths, weaknesses, opportunities, or threats for the library based on the electronic resources being marketed. Very loosely described, nineteen reported some thoughts on what consequences their marketing plans would have on their libraries. In an article reporting on the development of a 'Find A Journal' service, for example, the author identifies a possible strength and weakness for considering marketing the service via office visits for one-on-one training in faculty offices: "Our experience suggests that academic staff are more likely to respond to overtures in their own office, with services they can access from their desktop, rather than coming to the library. However, we are aware that some academics may have very outdated equipment and this could be counterproductive."⁶

Target

All libraries in this research report a target for their marketing of electronic resources. The targets are according to type of library: academic institutions report targeting students, faculty, other librarians, and library staff; public libraries target community members and the K-12 school

population; and medical libraries target health professionals, senior citizens, adults, and high school students. The academic institutions are specific about the kinds of student they target, noting incoming students, freshmen, or graduate business students.

Goals

Twenty-two libraries report a goal or objective for their marketing campaigns. Seven of those noted that a goal was to increase "awareness" of electronic resources. Increasing "use" of electronic resources was mentioned in four documents. Two examples of clear goals are: "Develop and implement an extended partnership with community centers and public libraries to provide computer workshop classes on access to health information"; and "[to provide] an opportunity to focus attention on the intellectual content of the library rather than the building itself."⁷ Some examples of less developed goals are: "The library had been quiet for too long; it was time to make everyone aware of their existence"; "We did not develop a formal plan"; and "We all want to make the most of our investments and resources."⁸

Strategies

The author defines the marketing component of *strategies* as having two pieces—the general approach as well as the specific techniques chosen—but in this analysis both were coded with the simple code of *strategies*; the two pieces are not distinguished in the final coding, therefore. This decision was made because many of the libraries easily described techniques in use but few stated a deliberate approach to accomplishing their goals. All twenty-three documents note a strategy (as defined for this research), listing thirty-eight specific techniques used. Whether the techniques are appropriate for the goals, and how they are measured, is addressed in a later section of this paper.

The specific techniques in use are: Academic staff as collection developers; Banners/posters; Blackboard; Bookmarks; Branding; Calendar; Collaboration; Collection policy; Email (external); Email (internal); Faculty/professionals as marketing tool; FAQ; Feedback form; Flyers/brochures; Giveaways; Home/off-campus access; Incentives; Mascot; Native language education; Newsletter; Newspaper alert; Online social networks; Patron training (group); Patron

training (individual); Phone call/personal visit; Pins; Postcards/letters/direct mail; Screen savers; Slide show/demonstrations; Staff training (group); Staff training (individual); Students as marketing tool; Survey; Usage statistics; Use guide; Web page alert; Web page, customized; Word of mouth.

Staff

Eighteen of the twenty-three documents mention the people involved with working on the marketing campaign. The people were generally not named specifically to a role in the campaign, but rather were part of an “ad hoc committee,” “each assistant librarian,” or “a combination of librarians and support staff.”⁹

Budget

Of the twenty-three institutions represented in this research, twelve of them report having either no budget for marketing or do not mention budgeting in the article. Lindsay found in a survey that “the library’s annual budget does not usually include funding specifically for marketing.”¹⁰ Of the five libraries that mention a specific dollar figure for their budget, the least is \$137 (a postcard campaign), the greatest \$3000 (laptops purchased for on-site marketing of electronic resources).

Time

Time is reported in seventeen of the twenty-three documents in a variety of ways. Of those, some are specific about a timeline for the entire marketing plan (“This team has prepared a three year strategy, for 2003-2006,”) while others focus on the timeline for only the marketing campaign being described in the document (“a month-long promotional campaign to promote Ex Libris SFX”).¹¹ The documents describing activities in an academic setting tend to focus on the beginning of the school terms as the start of the marketing campaign.¹² A few designed a time-sensitive themed campaign, such as “Awareness Week 2002,” “Orientation Week,” “Nursing Week,” and “National Library Week.”¹³ One library reports an understanding of the cyclical nature of marketing, noting that, “Although the program is started with a timeline in mind, and a general goal of promoting the resources, the promotion never ends.”¹⁴

Measurement

Twenty of the twenty-three documents report some kind of measurement as part of their marketing campaign. The measurements range from simple counts (“The SAMs instructed almost 500 people in forty-four classes across fourteen months”) and comparisons (“Last year, for the first time a number of peer tutors had created RefWorks accounts for themselves prior to the start of the fall 2005 semester. In the previous year, there were no students in the room with existing accounts”), to noting trends based on measurements (“After double-checking the statistics on the library’s fifty databases, and looking at three or four years’ worth of data, I saw the overall trend was that the numbers were heading down, slowly and surely”).¹⁵

Broering remarks on the difficulties in knowing how and what to measure: “One of the most challenging parts of a service of this nature, involving multiple sites and diverse population, is to gather information and data to evaluate the program with some degree of uniformity. . . . The measurement assessment is scientifically skewed by the very nature of the attendees and the multiplicity of topics being covered.”¹⁶ In sync with this thinking are two examples of the hurdle of measurement: “We don’t know how many of our postcards have actually been mailed by our patrons”; “Since the launch of GET IT the feedback from users has been anecdotal, but positive.”¹⁷

Assessment

When coding the texts for *assessment* the author focused on any mention of evaluation of the libraries’ marketing plans. Nineteen of the twenty-three libraries provide some kind of consideration of the effect of their marketing strategies. Determining whether or not the stated assessments provide actionable knowledge for the next phase in the cycle of marketing is addressed in the next section.

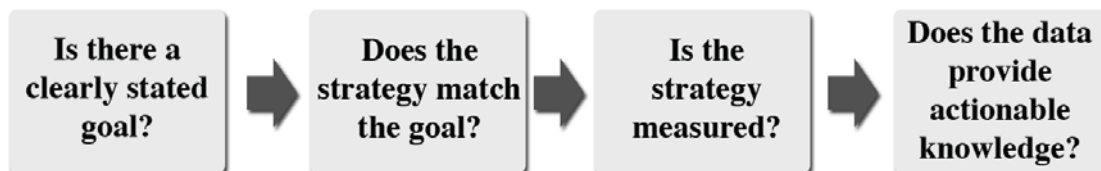
Does the measurement and assessment match the goal?

Having a clearly stated goal for a marketing plan should lead to choosing a strategy to achieve that goal, and identifying how to measure the strategy will ultimately tell a library if the campaign has

helped to reach the goal. This section uses the following model (see Figure 2), applied to each of the twenty-three documents, to see if the libraries in this analysis have efficiently designed their

marketing plans in order to gain information about how to proceed in their next steps in a marketing plan.

Figure 2: A model to assess a library's efficacy in marketing plan development



Libraries without a goal, a marketing strategy, measurement, or assessment were not considered in this portion of the analysis; five were removed, leaving eighteen libraries. The coded passages for these four marketing plan components were pulled together from each document to determine if the passage that was coded with *goal* was indeed clearly worded, if the passage that was coded with *marketing strategy* was appropriate for the stated goal, if the passage that was coded with *measurement* reported some kind of count of the strategy, and if the passage that was coded as *assessment* described an evaluation of the combination of their goal, strategy, and measurement.

Three of the eighteen were clear in describing the four components, as displayed in Table 2. The contents of the Table are quotes from the documents that were coded with *goal*, *strategy*, *measurement*, and *assessment*. They demonstrate an evidence-based assessment of the campaign, which can then be used in their next cycles of marketing. These three institutions have gained actionable knowledge. For example, in the first quote in the Assessment column one can see that the institution has learned that in order to get students to participate in instructional sessions, word-of-mouth advertising should be their focus.

Table 2: Goals, strategies, measurements, and assessments of successful marketing plans

	Goal	Strategy	Measurement	Assessment
1	“The goals of instructional sessions are to promote the library’s resources as scholarly and reliable, highlight special features of the resources, teach literacy skills, and present the library as a welcoming place.” ¹⁸	“... Tours and introductory sessions called Smart Start Library to acquaint incoming students with the library’s services and collections (including online databases and resources available via the Web site)”	“Students are asked to complete a short printed questionnaire following the session to help the library measure the effectiveness of instructional sessions.”	“Of the two hundred and eighty participants who completed questionnaires in September 2005, 87% of the respondents replied either ‘agree’ or ‘strongly agree’ in response to the comment ‘Orientation leaders influenced my decision to attend.’ These numbers demonstrate the value of word-of-mouth advertising.”
2	“Provide information to senior administrators regarding student awareness, perceptions and satisfaction of WSU's efforts to create a virtual library system.” ¹⁹	“The research team, in cooperation with library staff, created a questionnaire with 29 questions.”	“The response rate was less than expected. Of the 2,965 surveys mailed out, 271 were returned by November 22, 2000, for a response rate of 9.41 %.”	“From these figures, it is clear that the library's efforts to promote directly its electronic resources is not effective because only 18.5% of the students had learned about electronic resources from library publicity or librarians.”
3	“The objectives of this research were to (1) assess the awareness and usage of current electronic resources and services by a segment of the Libraries’ customer base, the faculty and teaching staff, (2) assess the obstacles to use of electronic information, and (3) determine how to increase the use of the available technologies and services.” ²⁰	“A random sample of 400 faculty (including teaching assistants) was generated by computer from a population of over 2,300.”	“Thirty-nine percent of the recipients of the survey responded.”	“... The most common cited obstacle to using information technology is lack of information; to increase use of electronic resources the Libraries need to provide more information and instruction on available resources. Obviously, current promotional efforts have not been sufficient.”

Part of a bigger plan?

We know that successful marketing campaigns are part of a larger marketing plan or institutional mission.²¹ Woods notes that, "A good marketing plan should be based on the library's mission statement, strategic goals and initiatives."²² It is surprising then, to discover that only seven of the twenty-three documents in this corpus remark that their campaigns are a piece of a library-wide plan.

Discussion and future research

Of the twenty-three documents in this analysis only three clearly demonstrate a commitment to using a marketing plan as a systematic process, based on data that can be viewed objectively. It is not clear from this analysis why libraries do a mostly poor job at identifying and employing the components of a marketing plan. Lindsay suggests, however, "Librarians do not understand the fundamental nature of marketing and public relations or its benefits."²³ As a result, composing a marketing plan may not be a priority for libraries. It is clear that libraries understand the need to market but still fail to develop a plan to do so.

Both Marshall and Lindsay report on the attitudes of director librarians about marketing but there could be deeper research in this specific area, since their reports on director attitudes were only a part of a larger project.²⁴ Probing more on the reasoning behind why a library director does not choose to make marketing (or marketing of electronic resources) a priority may provide researchers an opportunity to develop a solution to the problem.

Limitations of this research

It is clear that libraries other than those represented in this research are developing and activating marketing plans for electronic resources in their libraries. This research is limited in scope to just what has been described in published literature, and therefore does not reflect the numerous ways in which marketing electronic resources may be being done in libraries today. There are many publications about how marketing electronic resources can be done, but for this research it is instructive to use the published data because it reflects the actual

behaviors of libraries, related to marketing electronic resources.

Summary

This paper reports on the results of a content analysis of the published literature in the field of library and information science about library marketing plans for electronic resources. The author uses the components of a typical marketing plan to guide the analysis, giving special consideration to the evaluation of marketing efforts. The author discovered that though libraries report many of the components of a marketing plan, only three of those libraries have composed a thorough plan. These findings parallel the conclusions of Ford, Lindsay, and Marshall, who found that libraries do not plan well for marketing in libraries; libraries do not do better in developing marketing plans specifically for electronic resources.²⁵ This research also discovered that less than one-third of libraries in this research report that their marketing campaigns are part of a larger marketing plan in the library.

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Appendix A: Institutions referenced in this analysis

Brock University²⁶
Denton Public Library²⁷
Edge Hill College of Higher Education²⁸
Library System of Lancaster County²⁹
Lucy Scribner Library at Skidmore College³⁰
Morehouse School of Medicine Library³¹
Mount Sinai Hospital (Toronto)³²
National Health Service (NHS) in England³³
Pacific College of Oriental Medicine (PCOM) in San Diego³⁴
Science & Engineering (S&E) Library at UCSC³⁵
State and University Library, Bremen, Germany³⁶
Tanzanian academic and research institutions³⁷
Texas A&M University (TAMU) Libraries³⁸
Trinity University³⁹
University of Arkansas⁴⁰
University of Connecticut⁴¹
University of Illinois at Urbana-Champaign⁴²
University of New England, Armidale, New South Wales, Australia (UNE)⁴³
University of South Florida⁴⁴
University of Sunderland⁴⁵

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Truth-Telling and Survey Methods in Advocacy Research: A Call for the Formation of the Flat Venus Society in Library Assessment

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Abstract

Computerized images from the 1992 Magellan space probe depicted high mountains and deep canyons on the surface of the Venus. Aware that Venus is mostly flat, rolling plains, one planetary scientist founded *The Flat Venus Society* to advance the aim of accurate representation of planetary scientific data. Since a culture of assessment requires accurate, thorough, and impartial collection, interpretation, and reporting of data, this paper proposes the formation of *The Flat Venus Society in Library Assessment*.

The paper reviews major library advocacy research studies and campaigns in the US. Quite often these studies and campaigns report inaccurate information and draw unjustified conclusions. Many research studies fail to fully address limitations of their designs. Others misapply statistical techniques due to an insufficient grasp of their proper uses. Some campaigns use questionnaires for educational rather than data-collection purposes, exacerbating the already inadequate understanding of survey research methods among the profession at large. Interpretations and uses of cost-benefit and return-on-investment studies are often incorrect. Library value calculators are deceptive tools whose use should be abandoned. A call is made for the curtailment of the influence that marketing specialists have on the production of library advocacy information. The practices of these specialists threaten the reputation and credibility of the profession as a whole. A strategy by which the library assessment community might promote best research and quantitative analysis practices in librarianship is proposed.

*"Evidence is like a jigsaw puzzle. You can't see the whole picture until it is completed."
- Jessica Fletcher, Murder, She Wrote¹*

In his book *Visual Explanations* data visualization guru Edward Tufte recounts a story about astrobiologist David Morrison. When computer-enhanced images of the planet Venus were released by the National Space and Aeronautic Administration (NASA), their coloring, magnification, and scaling were grossly misleading. This led Morrison to publish this announcement in a planetary science publication:

This is a call for the formation of the Flat Venus Society. In the face of a media blitz that conveys the impression that Venus is characterized by soaring mountains and deep canyons, a dedicated group is needed to promote the fact that our sister planet is mostly flat, rolling plains.²

Because NASA's images exaggerated the slope of the planet's surface by a factor of 22.5 to 1, Morrison lamented:

It does not take a rocket scientist to calculate that the mean slopes are no more than 3. Yet the public thinks [Venus's volcanoes] are precipitous peaks with near-vertical walls rising into a black sky. (A black sky? On Venus?)³

Planetary scientists favoring fair, accurate, and responsible interpretation of scientific data were thus sought for membership in Morrison's Society.

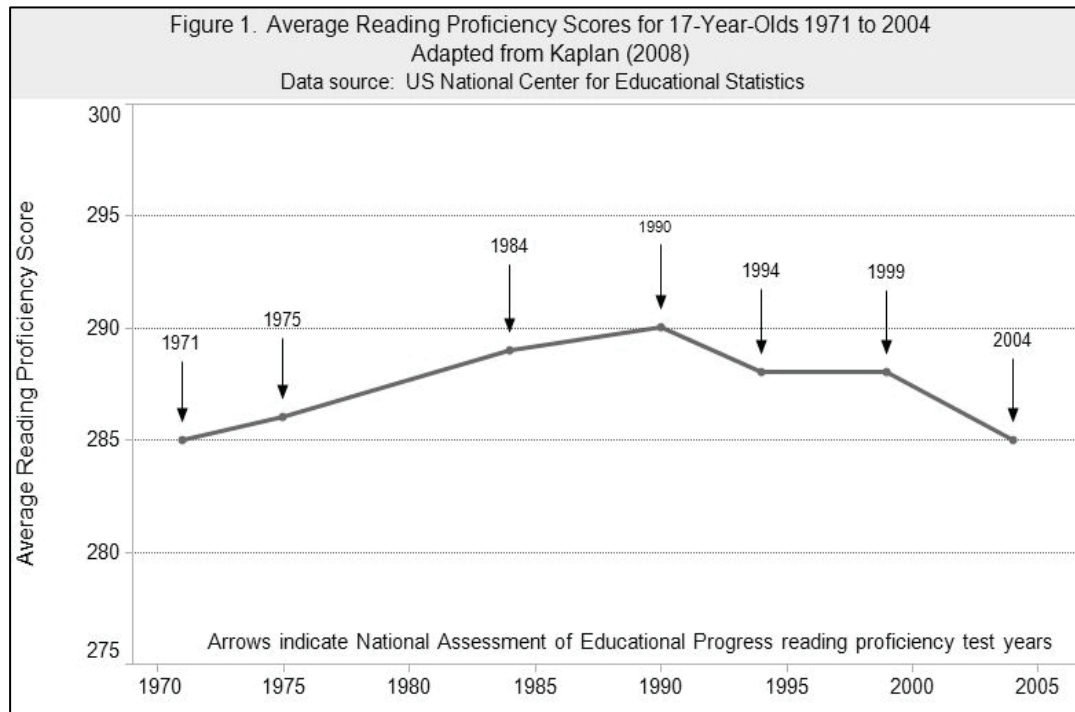
It seems only natural that librarianship would support the sort of stance Morrison took. The importance of establishing the authenticity, accuracy, completeness, and relevance of information is central to our professional practice. Yet, we delegate our professional advocacy duties primarily to library marketeers who apply the same tactics as NASA's cadre of public relations specialists. Campaigns devised thereby on behalf

of libraries and librarians end up violating the core principles of the profession. Therefore, this paper is a call for the formation of *The Flat Venus Society in Library Assessment*. Information professionals favoring fair, accurate, and responsible portrayals of the efforts and accomplishments of libraries are hereby cordially invited to join!

Interested recruits can prepare for the task ahead by drawing inspiration from the work of Kaplan (2008),⁴ who wrote: "To test official claims against available data requires us to know both how to understand quantitative measures and, more important these days, how to follow or seek out the trails that lead from claims to evidence."⁵ Kaplan examined the findings of a 2007 National Endowment for the Arts (NEA) report on the

status of reading in the US.⁶ To support their claim that reading skills have been on the decline, NEA used a subset from a larger set of survey data on student reading proficiency collected by the National Center for Educational Statistics (NCES). Specifically, the full set of data spanned from 1971 to 2004, while NEA's analysis began with 1984.

One of Kaplan's key observations is illustrated in Figure 1: There was a moderate upswing in the average reading proficiency score for 17-year-olds until 1990, followed by an equivalent downswing into 2004.⁷ In other words, average reading proficiency levels in 1971 and 2004 were the same. So, NEA's use of half of the overall data misrepresents the larger picture. There was no substantial reading decline over the longer period.



Granted, other data in the NEA report that buttressed the theory of the decline of reading were interpreted reasonably fairly. Yet, not all of the data supported NEA's argument. Though unmentioned by Kaplan, NCES data also showed that average proficiency scores for 13-year-olds increased consistently from 1971 to 2004.⁸

When investigating research questions researchers are obliged to examine the complete range of evidence impartially even when some evidence

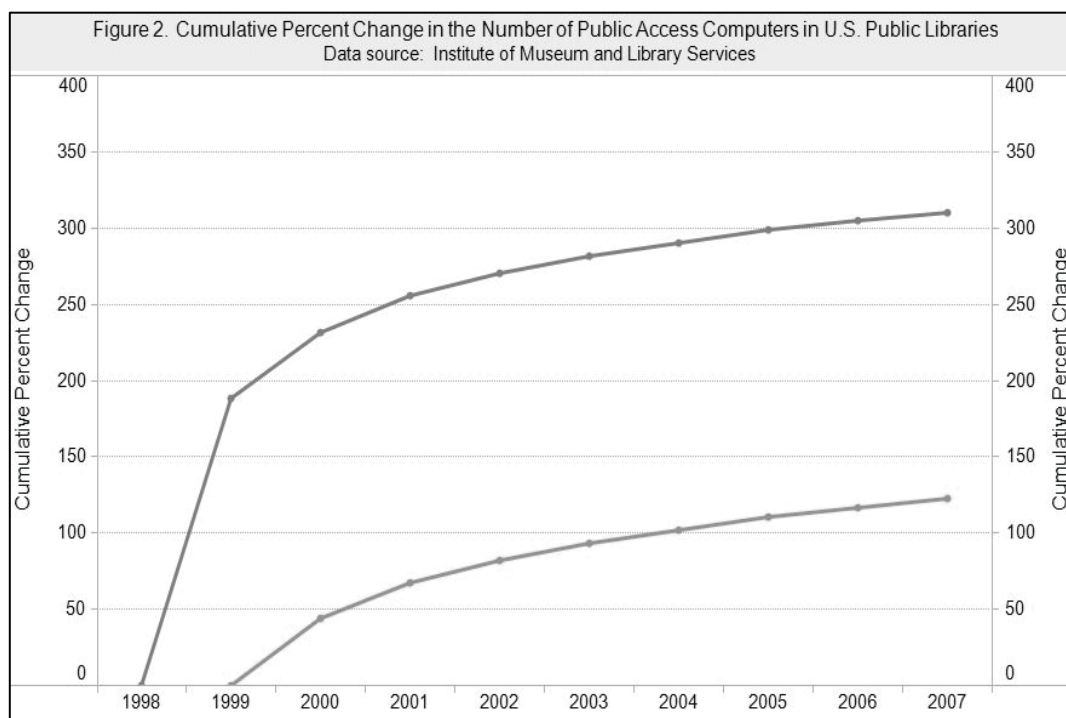
might contradict our hypotheses. A key challenge for advocacy research is producing defensible findings while embracing the values that inspire the research. We apply evaluation and behavioral science research methods to library advocacy in order to produce evidence that passes higher standards of validity and objectivity. Impressionistic, anecdotal, biased, or otherwise tainted information all interfere with the accomplishment of this objective.

Rationing Exaggeration

Nevertheless, the temptation to sensationalize data can be difficult to resist. This was true for Becker et al. in their national survey of use of public access computers. They report that the “average number of public access computer terminals in public libraries grew by more than 300 per cent.”⁹ Their observation is based on the annual survey of public libraries conducted by NCES. 1998 was the first year that counts of public access computers were collected. That year only 57% of libraries submitting their annual data reported this new item.¹⁰ So, the 1998 count—24,088 for the fifty US states and District of Columbia—was quite understated.

In 1999 when 96% of reporting libraries did report

this item, the count of public Internet terminals jumped to 69,427.¹¹ The increase from 1998 to 1999 was 188% as seen in the upper line in Figure 2. This single-year boost caused the cumulative rate of change to reach 300% by 2005. However, tracing the rate from 1999 results in a cumulative change of only 122% by 2007 as seen in the lower line in Figure 2. Clearly, this line is a fairer representation of cumulative growth. Moreover, rates of national public access computer installations over time are not useful measures of progress in making them available. Installation rates are necessarily high early on, diminishing steadily over time. The more useful measures of progress are the total number of computers installed and the extent to which these meet community needs.



Because of the extended economic downturn, public library advocates have recently latched onto the ideas of libraries as key sources of career assistance for U.S. citizens, and library computers as powerful job-seeking tools. These ideas have been disseminated widely by the American Library Association (ALA) and also appear in a national marketing project created by the Online Computer Library Center (OCLC) known by the 21st century moniker of “Geekthelibrary.org.” A brief educational questionnaire on the project’s website lists this multiple-choice question: “In the

current economic climate, what is the most common use for your local library’s computer center over the past year?”¹² The correct answer is given as “preparing resumes and searching for jobs.” The website elaborates:

Libraries across the country report a significant increase in people coming in to use computers specifically to find and apply for jobs. Over 60 percent of U.S. libraries say that helping job seekers is now one of the most critical roles they play.¹³

While the Geekthelibrary.org website cites no sources for this information, the first statement appears to be based on anecdotal reports from national and state library organizations and the news media. The second statement is probably from one of the series of longitudinal studies by Davis, Bertot, and McClure. This particular study found that 66% of librarians believed that computer-related services for job seekers are critical to their community.¹⁴ The following year the same researchers found this figure to be 74%.¹⁵ Neither of these surveys collected data about how often library computers were used for job-seeking compared with other uses. This technicality did not prevent Geekthelibrary.org staff from transforming librarians' impressions into measures of services actually delivered. Nevertheless, their claim is pure speculation.

As masters of persuasion, library marketers seek to charm rather than inform. A typical example of marketeering prevarication is this factoid-style assertion: "US public libraries offering career assistance: 13,000" and "US Department of Labor One-Stop Career Centers: 3,000."¹⁶ The suggestion is that, due to their prevalence, libraries provide 4.33 times more career assistance than government one-stop career centers do.

There are two problems with the comparison. First, due to their prevalence we might suppose that neighborhood convenience stores sell four times as many gallons of milk as supermarkets do. But we need actual sales figures from both store types to see whether this is true. Second, the comparison ignores the specific types of career assistance most public libraries provide compared with those most career centers do. Public library services are likely to be self-service access to vocational materials, word-processing, and online job search websites, and so forth, whereas in government centers these will typically be vocational assessments and counseling, training in resume writing, job interview coaching, and so on.

The data in the OCLC flier are inadequate for demonstrating whether or not public libraries outperform government career centers. Accurate measures of the mix and amounts of services users receive at these two institutions are necessary to make a valid comparison. While government career centers routinely collect data

like these, libraries do not. Indeed, these measures would be quite valuable for library advocacy, comparisons with other public agencies notwithstanding. Unfortunately, our surveys to date, including those by Becker et al. and Davis et al., have not addressed this information deficit.

Really Mistaken Conclusions

The overinterpretation of library survey data takes various forms, as do mistaken conclusions drawn. For instance, Geekthelibrary.org alleges that "Demand for [library] computers in most libraries is so great that there is often a lengthy wait time . . ." and these "waiting lines are commonplace."¹⁷ In this case, Geekthelibrary.org again neglects to cite its information source. Presumably, the source is the same as the survey used by ALA to make this assertion:

Growing community demand...can overwhelm library resources...Despite ongoing improvement in the number of Internet computers available to the public, seven out of 10 public libraries report they do not have enough computers to meet demand all or some part of the day.¹⁸

The statement refers to the proportion of respondents choosing either of these two responses (of five available) to a questionnaire item in the study by Davis and her colleagues: (a) having "consistently fewer" computers than needed on any given day and (b) having fewer computers than needed "at different times" in any given day.¹⁹ It is unclear how uniformly respondents interpreted the wording of the multiple-choice responses. And, again, the data are the impressions of librarians, not auditable transactions reflecting actual computer availability and use. As for Geekthelibrary.org's interpretation of survey findings, Davis, Bertot, and McClure did not collect data about wait times. Thus, characterizing these as "often lengthy" is an embellishment of the facts.

Even overlooking these deficiencies, is it reasonable to conclude that library resources are "overwhelmed" because patrons wait for computers? Good public management requires balancing resources with need or demand. The particular problem of wait times is a quantitative one routinely addressed by the field of operations research. A typical operations research question in public services is the optimal distribution of

emergency resources like fire fighting personnel and equipment or police patrol cars in a community. The goal is to minimize response (wait) times and deliver ample resources to respond effectively to emergencies—without over-spending public funds. In the provision of emergency services it is understood that equipment may often be idle. However, for other public services including public library computers under-utilization of equipment is a misuse of public funds.

Corporations understand this idea very well. An especially apt example is Disney World where waiting lines are an accepted part of the “guest experience.” Disney employs staff with PhDs in queuing theory to fine tune operations in order to maximize throughput on their attractions. Success is having a sufficient capacity that is busy all of the time while making wait times acceptable. As statistician Kaiser Fung explains, with Disney’s attractions and also urban highway traffic flows, it is impossible to avoid occasional long delays no matter how many resources are made available.²⁰ Waiting lines may well be indications of efficient use of library resources. Assessing the sufficiency of these requires more informative data than are available from the studies by Davis et al.

Buying Bias

The inadequacy of data does not prevent their promotion by the Geekthelibrary.org project. Indeed, several of the factoids posted on the project’s website are untrue, including these statements: “Over 70% [of] elected and appointed officials feel that the library has sufficient funding” and “the majority (73%) [of elected officials] think the library has enough money for day-to-day operations.” In this instance the project cites a source for its information, which happens to be the OCLC study by De Rosa and Johnson that was the progenitor of the project itself.²¹ In this study the researchers polled US elected officials by emailing the subscribers of *Governing*, a professional trade journal. Eighty-four self-selected respondents completed the study questionnaire.²²

Almost always self-selected samples are biased and inadequate reflections of the larger population our research studies seek to describe. Indeed, the OCLC researchers acknowledged this deficiency, noting that these respondents

“represent a convenience sample that is quantitative but not statistically representative of all local elected officials in the United States.”²³ The researchers should have therefore stated that the inferences could not and should not be drawn from this sample to the US elected officials nationwide. Instead, they devoted twelve additional report pages to an analysis of these data as if they were reliable reflections of elected officials nationally.²⁴

In these situations two basic explanations are possible, both of which are troubling: A research team recognizes significant faults in their findings and dismisses these intentionally, portraying the findings as if they were sound. Or researchers might not recognize the flaws or fully appreciate their severity. So, they operate under the misconception that their findings are more rigorous than they actually are.

It is difficult to tell which is the case in the OCLC study due to the researchers’ incongruous statement about the convenience sample. Perhaps they misunderstand aspects of sampling theory, as, for example, their use of the term “quantitative” implies. Samples are neither quantitative or qualitative, although data collected by means of sampling is usually quantitative.

Besides, whatever meaning might be ascribed to the term, the fact remains that the sample is unrepresentative.

A related entry on this same topic appears in the report’s glossary:

Convenience sample—Data drawn from a population that has been selected because it is accessible and appropriate; not necessarily a statistically significant sample.²⁵

An entire sample cannot be characterized as statistically significant or insignificant. Rather, these designations are reserved for specific patterns exhibited in data that might (or might not) come from a sample. Statistical significance, discussed more below, is quite distinct from sample selection.

Unfindings

The possibility of conflicted intentions of researchers is illustrated in a recent study by

Roman, Caron, and Fiore.²⁶ To the study's primary research question, "Do public library summer reading programs impact student achievement?" the researchers respond with an unequivocal, "Yes."²⁷ Unfortunately, the evidence produced by study is quite insufficient to support this conclusion.

Proving that public programs produce change in clients requires certain minimum research design features. The designs must be able to isolate effects attributable to the program from those caused by extraneous factors. For this reason the most rigorous evaluation studies use random selection of participants, randomized assignment of participants to a program (treatment) group or control group, and/or some reliable method for establishing a baseline against which program results can be gauged.²⁸ Study designs that lack these methodological controls are insufficient for establishing an unambiguous link between the program and the results observed.

The design of the study by Roman et al. fails to establish such a link. The data reveal that summer reading students ("attendees") out-performed students not attending summer reading programs ("non-attendees") both before and after the summer reading programs were held.²⁹ Thus, high reading achievement by attendees is attributable to factors beyond the summer programs. Because the attendee and non-attendee groups were not equivalent to begin with, comparisons between them are invalid.

The study data also show that average gains in post-summer reading proficiency by non-attendees was three times greater than gains by attendees. In the face of these significant contradictions, the study fails to explain any of the reading proficiency gains. The question about the role that summer reading plays in improving reading proficiency remains unanswered.

The researchers do acknowledge several weaknesses in the research design and say that the study therefore is "not definitive."³⁰ (The more accurate term would be "inconclusive.") They also explain that their research approach was intentionally "naturalistic" and "causal-comparative."³¹ Whatever the advantages of these alternative designs, they do not produce reliable information about program impacts, again, due

the lack of unambiguous linkages between program and results.

Unfortunately, this important fact is omitted from the executive summary, which reports this assertion without qualification: "Students who participated in the public library summer reading program scored higher on reading achievement tests at the beginning of the next school year than those students who did not participate . . ."

³²Readers are left to assume that the summer programs accounted for the difference. We can only speculate about the motivations of researchers in studies like these. Are they purposely whitewashing results or do they believe their conclusions stand in spite of the study's significant shortcomings?

The Road to Wrong Information

For some researchers the road to wrong information is paved with the best of intentions. Rather than being purposely misleading, their studies present wrong information due to an inadequate grasp of research and statistical methods. A prime example is the use of inferential statistics and statistical significance testing. Because the theory of inferential statistics is so convoluted and non-intuitive, most statistics students never understand its concepts fully. As research psychologist Rex Kline reported, well-trained behavioral scientists often get the theoretical and practical details wrong.³³

It is not surprising, then, that library studies using inferential statistics would misinterpret their meaning. A recent OCLC report is an example of this.³⁴ The researchers conducted statistical significance testing on data from their survey of user perceptions of online catalogs. Then they made observations like "Significantly more public library respondents" preferred a given feature than academic or special library respondents, or that "significantly more academic and special library respondents ranked" some features higher than public libraries did.³⁵

These observations, however, misjudge what tests of statistical significance do. In actuality, they are like pass-fail tests. The tests serve as a rule-of-thumb for determining whether differences found in data are probably, one might say, "real" rather than "imaginary." When the data pass the test (differences observed are "statistically

significant”), the result is arguably a valid reflection of the phenomena under study rather than explainable as a statistical artifact or fluke. When the data fail the test, the observed data (differences) are considered to be a statistical fluke.

Tests of statistical significance do not tell us whether some data are significantly higher or lower than other data. A given difference might be considered small, moderate, or large depending on the context. An evaluation of the magnitude of observed differences should be based on subject area knowledge and professional judgment, not on statistical significance. Statistical significance testing answers only the pass-fail, yes-no question of whether differences are likely real rather than statistical flukes. Granted, this is a subtle point about a confusing topic. Still, if our studies are unable to interpret a given statistical tool correctly, we should avoid using the tool. Otherwise, our misinterpretations can lead our reader audience astray.

An American Association of School Libraries (AASL) study did happen to lead its readers astray concerning its survey results.³⁶ In each year in which it was conducted, this longitudinal study has been based on respondent self-selection, that is, a convenience sample. In this case, the AASL report includes margin of error information—percentage ranges typically appearing with surveys and polls to indicate how precise the survey data are based on certain statistical assumptions. These assumptions, however, require that the survey utilize a probability sampling method such as random sampling. Convenience sampling falls under the more general rubric of nonprobability sampling. There are no reliable ways for estimating the precision of survey findings when respondents are selected using nonprobability sampling. So, the margin of error information AASL published is fiction.

The Beneficence of Cost/Benefit Analysis

To some in librarianship, financial and economic comparisons hold the greatest hope for proving and promoting the worth of libraries. These comparisons involve two related methods for estimating value—return-on-investment and cost-benefit analysis. Each approach involves calculations meant to identify the extent to which the economic benefits of a library (or library

program) exceed its economic costs. The theoretical bases for these approaches are exceedingly complicated, involving several nearly incomprehensible concepts (“Pareto improvement,” the “Kaldor-Hicks criterion,” and others). Fortunately, as a project proceeds with survey instrument construction, the relevant concepts (“contingent valuation,” “willingness-to-pay,” “consumer surplus,” and so on), are not quite so esoteric.

Nevertheless, once studies are completed and results reported, a gap in our understanding becomes apparent. We are still apt to misunderstand the theory behind these approaches. For instance, Elliott et al. have been careful to communicate an important principle pertaining to cost/benefit analysis: Valuations from this analysis are unique to the communities and institutions from whence they come.³⁷ The figures are really not comparable across communities or institutions due to differences in assumptions and measures utilized. While cost/benefit ratios are expressed in units of currency (dollars), the ratios are not necessarily standard, that is, they may not be calibrated on equivalent scales. The library community at large remains unaware of this constraint as evidenced, for example, by the list of return-on-investment ratios from various US states published by the Library Research Service.³⁸

Results from cost/benefit analysis are statements about “economic efficiency,” the degree to which the measure of relevant economic benefits surpasses all relevant economic costs. This idea should not be confused with the idea of “technical efficiency” (also called “operational efficiency” and “productivity”). Technical efficiency refers to a determination of the financial cost of producing a standard amount (single unit) of a given product or service.³⁹

Nevertheless, a report by the now defunct Americans for Libraries Council mistook one form of efficiency for the other. It commended a library whose cost/benefit results led to the library sharing “management practices with local school systems and fire districts . . . to impart the secrets of its efficiency in managing money.”⁴⁰ Neither cost/benefit analysis nor return-on-investment results are indicators of an organization's operational efficiency or its financial performance.

Neither are they indicators of the managerial skills of its administrators.

More importantly, returns and benefit/cost ratios do not answer an important question: Are returns or surplus of benefits over costs adequate? Because these approaches take a purely economic perspective, they raise the distinct possibility that alternative public programs could produce greater returns given the same resources. Thus, if a local parks and recreations program demonstrates a return-on-investment that exceeds that of library (presuming both are conducted in the same community using the same measures and assumptions), the community would be justified therefore to transfer its investments from libraries to its parks and recreation programs.

The most insidious use of these analytic approaches is the now popular "library value calculators." They calculate ostensible savings that users enjoy from borrowing books, attending library programs, and so forth compared to the taxes or tuition they pay in support of the library.⁴¹ However, these calculators are mere promotional gimmicks masquerading as assessment instruments.

Consistent with the mindset of marketeering, these virtual devices seek not to inform but to delight. What is not obvious, however, is how they hide information. They do so in the same manner that a skillful magician hides details of the physical realities of her tricks, namely, by means of distraction. The returns they announce for an individual user are, in reality, counter-balanced by one or more students, citizens, or households whose returns are negative. Losses by this group directly subsidize the surpluses reaped by happy users of these devices. The losses part of the equation, as it were, is conspicuously absent from the calculator's programming. Withholding information like this makes these tools slanted and deceptive.

Further, the whole idea of individual returns or benefits is inimical to the conduct of library assessment. In assessment our objective is to determine how the library and its programs benefit the community of users as a whole, not how any given individual fares. For this reason, the calculators are not bona fide assessment tools. Regrettably, they have been endorsed by leaders

in library evaluation and assessment including the Library Research Service and Herson and Altman.⁴² However, because these calculators withhold information, they are deceptive. Their use by libraries should be abandoned.

Plan for Our Planetary Society

The mission of the *Flat Venus Society in Library Assessment* is to keep the profession mindful of our commitment to responsible collection and use of library advocacy information. The Society encourages the formulation of complete and balanced portrayals of evidence without embellishments, hyperbole, or spin. In the end, exaggerated interpretations of data prevent us from improving the quality of our research and statistical information gathering. Stretching the truth about study findings can lead us (and our constituents) to believe our information is more substantial it actually is. This mistaken belief then removes the incentive to seek the information actually needed to answer our research questions.

Part of the problem is the library profession's inordinate emphasis on marketeering, along with that specialty's low regard for information accuracy. Another is the profession's general ignorance of the principles of research, assessment, and evaluation. This ignorance makes the misappropriation of assessment tools for marketeering purposes easier, as the case of library value calculators illustrates. Misappropriation of tools in this manner violates basic principles of sound measurement and evaluation. And it trivializes the assessment process, making users believe that measurement is a cinch when nothing could be further from the truth.

The same is true for the now popular use of questionnaires as teaching tools rather than survey research instruments. The multiple-choice Geekthelibrary.org questionnaire described earlier is one example. Another is an online questionnaire promoted by the Institute of Museum and Library Services to promote "21st century skills."⁴³ While the educational goals pursued might be laudable, this application adds to the profession's already considerable naiveté regarding survey methods and measurement. The purpose of teaching-tool questionnaires is to influence (that is, change) respondents. That this purpose is wholly incompatible with sound

measurement will not occur to most library professionals. In research and measurement it is crucial that data collection techniques do not bias or unduly influence respondents.

The only way to counter the inordinate influence of library marketeering is to establish high standards for advocacy information accuracy, reliability, completeness, relevance, and reasonableness. A fruitful area in which to begin would be lobbying for sound survey research practices throughout our professional organizations. In particular, we need to stress the importance of avoiding conducting surveys by means of convenience sampling. Further, the profession needs to assess potential bias in surveys conducted online by opinion research bureaus whose survey methods and respondent panels are proprietary and unverifiable. We might also emphasize the importance of replicating survey studies, following Kline's reminder that, "Replication is a gold standard in science."⁴⁴ In this same vein, we need to educate consumers of advocacy research so that they realize that no research findings are completely certain (uncertainty always lurks), regardless of the rigor with which it has been conducted.

In light of this pressing need, the formation of the first working committee of the *Flat Venus Society in Library Assessment* is hereby announced: The Standards Committee. Interested applicants for membership are cordially welcomed!

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Marketing and Assessment in Academic Libraries: A Marriage of Convenience or True Love?

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Abstract

Despite the worldwide increase in marketing in academic libraries in the past 10 years, marketing of assessment activities is not widely practiced—even in the USA and UK.¹ However, with the recent growth of library assessment—the majority of assessment coordinator positions were created in the past 10 years²—marketing teams are promoting library surveys and marketing their results, as well as promoting existing and new library services.

This paper describes the process of cooperation between the Marketing and Assessment Teams at the University of Haifa in Israel since 2008, from the initial apprehension to the successful marketing of the **In-Library Use, Wayfinding, Focus Group, LibQUAL+®** and **Non-User** studies.

Introduction

The last decade has seen an increase in the interdependence of library marketing and assessment—a process whose importance was recognized in the private sector by Souder in 1981 who found that “a disharmonious relationship between the two groups was a major factor in the failure of new products.”³ And it is not uncommon in the private sector for marketing managers to carry out both assessment (market research) and marketing.⁴ This interdependence was first mentioned in the library literature by John Sumsion in 2001 when he stated that “Marketing and user studies may employ different terminology but in reality, they are two sides of the same coin”⁵ and was followed by Sara Kearns’ more explicit explanation in her 2004 article *Marketing Library Service Assessment*.

Marketing and assessment are converging in libraries...librarians are recognizing that assessment and marketing are intertwined so that libraries cannot be marketed without

knowing what users want and that libraries cannot be assessed if users do not what they can or do offer.⁶

It was further reinforced by Melissa Becher and Mary Mintz’s in their paper at the 2006 *Library Assessment Conference* on the “symbiotic relationship between marketing and assessment.”⁷

Promoting library assessment activities is not an easy task for most libraries and the difficulty is compounded due to a dearth of professional literature on the subject - one useful publication is the LibQUAL+® team’s “Suggestions for Marketing your LibQUAL+® Survey.”⁸ However, coordinated marketing and assessment team efforts prior, during and after survey administration can lead to increased response rates, greater visibility and increased library use—as seen at the University of Haifa and American University libraries.⁹

Since the 1980s, many academic libraries have been aware of the need to market their resources and services “in order to facilitate the achievement of important organizational goals.”¹⁰ However, library marketing is still not widely practiced outside of the US,¹¹ partly due to the substantial effort and budget required to do so effectively. And even in the USA where most libraries do market their services, very few libraries have an independent marketing unit—more usually marketing is linked to a library development or fundraising department.¹² By the same token, library managers are becoming increasingly aware of the importance of assessing their activities in order to accomplish their strategic goals.¹³ As a result, marketing teams are now faced with the need to market not only their library’s resources and services, but also to promote surveys, which require the participation and goodwill of its users (and non-users), and to

publicize the results of these surveys—which may not show the library in an entirely positive light.

Goals of University of Haifa’s Marketing and Assessment Teams

In 2006, the University of Haifa made a strategic decision to create two teams to deal with this issue. A six-member Marketing Team was chosen by the library management with members from each of the main departments. The criteria for their inclusion were based on their professional abilities, and their leadership and interpersonal skills. For example, one member was the library’s graphic designer, one was the library’s web site manager, and one was in charge of the blog. The team leader had very good connections within the university—such as with the university’s Public Relations department. The team has the following goals:

- To promote awareness of existing and new library resources and services
- To increase accessibility, awareness and use of library resources and services
- To increase visibility of the physical and digital library

A year later, a nine-member Assessment Team—two of whom were also members of the Marketing Team—was formed. The original team leader was the head of reference, but she retired a year later and the job was assigned to the Head of Interlibrary Loans who had just finished writing a doctoral dissertation in Information Science and was one of the few librarians with experience in survey administration and statistics. The other members were talented librarians - most in non-managerial positions—who were familiar with the library’s strategic plan and vision. It has the following goals:

- To create a “Culture of Assessment” as defined by Amos Lakos, Betsy Wilson and Shelley Phipps between 1998 and 2002 as:
An organizational environment in which decisions are based on facts, research and analysis, and where services are planned and delivered in ways that maximize positive outcomes and impacts for customers and stakeholders. A “Culture of Assessment” exists in organizations where staff care to know what results they produce and how those results relate to customers’ expectations.
Organizational mission, values,

structures, and systems support behavior that is performance and learning focused.¹⁴

It was later summarized by Denise Covey as “a set of beliefs, behaviors, and assumptions that drive an ongoing cycle of data gathering, analysis, interpretation, organization, presentation, and use to achieve planned objectives”¹⁵

- To assess the extent to which the library is meeting the needs of its customers.
- To assess the extent to which library customers are satisfied with library services.
- To recommend the implementation of changes in the library based on the surveys that are conducted.

Initially, neither the Marketing nor the Assessment Teams were very enthusiastic about cooperating with each other, but the mutual benefits soon became apparent: the Marketing Team could benefit from the Assessment Team’s market research and therefore priority-setting, and the Assessment Team could benefit from the Marketing Team’s assistance in promoting its activities. In addition, as both teams were quite large and consisted of members who had primary job responsibilities outside of marketing and assessment, the workload and expertise could be distributed among more people. Some of the difficulties encountered and how we overcame them are outlined below.

Reservations about conducting joint marketing/assessment projects

The two main reasons for the Assessment Team’s reservations about working with the Marketing Team stemmed from a fear of loss of autonomy regarding decision-making; for example, decisions about the texts on invitations, posters, blog posts etc. needed to be made in conjunction with the Marketing Team and concerns about the practicalities of working with so many people.

There were several reasons why the Marketing Team was concerned about marketing assessment activities:

First, marketing is a time-consuming, expensive and labor-intensive process, and it is far more difficult to market assessment activities that have no immediate benefits to the user, than it is to

market essential library resources, services and products.

Second, it is necessary to enlist the goodwill of users who need to be convinced of the future benefits of devoting their time to a survey, and inevitably need to be offered expensive incentives.

Third, there was a belief among some librarians that assessment is redundant (unlike marketing which was unanimously accepted as necessary); for example, when the University of Haifa carried out its **Wayfinding** study, some people said “we know what the problems are so why bother surveying?” And prior to the **In-Library Use** survey and **LibQUAL+®**, we were told that the majority of people who answer surveys are either grippers or exceptionally pro-library, so why bother? - or as Kearns called them “library cheerleaders or disgruntled users.”¹⁶

Fourth, there was a belief that marketing would not increase survey response rates for some assessment activities; for example, during our **Non-User** survey we were told that the survey was redundant as it in a student’s own interest to use the library, and not the library’s responsibility to market it to disinterested students.

Fifth, the difficulty of publicizing negative results; for example, our 2009 **LibQUAL+®** results showed a gap between the perceived and desired levels of noise in the library, which proved challenging to publicize as there was going to be even more noise during the future renovations.

Sixth, the results of library assessment activities may show that current marketing activities are deficient—recent studies show that more than 40% of students lack knowledge about library services and resources;¹⁷⁻¹⁸ for example, several of our surveys showed that many of the desired services already existed, such as home delivery of books/articles from the collection, lap top sockets etc.

Seventh, there are very few courses in library schools on marketing or assessment—so librarians had to learn these skills on the job. In our library, none of the marketing or assessment librarians received formal training, apart from a few professional courses, guidance from a faculty member, and the ARL’s ESP program.

Eighth, the difficulty of depending on the services of other professionals; for example, our graphic designer and the university’s public relations departments had other commitments and time constraints which limited us.

Despite the above reservations, several assessment projects were successfully marketed during the past three years, following a request from the assessment team—and with the approval of the library directory. The first step was a formal meeting in which the head of the Assessment Team met in person and explained the aims of assessment to the head of the Marketing Team and then to rest of the marketing team. Next we decided on and created an Assessment Team logo with the slogan “You can impact the library!” which appears on all assessment materials, followed by the creation of a library assessment website: <http://lib.haifa.ac.il/libinfo/assessment/english>. For each survey the assessment team submitted a formal request for assistance from the marketing team, conducted assessment team meetings on how we wanted to market each survey, and met formally with the marketing team to explain about the survey and receive their input on how it should be marketed. The two teams never met in person, but there was a lot of e-mail correspondence to/from all team members. Many of these e-mail discussions were lively and agreement was not always reached easily. For example, the marketing team usually wanted catchy attention-getting phrases, whereas the assessment team preferred messages that conveyed the true intention of the surveys.

In May 2008, on the advice of the ARL consultants Steve Hiller and Martha Kyrillidou, we ran our first survey the **In-Library Use** survey—a Hebrew translation of the University of Washington’s one-page questionnaire on what users did in the physical library on a particular day. We distributed questionnaires during two-hour slots for two weeks in the middle of the second semester. We created posters which we hung up around the campus, posted updates and photographs on the library blog, the library and university web sites, and on the plasma television screens. We hung balloons at the entrance/exit to the library and student employees with library t-shirts approached potential participants and handed out questionnaires and sweets. We

decorated boxes with the assessment logo for returning completed forms.

After the survey closed, we published a summary of the results on the library blog, FB and presented it at library staff meetings and national and international conferences.

Our next joint marketing project was the **Wayfinding** study which we conducted in November-December 2008. We sent graphic invitations by e-mail to a sample of 110 new students who were asked to choose a convenient day and time to participate in a study in which they would be filmed in return for 50 nis. We received 20 positive responses and 10 students turned up on the assigned day. We asked them to find three items in the library and observed them attempting to locate them. After we had viewed all the sessions, we transcribed and analyzed the results and published the report on the blog and at staff meetings.

From March-June 2009 we carried out five **Focus Group** sessions on the subject of the upcoming renovations. We sent graphic invitations by e-mail to a sample from five specific groups: BA, MA, Research Assistants, PhD, and faculty members. We offered 50 nis to each student participant as an incentive.

In May 2009 we ran **LibQUAL+®**. Our marketing began by sending a graphic letter to the whole population of 22,000 students and faculty. We hung up posters around campus and published it on library and university web sites. Student employees roved the campus with laptops and offered to fill in the survey for students. A raffle of coffee and cake vouchers and book shop vouchers were offered as incentives.

Our most recent survey was the **Non-User** survey which we conducted in May 2010. We sent an electronic one-page questionnaire by e-mail to 5,000 students and faculty who hadn't borrowed a book or accessed our electronic offprints' database during the previous academic year via **QSIA—Question Sharing, Information and Assessment** (http://qsia.haifa.ac.il/qsia_struts/Opening_1.do?notifications=Clear) the library's own software for creating online exams, assignments and surveys. We called it **Patterns of Use Questionnaire** and presented it as a questionnaire

whose aim was to understand how people obtain academic information so that respondents wouldn't know that they had been targeted as non-users. No incentive was offered and no marketing was done—due to problems targeting the desired group such as obtaining active e-mail addresses. As expected, the response rate was very low, possibly due to the lack of marketing, but more likely due to technical problems during the first few days of the survey and the inherent difficulty of getting non-users to respond to such a survey.

Measuring Success

We determined the success of our assessment/marketing projects by: the response rates, the representativeness of the results, and the number of free-text comments with rectifiable issues. Although the response rates were not very high in any of the surveys, they were very representative of our population, and with over 40% of respondents filling in free-text comments we were able to use and apply the information received to make changes. Based on the survey results and comments, we created and marketed an additional group-work room, improved signage, and embarked on a quiet campaign - all of which have improved services for our users.

For the **Quiet Campaign** we created posters, screen savers for the public workstations, and colorful bookmarks which seemed to have a very positive effect on the noise level. We also created a "**You said—We did**" document which outlines all the changes we have implemented since the first four surveys which we published on the library blog, FB, and the library website (see below). Some of the changes were already in the planning stages before we carried out the surveys, so they were more easily-implemented once we received confirmation of our intuitions, however some issues such as the widespread dissatisfaction with the noise level, were not known and the quiet campaign began following the **In-Library Use** survey. The high priority given to implementing these changes is directly connected to the library management's vision of improving service and putting the user at the center.

- **Quieter library** We are undergoing a "Quiet" campaign. A member of the library staff roves the library during peak hours and asks people to turn off their mobile phones

- **Group study areas** We created an additional group study room on the third floor of the library which has tables, computers and a drinks machine.
- **Help locating books on shelves** We installed an internal telephone helpline in various places in the library. Temporary library staff members now wear purple shirts for easy identification if help is need among the stacks.
- **Improved signage in library** We added signage to the entrance/exit and to the Media and Periodicals Departments orientation and among the stacks.
- **Allow entrance to the library with bags** At the beginning of the last school year we began allowing you to enter the library with bags. We will also be installing lockers in the new library wing which is currently being constructed.
- **One place to search for all library information** At the beginning of the current school year we launched a new system called "OneSearch" which allows you to search for books, articles, images, maps, video and databases in one go.
- **Easy to use library web site** At the beginning of the current academic year we launched a new user-friendly web site.
- **Simplified remote connection to the library systems** During the second semester, the Computing Division will provide you with a web link for simple remote connection to the library.
- **Continue buying books and journals** We will continue to acquire as many books and journals as possible with the budget available. We recently purchased the following: archives of electronic journals from leading publishers; repository of OECD statistics—donated by the Center for German and European Studies; packages of e-books.
- **Advanced Reference services** We offer 1 * 1 specialized Reference Service specializes for graduate students and faculty.
- **Access to library resources through Google** We have made library resources available through Google and Google Scholar.
- **More electrical outlets for laptops** We have added dozens of additional outlets throughout the library.
- **More public workstations** We have added computers throughout the library including in the new Group Study room. We offer laptops for use in the library.
- **Borrow movies from the Media** Students and academic staff can now borrow DVDs overnight or over the weekend.
- **Access to full-text articles in Hebrew** We have begun scanning the full- texts of Hebrew journals as part of a national project.
- **Notification of new library resources** We have installed an electronic notice board to inform about existing and new services. We issue a monthly newsletter about new and existing services which we send to the whole library community. We also notify of new services on the library blog, Facebook and Twitter.
- **Drinks Machine** We installed a drinks machine in the new Group Study room on the third floor of the library.
- **Assistance with technical problems** We plan to activate a new Help Desk to provide technical assistance.
- **Comfortable and welcoming physical space** During the coming year the library staff will populate the new wing and the current library building will be totally renovated and refurbished.
- **Shorter queues at Reference desk** We will be creating a combined Reference service desk which will enable more librarians to be available to users. We offer the following remote services: chat, e-mail and phone.
- **Reduce cost of ordering items from other libraries** We are currently examining the possibility of reducing Interlibrary Loan charges in the next school year.

Conclusion

Clearly, the collaboration of the marketing and assessment teams has worked well in our library. Although, the relationship began as a "marriage of convenience," after successfully conducting five marketing campaigns, it is more accurate to call it "true love"!

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ClimateQUAL® and Thinklets: Using ClimateQUAL® with Thinklets to Facilitate Discussion and Set Priorities for Organizational Change at Criss Library

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Abstract

Criss Library conducted the ClimateQUAL® survey during the 2009 fall semester. The library had been experiencing numerous changes due to a three year library renovation, several personnel resignations and library reorganizations. There was an over-riding perception of mistrust, fear and uncertainty that needed to be addressed. Our first step in addressing the negative perceptions was to run the ClimateQUAL® survey to gather statistics for a better understanding of staff perceptions. Our next step was to report on the ClimateQUAL® data to the library staff and start discussions on goals and solutions for addressing the organization climate. The third step was to identify the areas of the organization to address first. Once those organizational areas were identified, they were prioritized and goals with solutions were developed.

Due to the negative perceptions and climate of mistrust, we wanted a way to offer an open, comfortable line of communication so library staff felt free to express opinions and offer ideas for solutions. We found the answer to anonymous expression of opinion by using thinkLets, ways for people to use a pattern language for reasoning toward a goal, developed at the UNO Institute of Collaboration Science. The group support system (gss) software was loaded on computers and the library staff was divided into groups where each individual in the group added their comments and ideas to their computer anonymously. Using thinkLets and the gss software in the facilitated discussions allowed each participant the freedom to openly express opinions, comments and ideas and led to a consensus of prioritizing problems and solutions with goals and timelines.

This paper will discuss the process that the Criss Library has been through from the

ClimateQUAL® survey, the facilitated discussions using thinkLets and the strategies for improvement.

Introduction

The Criss Library at the University of Nebraska at Omaha has experienced some exceptional change within the last five years. The library has undergone a complete physical transformation; a thirty thousand square foot addition was completed in 2006 and a total renovation of the library that was completed in 2009. Throughout the construction, the library remained open and all services available to patrons.

Not only did the library faculty and staff endure the environmental stress of a renovation, we have also been affected by three reorganizations in a three-year time frame. The reorganizations changed job descriptions for 30% of the employees and resulted in a 50% turnover in staff from resignations, layoffs, and retirements. The personnel changes have left the remaining employees uneasy; and while there is a high level of achievement, an undercurrent of low morale, distrust, and fear remains.

After the completion of the building renovation and a change in leadership, the focus returned to collections, services, and employees after long being on the facilities. Recognizing the strain of years of construction and personnel changes had placed on the organization, we wanted to uncover the mood of the employees and reveal the true issues behind the low morale, uneasiness and fear. After doing some research on organizations, change, and the effects of change on employees, it was decided to use the ClimateQUAL® survey for assessment of the library staff.

Overview/Background and ClimateQUAL®

The Criss Library at the University of Nebraska at Omaha set out to determine the organizational health of our library by measuring the diversity and climate of our organization. The climate of an organization helps employees interpret and understand what behavior is rewarded, supported, and expected in the organization.¹ A healthy organization creates climates that show that teamwork, diversity and justice are valued and there is a strong concern for customers.²

To gain a broader understanding of organizational development and the different principles or elements involved, a literature review was conducted. Richard Beckhard defined organizational development in *Organization Development: Strategies and Models* as:

“Today there is a need for longer-range, coordinated strategy to develop organization climates, ways of work, relationships, communication systems, and information systems. It is out of those needs that systematic planned change efforts – organizational development – have emerged.”³

The father of organizational development in academic and research libraries, Duane Webster, listed some principles for improvement of organizations: interpersonal competence is important; participation leads to commitment; groups and teamwork are important; and those who will implement a change must be involved in the planning of that change.⁴ Some of these same principles were repeated as elements of organizational development described by Karen Holloway: putting decision making closer to people doing the work; improving group dynamics, organizational structure, and organizational culture; learning how to work collaboratively and across hierarchies; and building trust.⁵ The Organizational Climate and Diversity Assessment (OCDA) has used the principles and elements of organizational development and described them as climates. Questions were developed for the OCDA to help libraries discover their strengths and weaknesses within each principle or climate.

Criss Library used the Organizational Climate and Diversity Assessment (ClimateQUAL®) tool

to survey the employees and develop a baseline to assess the effectiveness of any changes. The ClimateQUAL® survey addressed climates for diversity, teamwork, learning, and fairness. The survey was administered in November 2009 and results were received in December 2009. The results were based on a seven point Likert scale and showed averages for each climate. With some exceptions, a high average indicates a strong or healthy climate. The Criss Library results showed healthy climates in several areas but also indicated three areas where changes are warranted. Criss Library employees scored well on interpersonal justice (5.86 or 84%), informational justice (5.02 or 69%), a healthy climate for leadership, a healthy climate for deep diversity and demographic diversity, organizational citizenship behaviors, interpersonal conflict and task conflict. The three areas where the average scores were low for Criss Library were distributive justice, procedural justice and structural facilitation of teamwork.

Criss Library's ClimateQUAL® Results

With a better understanding of organizational development, the literature was researched for additional clarification on the three climates with the lowest average scores at Criss Library: distributive and procedural justice and the structural facilitation of teamwork. The ClimateQUAL® web site Core Scales page defines distributive justice as the degree to which staff perceives that rewards are fairly distributed upon performance. On the same Core Scales page, procedural justice is the degree to which staff perceives the procedures that determine the distribution of rewards are uniformly applied. The climate for teamwork and the structural facilitation of teamwork is the degree to which staff perceives that teamwork is valued by the organization and to which they perceive that they are valued as team members.⁶

In general, distributive justice is related to specific attitudes or perceptions of the fairness of organizational outcomes or processes received in a given transaction (pay satisfaction, job satisfaction).⁷ Individuals evaluate and compare the outcome they receive to a standard or rule or the outcome received by a coworker. Distributive justice perceptions are positively related to job satisfaction, organizational commitment, and trust and negatively associated with organizational

withdrawal.⁸ Negative associations of distributive justice can contribute to spreading rumors, counter-productive work behaviors, conflict at work, faking sick and damaging or wasting company materials or equipment.⁹

Procedural justice is more strongly related to global attitudes (e.g., organizational commitment, group commitment).¹⁰ Procedural justice in the context of a group show individuals care about fairness because of their relationship with the groups to which they belong.¹¹ Procedural justice can be defined as the perception of the fairness of the processes used to arrive at outcomes. It is the individual's perception of the fairness of the process components of the social system that regulates the distribution of resources. Procedures are judged on their consistency of application, their prevailing ethical standards, their degree of bias, accuracy, and correctability, and the extent to which they represent all people concerned. Fair procedures ensure acceptance of policies such as smoking bans, pay systems, parental leave policies, and disciplinary actions. Positive procedural justice is associated with trust in management, job satisfaction, and organizational commitment. Negative or low procedural justice can lead to counterproductive work behaviors, conflict at work and the use of organizational revenge strategies.¹²

Structural facilitation of teamwork was another opportunity area with lower results than other universities. Criss Library employees scored a mean of 3.79 compared to 4.24 for all institutions, showing UNO at 0.45 below the average. Only 40% of Criss Library employees responded positively to the question in the scale for Structural Facilitation of Teamwork, which compares to the mean of 48% for all institutions. Teams as defined by Sue Baughman are "small groups of staff working on a common purpose" and "teamwork is the environment that is created to foster how the members of a group work together".¹³ A true team is empowered to make decisions, improve processes, and implement strategies to better serve the user.¹⁴ A team can add to the success of an organization by taking ownership of identifying ways to improve processes, continuous learning and development, and increasing innovation and risk-taking. Libraries that develop into learning organizations with a focus on customer needs and building a

culture of continuous learning for team members can establish a culture of teams and teamwork and increase service to their customers.¹⁵

Criss Library scored the highest on the ClimatQUAL® survey in the Climates for Diversity. In the Valuing Diversity climate, defined as the degree to which equality between minorities and majorities is valued, 71% of Criss employees responded positively. In Race—the extent to which the library supports racial diversity, 96% responded positively. Another climate where Criss employees responded positively was in Interpersonal Justice (84%)—the degree to which one perceives there is fairness and respectfulness between employees and supervisors and Organizational Citizenship Behaviors (71%)—the degree to which employees perceive that 'professionalism,' politeness and care is exhibited within the organization. Some comments:

- "Overall this is a very good place to work. Folks are generally helpful, good natured and open minded."
- "Our library caters greatly to the patrons. There is a great working atmosphere at the service desks, and you know that other employees are friendly and ready to help you, should you require it."

In contrast to healthy climates, there were three areas where the results from the survey indicated needs for improvement: distributive justice, procedural justice and structural facilitation of teamwork. In the Climate for Justice/Fairness, Distributive Justice and Procedural Justice ranked lower for Criss Library (22% and 35% employees responded positively) than compared to all institutions (30% and 47% respectively). In the area of Climate for Teamwork, the Structural Facilitation of Teamwork received a lower average score with Criss Library employees (3.79) than all institutions (4.26). Also Criss Library employees (4.10 mean score or 43%) perceive they do not have as much influence over their teams as other institutions' employees (4.86 or 62%). Some comments on the teamwork issue:

- "Staff members, librarians, and administrators need to be more open to helping other departments within the library when asked."

- “I feel communication and teamwork are two areas at the library that need to be addressed.”

Criss Library employees also expressed concern in the Climate for Psychological Safety which is the degree to which employees feel the organization is a safe environment for offering opinions and taking risks. The mean score for Criss library was 4.52 compared with 4.95 for all institutions. Criss Library employees expressed concerns regarding expressing ideas and opinions, and fear that this is not a safe environment for risk-taking.

The comments below express this concern:

- “There is a great deal of fear in this organization.”
- “This organization is a mess. People don’t trust. Communication is the pits.”
- “. . . they were out of favor with administration. It created a climate of fear across the library. This is why people are still afraid to try new things or offer dissenting opinions.”

There were several comments regarding the absence of rewards in the organization. The

average score for the Climate for Continual Learning shows that the Criss Library employees feel they are not as encouraged to express new ideas and their ideas are not accepted or rewarded. The average score for Criss Library was 5.05 compared to an average score of 5.28 for all institutions.

- “The rewards questions were very hard to answer because the library doesn’t give reward.”
- “There are attempts at saying thank you but I’d say most people do not feel personally rewarded for their work.”
- “It would be nice if the Directors or the Dean provided greater recognition and/or rewards (not just monetary, but treats, prizes or even paper certificates) to those departments or individuals who go ‘above and beyond’ to serve our patron population.”

The following tables break out the lowest and highest average scores, by percentage of respondents assigning a ranking 5 or above on each 7 point scale.

All Library Organizational Climate Lowest Five Ranked	
Organizational Climate for Justice Distributive Justice	22.22%
Procedural Justice	34.62%
Climate for Teamwork Structural Facilitation of Teamwork	40.00%
Climate for Customer Service	62.26%
Climate for Psychological Safety	62.26%
All Library Organizational Climate Highest Five Ranked	
Climate for Demographical Diversity Race	95.74%
Gender	90.38%
Sexual Orientation	90.00%
Organizational Climate for Justice Interpersonal Justice	84.44%
Leadership Climate Leader-Member Relationship Quality	83.67%

The following chart shows the top three Opportunity Areas for all departments and the range of average responses. All departments, with the exception of one (who did not have the

minimum number of responses for reporting), had the same three lowest scoring climates (Opportunity Areas), but in varying rank order.

Top Three Opportunity Areas for All Departments	
Organizational Climate for Justice Procedural Justice	2.00 – 4.88
Climate for Teamwork Structural Facilitation of Teamwork	2.75 – 4.36
Organizational Climate for Justice Distributive Justice	2.44 – 4.14

After the Survey: Group Support Systems (GSS) and ThinkLets

The receipt of the survey results coincided with the semi-annual ClimateQUAL® partners meeting at ALA midwinter in Boston, January 2010. A number of partners spoke informally on their experiences with survey administration and the common theme running through those discussions was the importance of library staff involvement in the identification of interventions or solutions. This concept was returned to the Criss Library ClimateQUAL® advisory team and we began to discuss ways to garner feedback from library staff. One of the team's members is a senior fellow at the University of Nebraska at Omaha's Center for Collaboration Science (CCS), an experienced facilitator, and knowledgeable about the institute's use of group decision software to facilitate meetings both on-campus and in the Omaha business community.

We chose to use this group decision software based on prior experience using it in other meetings at UNO. In addition to being a very productive and successful system, it is fun and engaging to use. There is a level of anonymity which can provide psychological safety to participants which they may not have in other traditional brainstorming venues, as well as providing a focus on the quality of the feedback and not on the personality of the person providing it. We felt the anonymity was an important factor given the general feeling of mistrust among library faculty and staff.

The system developed at CCS uses "thinkLets." A "thinkLet" is "the smallest unit of intellectual capital required to create one repeatable pattern of thinking among people working toward a goal".¹⁶

The institute has developed over sixty thinkLets that can be configured and used within a group decision system and can "encapsulate the components of a stimulus used to create a single repeatable, predictable, pattern of thinking among people working toward a goal".¹⁷ It was decided that Criss library would use the ThinkTank group collaboration software, www.groupsystems.com and employ the FreeBrainstorm, FastFocus, and PriorityVote thinkLets.

Facilitated Discussion Process

The ClimateQUAL® survey was administered to the following library departments, which align with the current organizational reporting structure: Administrative Services, Collections, Leadership Team, Patron Services, Research Services, and Virtual Services. Likewise, the facilitated discussions were conducted among these same departmental groups, with the exception of student assistants, who did not participate in the initial facilitated discussions. There are plans to hold conversations with student assistants later in the process.

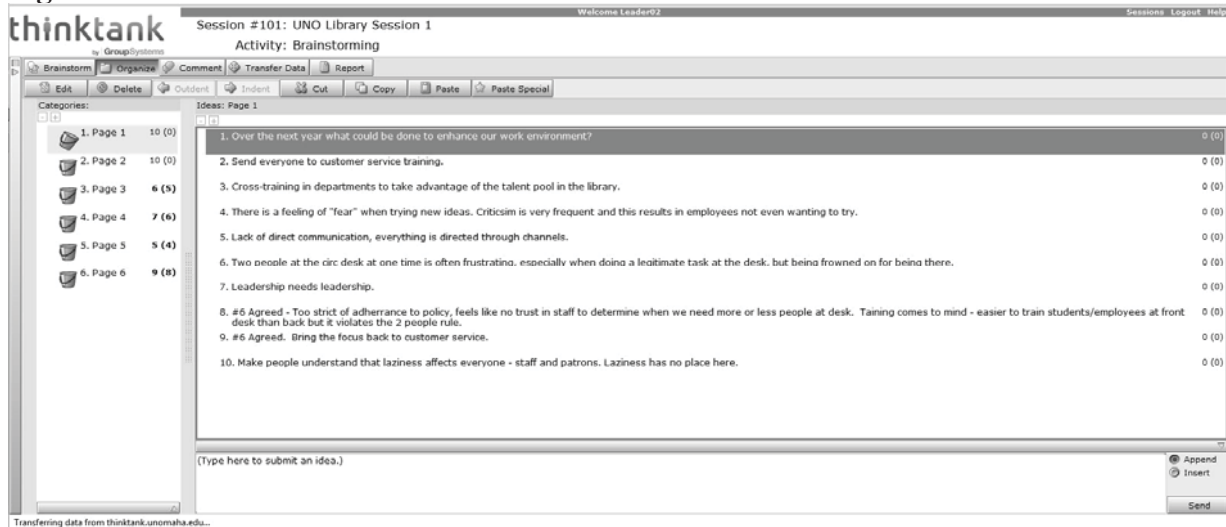
Prior to the scheduled discussions, each departmental group was provided a summary report of ClimateQUAL® results. The report included both the highest and lowest scoring climates for their department as well as the library as a whole. Faculty and staff were asked to reflect on the lowest-scoring climates, referred to as "opportunity areas" and to begin thinking of possible answers to this question "*Over the next year, what can we do to improve our work environment.*" Given the complexity of organizational development and possible interventions to address opportunity areas, the one-year time frame was presented in order to

provide a manageable time frame for our initial work.

Two hour blocks were scheduled to maximize participation from faculty and staff. Sessions were facilitated with faculty and graduate students affiliated with the Center for Collaboration Science as well as faculty from the University of Nebraska Love Library ClimateQUAL® team. The GSS software was installed on library laptops and each participant was given a machine with which to work. Facilitators used the ThinkTank group facilitation software to garner answers to the aforementioned

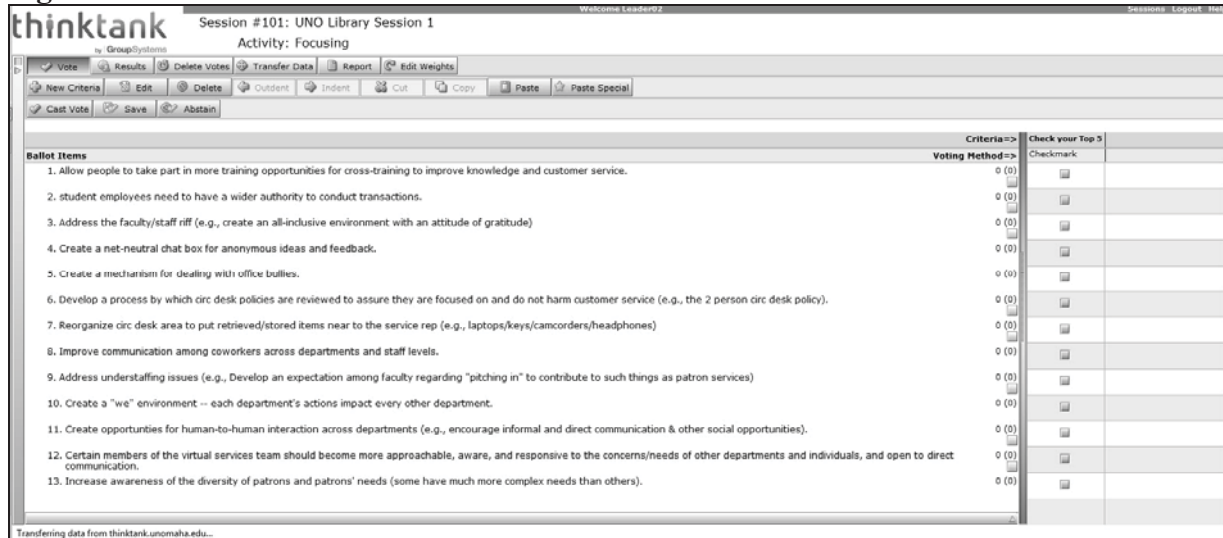
question. A page was displayed for each participant in the session and the *FreeBrainstorm* thinkLet was used to provide participants the opportunity to share their particular points of view, and it also enabled them to quickly see the bigger picture and to diverge from comfortable patterns of thinking. Participants were instructed to move to another page where they could either enter a new idea or comment on the other ideas that were entered onto that page by another participant. This thinkLet activity varied by the size of the group, but ranged from 20 minutes to over an hour in length.

Figure 1: Free Brainstorm thinkLet



The *FastFocus* thinkLet was used in the next step to quickly extract a clean list of key issues. Each participant was assigned a page and given the opportunity to choose the idea they felt was most important on that page. Each participant was given two "turns" to choose important ideas.

Once each participant had identified their two most important ideas, the facilitator verbally engaged the group to refine this list to eliminate duplication and to ensure that all agreed on and understood the idea presented.

Figure 2: FastFocus thinkLet

The final thinkLet employed was *PriorityVote* which simply is a rank of the most important idea.

The groups were asked to individually rank the list and the top five or six ideas remained.

Figure 3: Priority Vote

Ballot Items	Total #	Avg. Score	Std. Dev
6. Develop a process by which circ desk policies are reviewed to assure they are focused on and do not harm customer service (e.g., the 2 person circ desk policy).	4.00	0.67	0.52
12. Certain members of the virtual services team should become more approachable, aware, and responsive to the concerns/needs of other departments and individuals, and open to direct communication.	4.00	0.67	0.52
3. Address the faculty/staff riff (e.g., create an all-inclusive environment with an attitude of gratitude)	3.00	0.50	0.55
5. Create a mechanism for dealing with office bullies.	3.00	0.50	0.55
8. Improve communication among coworkers across departments and staff levels.	3.00	0.50	0.55
10. Create a "we" environment -- each department's actions impact every other department.	3.00	0.50	0.55
7. Reorganize circ desk area to put retrieved/stored items near to the service rep (e.g., laptops/keys/camcorders/headphones)	2.00	0.33	0.52
11. Create opportunities for human-to-human interaction across departments (e.g., encourage informal and direct communication & other social opportunities).	2.00	0.33	0.52
13. Increase awareness of the diversity of patrons and patrons' needs (some have much more complex needs than others).	2.00	0.33	0.52
1. Allow people to take part in more training opportunities for cross-training to improve knowledge and customer service.	1.00	0.17	0.41
2. student employees need to have a wider authority to conduct transactions.	1.00	0.17	0.41
4. Create a net-neutral chat box for anonymous ideas and feedback.	1.00	0.17	0.41
9. Address understaffing issues (e.g., Develop an expectation among faculty regarding "pitching in" to contribute to such things as patron services)	1.00	0.17	0.41
Summary	30.00	0.38	0.49

Employee Survey Perceptions of the Facilitated Discussions

To gain more understanding and insight of employees' perception of the facilitated discussions, a four question survey was distributed to all library employees, via SurveyMonkey. Twelve employees answered the survey, 29% response rate. Three essay questions were asked: "In your experience during the ClimateQUAL® facilitated discussion, what worked well?" "What did NOT work well?" and "What could have been done differently?" The fourth question was a Likert-scale matrix question where the respondents were asked to strongly agree, agree, disagree or strongly disagree with four statements: 1) Differing opinions were

openly discussed; 2) It was safe to speak up without fear of a negative effect; 3) I am satisfied with my involvement at the facilitated discussion; 4) There was good cooperation within my group.

The same number of respondents (n=5 or 42%) answered questions one and two with opposite answers. For question one, five respondents stated they felt the anonymity of the process worked well. Five respondents for question two answered that anonymity did not work well with one comment stating anonymity was compromised in the facilitated discussions. Additional comments provided from the survey indicated participants could tell who was typing; others were uncomfortable expressing any opinions if their supervisor attended the same

facilitated discussion; another stated that anonymity was compromised. Additionally, 33% of the respondents (n=4) felt nothing worked well in the discussions.

The third question asked what could have been done differently in the facilitated discussions. Most people responded by writing they wished they could have chosen their own group rather than joining their department in the discussions. Several reasons explaining this response can be found in the agree/disagree matrix questions. A large number (83%) did not feel safe speaking out about issues, most likely because of a supervisor present. Only 50% of the respondents felt opinions were openly discussed and were satisfied with their involvement in the discussions. Even though people did not feel safe speaking in their group, a majority of respondents agreed that there was good cooperation in their group.

Results of ThinkTank Sessions in All Groups

Reports were returned for each departmental session, which included transcripts from the FreeBrainstorm sessions and results from the PriorityVote. All departmental sessions were combined to provide 12 general themes from the library as a whole:

- Staffing and Scheduling Issues (5)
- Staff Unity/Teamwork (5)
- Communication (5)

- Goodwill/Morale (4)
- Accountability(4)
- Decision-Making(4)
- Policy Issues (4)
- Skills and Training (3)
- Leadership(3)
- Ergonomics/Physical Work Environment(3)
- Respect(3)
- Bullying (2)

The number in parenthesis represents the number of groups identifying as a priority with the total number of groups n=6. Each of the 12 themes had between three and ten related sub-themes and strongly corroborated sub-themes (priority ranked by over one-half of the generating group) were noted.

ThinkThank Sessions and ClimateQUAL results

Recall that the question asked in the facilitated discussions was “*Over the next year, what can we do to improve our work environment.*” While some of the groups answered that question in the context of the opportunity areas (lowest scoring climates) identified in the ClimateQUAL® report for their department, some did not. Thus, it is difficult to easily draw parallels between the feedback from the facilitated discussion to the ClimateQUAL® results. However, based on keywords and concepts delivered in facilitated discussions, these associations can be made:

General Themes from Facilitated Discussions	ClimateQUAL® Core Concepts
Staff Unity/Teamwork	Structural Facilitation of Teamwork
Communication	Climate for Psychological Safety
Goodwill/Morale	Climate for Procedural Justice; Job Satisfaction; Climate for Psychological Safety; Organizational Citizenship Behavior
Policy Issues	Climate for Procedural Justice
Leadership	Climate for Leadership
Respect	Team Psychological Empowerment
Bullying	Climate for Interpersonal Justice

Strategies for Improvement: The Next Steps

The facilitated discussions returned 76 sub-themes under the 12 general themes. The Advisory Team culled the 76 sub-themes into 40 statements, or *improvement strategies* by removing duplicates such as “make people accountable” and “develop a way to make people accountable” and combining like statements such as “reorganize circ area” and “optimize work spaces” into “optimize work spaces for all departments as needed so staff can do their job tasks effectively and efficiently.”

Of the 40 improvement strategies, there were five that could be implemented immediately: The Courtesy Committee was reinstated and volunteers/nominations were solicited to form this committee who would not only oversee the social activities, but also organize as well as advise the leadership team and the Dean on a staff recognition program. A mechanism for staff to provide anonymous ideas, comments and feedback is under development. Several members of the leadership team and library supervisors have completed or are scheduled to participate in a new campus leadership program, and lastly, a current project to collate policies on the library’s internal wiki will be followed by an internal review of all policy.

The remaining 35 improvement strategies are scheduled to be presented to the faculty and staff via an online survey where they will be asked to rank the strategies in order of importance. The resulting list is where we will take the first solid steps toward organizational change and a healthy organizational climate for Criss Library.

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After the Data: Taking Action on ClimateQUAL® Results

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Abstract

In 2008, the Sheridan Libraries and Johns Hopkins University Museums Staff Development and Training Team (SD&T) found itself wrestling with ways to facilitate constructive organizational change. To ensure its programming was rooted in the actual needs of the organization, the team administered the ClimateQUAL®: Organizational Climate and Diversity Assessment (OCDA). Little did the team realize that participating in ClimateQUAL® would begin a year-long odyssey of building organizational trust and championing change. The official ClimateQUAL® results report turned out to be merely the beginning, and the team discovered that getting results is by far the easiest part of the process.

This paper discusses the Libraries' and Museums' process of responding to data measuring organizational climate. After outlining the survey preparation and administration processes, the paper describes the ClimateQUAL results report. The paper then discusses the issues inherent in acting upon the report, and the processes taken to respond to these issues and act to improve the organization. It explores and explains the steps that came next in responding to data: staff focus groups, in-depth interviews with library leadership, qualitative and quantitative data analysis, re-evaluating the meaning of communicating well, finding ways to get staff and management to hear one another, and developing short and long range recommendations. The authors hope that explicating the process will aid other organizations in taking effective action in response to their own data.

Introduction

In 2008, the Sheridan Libraries and Johns Hopkins University Museums Staff Development and Training Team (SD&T) found itself wrestling with ways to facilitate constructive organizational change. The team was at a regrouping point in terms of its strategic direction. It sought to go beyond anecdotal evidence in identifying ways to support library and museum staff. SD&T, a small committee charged with supporting the staff of the Libraries and Museums with training and organizational development matters, did not want to make assumptions in the course of implementing change in the organization. To ensure its programming was rooted in the actual needs of the organization, the team administered the ClimateQUAL®: Organizational Climate and Diversity Assessment (OCDA) in 2009 to its 150 staff members. ClimateQUAL®, a confidential, third party organizational health and diversity survey, is designed to assess the shared culture of an organization. It gathers data and assesses overall staff perceptions of the organizational climate of a library. Developed at the University of Maryland Libraries in 2000, ClimateQUAL® is now a partnership between the University of Maryland and the Association of Research Libraries (ARL).

Little did the team realize that participating in ClimateQUAL® would begin a year-long odyssey of building organizational trust and championing change! The official ClimateQUAL® report turned out to be merely the beginning, and the team discovered that getting results is by far the easiest part of the process.

This paper discusses the Libraries' and Museums' process of responding to data measuring organizational climate. After outlining the survey preparation and administration processes, the paper describes the ClimateQUAL® results report. The paper then discusses the issues inherent in acting upon the report, and the processes taken to respond to these issues and act to improve the organization. It explores and explains the steps that came next in responding to data: staff focus groups, in-depth interviews with library leadership, qualitative and quantitative data analysis, re-evaluating the meaning of communicating well, finding ways to get staff and management to hear one another, and developing short and long range recommendations. The authors hope that explicating the process will aid other organizations in taking effective action in response to their own data.

Survey Preparation and Administration

The libraries and museums ran the ClimateQUAL® survey from March 2-23, 2009. While many organizational culture assessments exist, the team chose ClimateQUAL® because of its library context and the support offered through a community of peers. There was an 80 percent return rate to the survey, a rate in line with the high return rates at other ClimateQUAL® institutions. The high return rate was a byproduct of the significant preparation the SD&T team led to prepare the organization and foster a sense of both security and ownership among staff.

Prior to administering the survey, the SD&T spent a considerable amount of time planning the roll out and grappling with organizational questions. *How would we communicate the survey to staff? How would we motivate them to take it? How do we manage expectations about what can be done with the results to create change? How do we get staff to understand change is a long process and most organizational problems do not have quick fixes?* The team realized that a critical success factor of the survey administration would be the existence of trust among staff in the confidential nature of the survey. As even good changes can be disruptive, part of the role as potential change agents was to find ways to effectively and comfortably discuss organizational issues without losing the trust or participation of people along the way. The team wanted to emphasize the

reasons for doing the survey: assessing the libraries and museums' organizational health, making people part of the process of improving the organization, and stimulating thinking about everyone's role in broader organizational improvements.

Three weeks prior to the administration of the survey, SD&T team members held meetings with each department to explain the survey's importance to the organization and outline how the libraries and museums' demographics were mapped to the ClimateQUAL® demographic categories. The team emphasized the survey's safeguards to protect someone's identity. For example, if there was a low response rate in any particular department, these responses would be rolled up into the next larger category. In these meetings, the team told staff how the raw data would be handled (i.e., no one in the institution would be able to see it or manipulate it to determine who said what), how the incentive would be administered (the team chose to have ARL administer the incentive so no one at JHU would know who submitted a survey or who won the incentive), and how the results would be distributed (the full report of everything received would be sent to staff; nothing would be held back).

These meetings were the first step in building trust with staff. Once the SD&T team established this trust, it was vigilant throughout the rest of the process to make sure we did nothing to break these bonds. Staff members showed an interest in change and looked to the team to facilitate changes many had hoped would happen. Feeling a strong sense of responsibility to the organization to do this process well, the team focused on following up on promises and finding ways to keep staff informed along the way throughout the survey administration period and beyond.

Survey Results

The SD&T team received the results report from ClimateQUAL® several weeks after the survey closed. The results are divided into four sections: demographics, organizational climate scales, analysis of variables, and comments.

Demographics: The demographics section provides breakdowns by Library Team, Position, Full or Part Time, Librarian vs. Non-Librarian,

Age, Ethnicity, Religion, Sexual Orientation, Gender, Length of Service at JHU, and Length of Overall Library Service.

Organizational Climate Scales: After the demographics the results provide tables with the mean, standard deviation, and standard error for the Organizational Climate Scales. The scales include measures for Organizational Justice, Leadership Climate, Diversity, Climate for Continual Learning, Climate for Teamwork, and more. Definitions of these terms can be found at: <http://www.climatequal.org/concepts/core-scales/index.shtml>. Because the results contain a considerable amount of statistical data, one is also provided definitions and some interpretation of mean, standard deviation, and standard error to help non-statisticians understand the significance of those measures.

Analysis of Variables: Following the tables on Organizational Climate, the results include another set of statistical tables on the demographic differences of the Climate Scales. These tables were perhaps the most confusing to people who were unfamiliar with reading and interpreting statistics. In the simplest of terms, the Analysis of Variance (ANOVA) show areas where the differences in answers across a demographic category was, perhaps not happening simply by chance, but where the variance has a probability of being tied to the demographics. Those areas that fall below a certain cut off level give a library clues for considering areas for action or next steps.

Comments: After the ANOVA tables were the comments section. Twenty-one percent of staff members supplied some type of comment. Those comments ranged from in depth, serious discussions about issues in the library to comments on the structure and phrasing of the survey itself. Based on comments the team heard once the results were released, we suspect the comments section was the most popular with staff and where they spent the majority of their time.

While the results were full of critical data, they lacked a roadmap for our next steps. To develop a plan, the SD&T team spent focused, intensive time understanding the data, analyzing the comments, and posing questions to ourselves. *What comes next? What actions are needed? One*

of the challenges the team faced, as is common in any survey results, was determining what is actionable based on data.

Another challenge was to determine the best way to convey the results to staff. The team had promised to provide all raw data to staff members, but there needed to be some kind of explanation to help guide them through the results, especially the statistical information. The SD&T team decided to craft an Executive Summary to the report including indications of which pages staff should spend their time investigating. The team also included information about the team's next steps to continue the dedication to a transparent communication process.

Choosing Focus Issues

The team's first step was to isolate specific issues on which it felt the organization should concentrate. Because the team could not address every possible issue in the report at once, it was important to prioritize. It used the analysis in the report to identify focus areas: 1) where a high percentage of staff gave positive responses; and, 2) where a high percentage of staff gave negative areas. These areas became, in turn, areas highlighted for celebration and targeted for constructive change.

The organization scored well in the ClimateQUAL® areas of Benefits of Teamwork (93 percent of respondents giving positive responses), Task Engagement (87 percent), and both Valuing Diversity (84 percent) and Climate for Demographic Diversity (91 percent). In addition, the organization had low scores where needed, such as Organizational Withdrawal (i.e., desire to leave the organization, 13 percent of respondents answering affirmatively) and Work Unit Conflict at both the Interpersonal and Task level (18 and 24 percent respectively). Finally, the comments revealed that staff had very positive things to say about their colleagues and the dedication and work ethic exhibited daily in the organization. The team took these to be very positive signs.

Similar to other organizations, there were areas where the team needed to focus some attention. The team identified a small number of indicators for which fewer than 60 percent of our

organization's staff gave a positive response or where the mean score was below 5.0 on a 7 point scale. Scores for Distributive Justice (25 percent), Procedural Justice (55 percent), Structural Facilitation of Teamwork (48 percent), and Climate for Psychological Safety (66 percent but a mean score of 4.94) all pointed to areas where organizationally we needed improvement.

To incorporate the free text comments into a plan of action, the team coded them to analyze any patterns or trends. Rather than use a grounded theory approach in analyzing the comments, the team used the ClimateQUAL® Core Concept terms as provisional categories to which it mapped clauses of each comment. First, we reduced the data in the concepts by labeling them with ClimateQUAL® terms relevant to what each comment conveyed.¹ This process focused, simplified, and abstracted the comments, enabling us to work with an organized, compressed display of what they communicated.² After analyzing the comments in relation to the ClimateQUAL® Core Concept terms, we were able to conclude that the comments mirrored the focus issues identified above (Distributive Justice, Procedural Justice, Structural Facilitation of Teamwork, and Psychological Safety). In addition to these areas, the comments also showed a pattern of concern surrounding leadership and communication. Coding the comments enabled us to explicitly connect the qualitative data available to us to the quantified conclusions in the ClimateQUAL® report. Moving forward, we were then able to use all of the patterns in our results to inform an action plan.

Taking Data-Driven Action

The ClimateQUAL® report helped identify the most pressing organizational issues, allowing the SD&T team to avoid guessing at underlying organizational strengths and weaknesses when creating an action plan. Initial internal response to the report, though, involved far more questions than comprehension when it came to taking action. *Why do people feel psychologically unsafe? How does our organization aid or impede teamwork? What does distributive justice mean at Hopkins? How do you reconcile positive scores on the benefits of teamwork with a lack of structural facilitation of team work?* To develop specific next steps, the SD&T team, library leadership, and managers needed to better

understand the specific landscapes of target issues. The SD&T team realized that it needed to dig deeper and go beyond the ClimateQUAL® results. After many discussions about the best method for delving further, the team decided to engage in in-depth focus groups with staff to contextualize focus issues in the organizational landscape.

Contextualizing Issues Through Focus Groups

To get the root of some of the ClimateQUAL® results, the team conducted focus groups with each department in the organization. Members of the SD&T team paired up, one person assuming a facilitator role and the other assigned to take detailed notes. The SD&T pairs scheduled ninety-minute sessions with each department, without their manager, as well as one session each for managers, supervisors, the Staff Development and Training Committee, and those unable to attend with their department. In all, the team held 23 focus groups over the course of two months.

In each session, the team used structured conversations to probe staff's thoughts on the survey results and ask for concrete suggestions for moving forward. The facilitator opened each focus group by explaining that individual comments would be kept confidential, and asked that each attendee similarly refrain from sharing their colleague's comments outside the session. The facilitator also tried to manage expectations about the focus group and its purpose: the team was there to hear more, and gather ideas to *inform* actions, but not every idea could necessarily be implemented. Each attendee received a one-page handout listing the definitions of the six terms (Procedural Justice, Distributive Justice, Psychological Safety, Facilitation of Teamwork, Communication, and Leadership), and the questions that were to anchor the session's conversation. The group briefly reviewed the overall results and six issues of concern from ClimateQUAL® in order to set a common stage for those who may not have internalized the vocabulary and conclusions from the assessment, or were perhaps simply overwhelmed by the amount of statistical data provided.

The facilitator then asked for all suggestions, concerns, and responses in answer to the below

eight questions that anchored the conversation for the duration of the focus group sessions:

1. What did you think (were your impressions) of the survey itself (taking it, questions, timing, how it was rolled out)?
2. What were your first impressions of the results?
3. What are your expectations now, having read the results? What would you like to see done?
4. After reading the comments in the survey, is there anything else you wish had been said?
5. What makes you feel valued? (What types of rewards, recognitions, processes, or other factors?)
6. How do you feel the organization might better foster or facilitate teamwork?
7. Of the issues we identified earlier (Procedural Justice, Distributive Justice, Structural Facilitation of Teamwork, Psychological Safety, Communication, Leadership), which do you think needs to be addressed first?
8. What changes in the organization would you like to see in the organization when we repeat the survey?

The team chose to create open-ended questions to better encourage staff to explore and share their thoughts on the survey and potential follow-up actions. The eight questions were designed to progress first from helping participants remember the assessment questionnaire, to exploring their personal experiences with the six issues of concern—to discussing concrete ideas for action. Facilitators inhabited a neutral questioning role, and refrained from agreeing or disagreeing with any statements made. To help guide attendees from venting concerns to making tangible suggestions, facilitators used a series of follow-up prompts, including “If you were put in charge of fixing that issue, what would be your first step?” The team wanted to ensure that staff understood that they not only had the ability to present ideas, but that it is their responsibility to be part of the change process. This was a first step toward having staff take ownership of future organizational change.

By emphasizing confidentiality and constructive engagement, the team heard an enormous amount of information, even from individuals who had not previously felt comfortable actively engaging in global organizational issues. Overall, participants showed remarkable candor. Some

staff members aired specific anecdotes of concern to them. Many were responsive to the above prompts and the discussion that followed. As the focus groups progressed, the team heard directly from staff members who were appreciative of the chance to participate so directly in organizational change. In a few cases, staff members who had at first elected not to participate in a focus group changed their mind after hearing from their colleagues about their focus group experience. Staff members passed the word along about the benefits of the focus group sessions, but fully complied with the confidential nature of the content discussed. Through their actions, they helped reinforce and perpetuate the underlying trust that the SD&T team sought to engender.

Developing Action Items

Some concerns turned out to be common to almost every focus group. There was a clear overall message from the focus groups that it would be detrimental to staff morale if action was not taken in response to issues identified by the ClimateQUAL® survey. To recommend concrete actions, the team evaluated and dissected the notes of every focus group. Common themes for each question emerged alongside concrete recommendations and historical anecdotes. The SD&T team analyzed and coded the notes of each of the eight focus group questions. The team developed three discrete written summaries for each session: a brief summary of the themes and sentiment of focus groups participants, a list of specific actionable suggestions elicited during the sessions, and a general description of any specific scenarios that focus group participants aired in the sessions.

From these analyses, the team developed two major types of recommendations: quick tactical actions and long-term strategic recommendations. Long-term strategic recommendations were developed in three main areas: fostering a sense of global ownership of our organizational issues, improving organizational communication, and improving leadership and facilitation of teamwork. Many of the final quick and long-term recommendations, listed below, came from the data developed through focus group sessions.

Those recommendations were:

- **To address overall organizational climate and leadership skills we need to foster a**

sense of ownership of organizational issues:

- Develop leadership skills on all levels of the organization.
- Facilitate conversation across the organization about leadership
- **To address organizational communication:**
 - Develop and publish each of the following, in series: a) a complete organizational chart, b) a map of organizational workflows, and c) a matrix of how decisions are made.
 - Charge Management Team with designing an explicit set of managerial communication principles and hold each other accountable to those principles.
 - Charge a cross functional, cross departmental working group with developing a set of communication principles to use across the organization.
- **To address both leadership and facilitation of teamwork practices:**
 - Bring in Talent Management and Organizational Development (an internal Hopkins unit which provides a suite of HR, organizational development, and talent management services) to assist in developing Management Team into a high performing team.
 - Charge the Executive Committee and Management Team with defining delegated authority and work with Talent Management and Organizational Development to move toward organizational practices that empower teams and remove ambiguity about authority in team related issues.
 - Develop institutional teamwork checklists that address issues such as participation, accountability, roles and responsibilities, team communication expectations, and annual reporting practices.
 - Develop and Sheridan Libraries and Johns Hopkins University Museums 101: Have the organization collaboratively and openly design its own cross-training program.

The team worked to articulate the scope of what to address when specific solutions were trickier to find or outside the scope of the team's expertise. For instance, executive and managerial level staff members were charged as a group with defining

“delegated authority” to move toward practices that empower and remove ambiguity about authority in team-related situations. Additionally, managers were charged with designing an explicit set of managerial communication principles and holding each other accountable to those principles. The principles included prompt sharing of information, structuring decision making around a process based on the strategic plan, logic and data, and endeavoring to operate by consensus.

With these recommendations, the team charged managers to take broad ownership of a plan for individual actions. In cases where an issue was entwined with the daily work of managers, it was necessary to define overall expectations directed toward all managers. The team shifted into a role as a source of program-wide momentum and reporting, and managers were expected to engage with the full set of recommendations. Managers were charged with employing organizational-level thinking and were encouraged to make direct ties between the recommendations and their program areas. Managers subsequently articulated the first set of actions that would be undertaken, complete with timeline and a point person.

Engaging Executive Leadership

After the recommendations were presented to the management team, the SD&T team felt it was important to discuss them in more depth with the Executive Leadership. The team held one hour individual sessions with the dean and each of the other members of the Executive Council. To get the conversations started the following questions were emailed prior to the discussion.

1. Based on the ClimateQUAL® Focus Group recommendations, which of the recommendations really resonates with you?
2. For us to be in a position to most efficiently attain our strategic goals and achieve success what would our library organization look like? OR How would a successful organization differ from our organization today?
3. As an executive level leader, how do you suggest starting to address some of these issues?

Executive Leadership, like other staff members, were open and honest about their perceptions and

were willing to give their insights. They were able to be honest because they also knew that their comments and observations would be kept confidential, and would only go towards helping the SD&T team develop a viable action plan.

Maintaining Momentum

After the baton was officially passed to the Management Team, the Staff Development and Training team's role changed to one of maintaining momentum. There were still many ways the team needed to continue the change process through follow-up actions. Based on comments in the survey and focus group sessions, the team discovered that staff members have a long organizational memory—especially for projects that once started with fanfare and then not spoken of again. Although the team was not directly responsible for many of the action items, it needed to track the identified actions holistically and ensure that tasks were completed by management team and communicated to all staff. The actions themselves and the continuous communication helped maintain the solid level of trust developed. Staff members looked to the team to take action, so any perception of lack of action would have left staff feeling that their confidences and trust was betrayed.

The SD&T team facilitated follow-up in multiple ways. One way was to have Management Team report on progress at the libraries and museums' Staff Exchanges (i.e., all staff meetings). Since perceptions of the staff from the ClimateQUAL® survey results were that management in the library were not responsive to staff needs, it was especially important to have those responsible report and be visible to staff members. The task did not even need to be complete at the time of reporting out—there just needed to be a noticeable effort to keep staff members apprised of the project's status.

Another initiative focused on better communication across the Libraries. Using the management teams' communication principles as a base, the SD&T team created and edited them to be appropriate to all staff members. The communication principles focused on the libraries and museums values including integrity and openness, innovation and constructive engagement and stewardship and trust. The SD&T members presented these principles at a

Staff Exchange, using examples from their own work to illustrate main points at an all staff open meeting. Staff members eagerly participated in the Staff Exchange and responded positively, indicating that they not only enjoyed the session but felt that they learned a great deal. One staff member mentioned how grateful he was that these issues were being examined. Overall, the session continued a level of trust that the team had built with the staff and illustrated how we were working towards common goals.

In addition, the team became deeply involved in developing a new performance appraisal program. ClimateQUAL® indicated levels of dissatisfaction with distributive and procedural justice. A way to address this issue was through a new University led Performance Partnership Program (i.e., performance appraisal system). Highlights of this new system include: a single anniversary date, a much stronger focus on year-round coaching and development, and the creation of defined, measurable goals. This new performance appraisal system was a huge initiative in the team's workload. It required the team to evaluate a new system, allay staff concerns, and create staff "buy in." The SD&T team utilized the communication techniques from the ClimateQUAL® rollout: communicating through multiple venues; communicating repeatedly; and meeting with every department to describe the rationale for the new system. Overall, the team reinforced the idea to staff that the new system was a result of listening to their needs. We worked closely with the University's Talent Management and Organizational Development department to train staff on the new system using a "train the trainer approach."

One year after the original ClimateQUAL® survey, the team administered a simple, one question follow up survey via Zoomerang. The question asked was: *"Last year the issues below were identified from ClimateQUAL® and the follow up focus groups as ORGANIZATIONAL issues that needed to be addressed. Please reflect back on the past year. How do you think the Sheridan Libraries and Johns Hopkins University Museums are doing on these issues at this point?"* The issues identified were the six issues highlighted throughout this paper—Distributive Justice, Procedural Justice, Psychological Safety, Facilitation of Teamwork, Communication, and

Leadership. The team also added a comment box to the survey. By administering this survey, the team wanted to better understand perceptions of organizational improvement one year after taking ClimateQUAL® to help inform what items to work on next. We had a response rate of 44%, and the results were mixed. As anticipated, the *perceived* pace of change on issues as core as those raised by ClimateQUAL® is gradual, yet staff expected faster results. The team recognized that none of these issues will be “fixed” without long term attention and willingness of the organization to change.

There were areas where staff believed there had been change, and areas that indicate a desire for more or faster improvement. Areas where staff perceived improvement include Communication, where 66 percent of survey respondents perceived positive change. There were also indications of areas in which we continue to need improvement, such as Procedural and Distributive Justice. Some comments indicated dissatisfaction with lack of change overall. Survey results also indicated that there have not been significant changes in Psychological Safety and Transparency in Decision Making—leading the team to note, yet again, that organizational change takes a significant amount of time and continuous effort.

Overall Lessons

Several practical lessons follow the team’s experiences with ClimateQUAL® and inform how it will handle current and future data and initiatives.

Start with a Strong Team: When undertaking a large initiative such as ClimateQUAL®, the importance of a proactive and dedicated team is crucial. The SD&T team is comprised of members who volunteered to be on the committee because of their avid interest in organizational development issues. Without that interest and commitment to helping staff members succeed at their jobs, this type of assessment and follow-up would not succeed. Given the issues raised by the ClimateQUAL® survey, absolute discretion of each team member was critical.

Communication: So much of what the team learned throughout the ClimateQUAL® implementation, analysis, and follow up is the importance of a clear, proactive, and multi-

pronged approach to communication. As in real estate the motto is “location location location,” the team found that it consistently returned to “communication, communication, communication” as the foundation for everything needing to be accomplished. Instead of making assumptions about staff members “hearing” the team’s message, the team started with the premise that “hearing” is challenging. The team focused on ways to have the message about the survey and its follow up activities simple and clear. People have different communication styles. The team was consistently reminded of this fact as it communicated aspects of ClimateQUAL®. More often than not the team still had staff members ask us questions that in our minds, we addressed. SD&T found it critical to communicate along each step of the process in multiple ways and through multiple venues: e-mails; meetings with departments individually; postings on the wiki; and answering questions individually; or presenting at Staff Exchanges. By proactively communicating in many different ways, the team was able have people “hear” the message because the active communication built a solid level of trust. Staff members felt that there was nothing being hidden from them, and they were receptive to the information given.

Data needs context: Whatever results you begin with will need to be interpreted and internalized for them to have meaning. The data from ClimateQUAL® provide a starting point for analyzing institutional perceptions. However, the results do not provide the analysis that only you and your colleagues can provide through your institutional lens. More discussion is often needed, as the team discovered when it held focus groups. Other organizations may find different ways to tease out important themes from their ClimateQUAL® results, but our team found that having ClimateQUAL® as the jumping off point for continuous discussion, not the ending point, to be what propelled it forward and helped it to understand the libraries and museums strengths and areas to address.

Determine the Level of Data Desired Through the Survey: ClimateQUAL® offers a range of granularity in results. Prior to implementing your survey, consider the level of data that you are seeking. Is it at the unit level or the broader departmental level? There are various costs

associated with the results received, so it is important to determine your organizations needs ahead of time and think about the results you want in the long run. The team wanted to start with results based around very broad demographic categories at the departmental level, and because of that, there were some questions about how applicable the data was to a supervisor's individual unit. However, because many units in the libraries and museums are very small (2-3 people) this would leave individuals very exposed in their answers.

Create a clear process: An open and defined process laid out for staff helps answer the perpetual "what now?" questions that follow such an assessment. A group-oriented process can give staff a non-confrontational group voice to management. The team also found that even with setting up a clear process and communication, there were still many questions about what was actually being accomplished, and how quickly. Staff were eager for change, and it required reporting out on expectations and continuous management of expectations about timeframe. Long-term, deep change takes time, and this idea has to be restated often.

Focus and tenacity is required to repair and build trust: Through the course of this process, the team found that there can never be enough trust in an organization, and that it takes conscious efforts and tangible actions, such as getting "out there" and speaking to colleagues, usually face to face, to build or repair trust.

Organization-level thinking is crucial: At all levels, but especially in leadership, a broad organizational outlook is crucial for intentional change and organizational health. To succeed in trying to assess and implement change, there needs to be a strong WE at all levels to move ideas forward. The team found, in conversations at all levels, that more often than not no one spoke of the organization as a whole. Staff, including management, mentioned "their team," "their staff," or "their department." The team found that the concept of WE needs to be continuously emphasized in daily communications and in larger initiatives. This change in perspective takes time, but is vital for breaking down silos and fostering deep collaborations across units.

The work of the SD&T team continues, and we hope that ClimateQUAL® will serve as the foundation for future assessments for organizational health. Our plans in the future involve not only assessments of the library as a whole, but also evaluations of how we as a Staff Development and Training team, can continue to do even better to meet organizational needs.

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Notes

1. Matthew B. Miles and A. Michael Huberman, *Qualitative Data Analysis* (Thousand Oaks: Sage, 1994), 10.
2. Ibid., 11.

Striving for Excellence: Organizational Climate Matters

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Abstract

The University of Connecticut Libraries was one of five Phase 1 libraries that participated in the ClimateQUAL® survey in 2007. Once the quantitative and qualitative results were received, the Libraries needed help understanding how to interpret the findings and respond. The Libraries turned to a library organizational development consultant for assistance with both interpreting the results and beginning to address them. The consultant designed a format for focus groups to provide anonymous but more detailed, experience-based information which helped the Libraries discover, understand and appropriately respond to the root causes of 'problem' areas indicated in the ClimateQUAL® Survey. A summary report, based on compiled data and including recommendations, was submitted and discussed with the Libraries' Leadership Council. Assisting that group in understanding that problems were embedded in the Libraries' systems, policies or practices, and should be divorced from 'personal blame' was an important part of the 'helping' role of the consultant. In line with organization development practice, recommendations were made to engage those closest to the 'problems,' the staff, in designing and recommending improvements to internal systems. The organizational development consultant advised the formation of six teams to address internal systems and an initial three teams, prioritized by the consultant and comprised of staff members from across the library, were formed. These teams were charged to "formulate a set of recommended actions that will contribute to a healthier organizational climate that promotes enhanced customer service by improving the Libraries': (1) leadership and team decision-making systems; (2) performance management system; and (3) hiring, merit, and promotion systems. Each team's key findings and

recommended actions are shared as well as progress to date on the teams' recommendations. The consultant also recommended that the Libraries track customer satisfaction with a LibQUAL+® survey every three years and administer the ClimateQUAL® survey three years after the pilot survey.

Introduction

The University of Connecticut Libraries began doing organizational climate assessments in 1999 with the original intent of measuring whether articulated organizational values were achieved following a library-wide reorganization in 1996. The UConn Libraries' original organizational climate assessment was influenced by Kaplan and Norton's Balanced Scorecard approach.¹ The Balanced Scorecard is one of the more recent multidimensional approaches to organizational assessment. Earlier, among others, Georgopolous and Tannebaum cited multiple effectiveness measures in the 1950s,² Kanter and Brinkerhoff researched the topic in the early 1980s,³ and Cameron published multidimensional organizational assessment literature specifically related to higher education beginning in 1978.⁴

The UConn Libraries' organizational assessment was directly influenced by the Learning and Growth component of the Balanced Scorecard's Vision and Strategy Process that asked "to achieve our vision, how will we sustain our ability to change and improve?" The other three Balanced Scorecard processes were addressed by the Libraries through user satisfaction studies, a statistical data information system, and a workflow study.

Eighteen assessment criteria for the Libraries reorganization and fifteen assessment criteria for

the seven newly created functional areas had been developed by the Libraries, mostly in response to concerns voiced by staff during the 1995 strategic planning and 1996 reorganization processes. In 1999, three years after the reorganization into functional areas and teams was completed, the Libraries conducted its first organizational climate assessment using a staff survey based on articulated measures of success including:

- Empowering staff with respect to operational responsibilities;
- Reflecting shared leadership and mutual respect among the staff;
- Displaying strong inter-area cooperation;
- Fostering good communications throughout the Libraries;
- Making the decision-making structure clear to staff; and
- Showing consideration for individual differences.

An organizational development (OD) consultant followed up on issues raised in the staff survey and outlined a number of actions that the Libraries subsequently pursued, including: team training; staff interactions (e.g., developing good communication skills and, mutual respect, understanding how mental models and the ladder of inference contribute to positive problem solving); leadership development training, employee recognition and rewards, improved communication by opening Leadership Council meetings to library staff, and implementing a more open process in developing the Libraries' periodic strategic plan/shared vision updates.

The 1999 organizational assessment was repeated in 2002 and 2005. The overall average score measuring the Libraries success in achieving organizational values increased by 4.5% between 1999 and 2002 and by 5% between 2002 and 2005. The overall average score at the functional area level increased by 3.7% between 1999 and 2002 and by 2.9% 2002 and 2005. Beginning in 2002, the Libraries sponsored a library-wide annual "day of learning" in part to address issues like organizational boundaries, the value of teamwork, and managing change. Simultaneously, between 1996 and 2006, the Libraries' average user satisfaction improved by 12% and between 2000 and 2008 the Libraries LibQUAL+® survey results improved by 5%.

Although the UConn Libraries experience with organizational assessment studies was valuable, it was not based on a standardized instrument like the Litwin and Stringer Organization Climate Questionnaire which was developed in Harvard University's Graduate School of Business Administration Research Division in the 1960s and was based on nine *a priori* scales: structure; responsibility; reward; risk; warmth; support; standards; conflict; and identity.⁵

In so far as the UConn Libraries initially used an instrument that was not developed in conjunction with other libraries, the Libraries were enthusiastic about participating in the first group of ARL Libraries to pilot the Organizational Climate and Diversity Assessment (OCDA) methodology in 2007. Soon to become ClimateQUAL® (<http://www.climatequal.org/>), the survey methodology was developed by Paul Hanges in the Industrial/Organizational Psychology program at the University of Maryland in conjunction with the University of Maryland Libraries beginning in 2000. The key organizational climate concepts that OCDA assessed in 2007 were: climate for diversity; climate for continuous learning; climate for innovation; climate for justice/fairness; job satisfaction; and team climate as they related to customer service. OCDA also assessed whether library policies, practices, and procedures were effectively supporting the library's mission as well as employee's perceptions of what behaviors were expected, supported and rewarded.

More than eighty percent of the Libraries' staff completed the OCDA survey instrument in the spring of 2007. When the summary draft findings were presented to the library staff at its 2007 Fall Forum, it was clear that the Libraries needed assistance in determining how to interpret and respond to the survey results. This became even more evident when the qualitative results, based on open-ended staff comments, were made available several months later. The UConn Libraries engaged one of the same organizational development consultants who had assisted the Libraries with its earlier organizational climate assessments. This consultant had also gained considerable trust and credibility with the library staff through her earlier work.

Consultant's Design/Methodology/Approach

The consultant designed a format for focus groups to provide anonymous but more detailed, experience-based information which helped the Libraries discover, understand and appropriately respond to the root causes of 'problem' areas indicated in the ClimateQUAL® Survey. A summary report based on compiled data and including recommendations was submitted and discussed with the Libraries' Leadership Group. Assisting that group in understanding that problems were embedded in the Libraries' systems, policies or practices, and should be divorced from 'personal blame' was an important part of the 'helping' role of the consultant. In line with organization development practice, recommendations were made to engage those closest to the 'problems,' the staff, in designing and recommending improvements to internal systems.

Background and Preparation for the Consultation

To begin this latest assignment to help the UConn Libraries achieve their organizational goals, the consultant read and re-read the rich but complex data description of climate factors and analysis provided to the UConn Libraries by the OCDA staff. Also, to get a picture, from a different set of data, of issues present in the environment as the staff completed the OCDA survey, she studied other consultant reports which had recently been submitted to the Libraries, and inquired about follow-up to each. She also examined the 2007 Strategic Plan and its updates.

After interviews with the Director and the Libraries organizational and staff development librarian, the consultant determined that a) there was serious interest in understanding how climate factors were affecting the staff's trust and commitment to the organization, and b) that there was a genuine commitment to implement systems changes to improve the climate. There was willingness as well to embrace the yet to be proven concept that there was a direct correlation between staff perceptions of climate and customers' perceptions of quality service.⁶ As has been described, UConn has one of the longest surviving team-based organizations, with an embedded history of staff empowerment, a clear

value to support diversity, and an overt commitment to continuous learning and improvement. It is worth noting that they were in a minority of the OCDA test group participants who, almost immediately, shared the results of the survey with their staff on an all staff website and held an all staff meeting to discuss results.

The specific assignment of the consultant was to:

- conduct focus groups on all climate factors of the survey that indicated a strong need for improvement—as indicated by less than 50% agreement on a particular factor;
- summarize, analyze, and report the focus group results to the Leadership Council; and
- advise on next steps.

Conducting the Focus Groups: Selecting Participants

In November 2007, six months after the administration of the survey, the organizational and staff development librarian invited staff to attend one of five ninety minute on-site focus groups. A general invitation went to all staff to attend one of two 'mixed staff sessions' and to the entire staff of one specific team and all underrepresented minority groups, where a significant difference in team/group responses was noted when compared to the overall Libraries responses to specific climate factors in the *OCDA Report*. A fifth focus group was held with the Team Leaders to round out the 'view' and learn more about probable causes. Anywhere from 7-15 participants attended each focus group session.

Believing that confidentiality was not an issue, a list was kept of the attendees. This later proved slightly problematic, since those attending first agreed to *verbatim* summaries, but withdrew that agreement when they saw the summarized transcripts, even though all personal identification had been excluded from the summaries. This experience matched the consultant's experience that although staff want to feel that their actual thoughts, as expressed, would be the most helpful to those in power, there is a prevalent reluctance to believe, in the end when one sees honest expressions of concerns, that there is no possibility of negative personal consequences. This dilemma was averted by having the consultant further summarize and abstract and, where possible, generalize the feedback from the groups, submit the summaries to the group for

their approval, and further edit the final summaries appended to the Final Report.

Conducting the Focus Groups: Approach

In a previously published article (summer 2004) the Consultant had detailed the importance of looking to systems to discover causes of climate problems.⁷ This approach provided a conceptual framework to further analyze the climate factors included in the OCDA Survey. Each factor in the survey can be seen as evaluating the success or failure of an organizational system (i.e., Distributive Justice encompassed the systems of Performance Management and Rewards). Thus questions for the focus groups were designed to enable the mapping of results to particular system improvements that might be called for.

Root Cause Analysis as embraced by Dean Gano in his book, *Apollo Root Cause Analysis, A New Way of Thinking*⁸ was the best 'question' methodology to use in the focus groups in order to distinguish between possible *system* causes (called 'conditions' in Gano's book) and *event-driven* causes. Each session began with a reminder of the purpose of the OCDA Survey and a description of the Climate Factor(s) for which input was being sought. Agreement on ground rules for the session, including one on confidentiality, was sought before proceeding with the questions. The consultant took relatively 'verbatim' notes on posted chart paper and reviewed those notes with the individuals providing the comment and with the whole group prior to ending the session. (Although this isn't the formally recommended way to track focus group input, it was done to save the time of transcribing audio tapes and helped the consultant gain a better understanding of issues referenced by the group.)

Using Gano's approach, each group was asked to think of an *event* (something that happened in the Libraries prior to the May administration of the survey) or a *condition* (the way things worked, what policies and procedures were in place or how they were implemented, the culture in the Libraries or a Team) which might have contributed to the 50% disagreement with the positive statement of the climate factor in the survey. Using this approach, it would be possible to distinguish between past *events*, which were beyond the Libraries' control to 'change' and

conditions or systems which were amenable to change in order to positively affect the climate. Causal *events* were not dismissed as unimportant, but were noted and recommendations made for becoming aware of their impact. Such events could be acknowledged openly as 'mistaken' or 'naïve,' clarified or given further context, and avoided in the future in order to avert a negative consequence on climate.

Conduct of the Focus Groups: Reports

After completing drafts, gaining feedback, re-writing summaries and gaining the agreement of the focus groups to share the summaries with the organizational and staff development librarian and the Vice Provost for Libraries, a draft Final Report with Appended Focus Group Summaries was submitted. The Final Report outline was as follows:

- Background
- Process
- Identification of categories (Climate Factors) which were discussed in the focus groups
- Summary recommendations
- Appendix: mixed staff (combined summary from the two groups), underrepresented minorities, staff from one team; Team Leaders separate reports, including analysis of themes and summary recommendations for each.

Summary Recommendations: Follow-Up Approach

Because the UConn Libraries is a team-based learning organization committed to organization development strategies, it was recommended that all change efforts include substantial involvement of the staff. Best practice recommended including the staff in further research, since only two data sets (the Survey Results Report and the Consultant's Report) existed. Staff involvement can point the way to substantial and successfully implemented changes that can lead to actual culture change. Since results of the survey indicated a gap between understandings of the staff and perceptions of the administration and a significant amount of time had passed and many changes had already been implemented since the original survey administration, the appointment of staff teams would reinforce the commitment to shared leadership, the development of organizational competencies, and the collaborative spirit needed for future success of

the Libraries in this environment of constant change. As organizational development practice has shown, staff understanding of issues and involvement in addressing them, can increase the effectiveness of planned actions and contribute to overall cost-efficiency.

Summary Recommendations: Overall Strategic Understanding

The *Libraries* had already begun a new Strategic Planning process in April/May 2007 which included a review of "Staffing to Vision and Plan 2010" which was originally developed in October 2006 by the planning group and administrators, and a retreat of 45 staff members to review and understand staffing needs and develop areas of *emphasis* and *de-emphasis* for the future. A new retreat was planned to begin the 2015 Strategic Plan. The consultant recommended moving deliberately forward on this approach, continuing broad and deep communications and using several methods for learning about the environment and changing customers' needs.

Summary Recommendations: Focused Climate Improvements

Based on her expanded view of the results and interpretations of the OCDA Survey responses the Consultant provided the Vice Provost for Libraries a comprehensive list of recommendations for specific aspects to consider as further, more internally grounded recommendations are developed by staff teams. While the strategic planning process proceeded, the Consultant recommended that selected, representative teams of 4-6 staff members be appointed to research and recommend changes in the following organizational systems:

- The Leadership and Team Decision-Making Systems, including the structure and role of the Diversity Team;
- The Performance Management System—with a focus on what improvements can be added to the currently prescribed procedures that would increase constructive approaches to developing staff;
- The Hiring, Merit and Promotion Systems—with an emphasis on the processes used, the involvement of peers and the clarity of the goals and criteria;

- The Communication System—with a focus on Leadership Council, the Strategic Planning Process and the 'Staffing to Vision' approach;
- The approaches to learning, training, and innovation;

Each team was clearly charged to:

- understand the current situation (i.e., what is prescribed, what is practiced, what is changeable from internal Policy and Procedure documentation and interviews with campus sources);
- understand what is desirable and will impact improved customer service using the ARL/OCDA and the Consultant's Reports data and analysis;
- develop and evaluate potential actions which can be taken, using the recommendations of the Consultant as a starting point; and
- consult with the organizational and staff development librarian and the Leadership Council to decide which high/benefit/acceptable cost actions can be implemented over the next two years.

In order to insure that teams worked from actual data and did not rely too much on perceptions gleaned from the Survey and the Focus Group Summaries, the consultant also recommended that the following be collected by the organizational and staff development librarian and shared with each team as appropriate:

- Staff salary improvement and turnover data
- Staff promotion data
- AA/EEO hiring data
- Exit interview data
- Trend data re: budget allocation to the Libraries (personnel, capital and operations)
- An outlined history of organizational changes in structure and staffing over the past 18 years

This combined set of data would enable the Libraries to understand what is actually happening to the organizational infrastructure that may or may not be contributing to the development of a healthy organization committed to customer service and continuous improvement.

In addition the works of Roosevelt Thomas, especially *Beyond Race and Gender: Unleashing the Power of Your Total Work Force by Managing Diversity (1994)*, were recommended as a starting

point to better understand how workforce diversity and complexity play out in the seemingly simple questions posed in the OCDA Survey. The Consultant also reminded the UConn Libraries administration to consider the sensitivity of minority responses to questions regarding diversity and discrimination in the OCDA Survey, and give less attention to 'average' or total responses, since the underrepresented members of the staff comprised a very small minority.

Summary Recommendations: Delivery of the Report and Follow-Up

After sending the written report to the Vice Provost for Libraries, the Consultant met with the Vice Provost for Libraries; the organizational and staff development librarian; and the Leadership Council and discussed their reactions, answered questions and provided further clarifications. Much of this conversation helped to educate the Leadership Council to the systems view of organizations and to help them not personalize the information provided by the Report and the Focus Groups. (See Phipps note re: Deming and Scholtes)

She then addressed an All Staff Meeting which was attended by almost the entire staff. In this meeting she again reminded the staff of the purpose and timing of the original survey. She stressed the commitment of the Vice Provost for Libraries and Leadership Council to discover root causes and move toward making positive changes in the climate of the UConn Libraries, and of their agreements to appoint staff teams to pursue further research and the development of recommendations for action.

Library Actions based on the Consultant's Work

The organizational development consultant advised the formation of six teams to address internal systems and an initial three teams, prioritized by the consultant and comprised of staff members from across the library were formed. These teams were charged to "formulate a set of recommended actions that will contribute to a healthier organizational climate that promotes enhanced customer service by improving the Libraries': (1) leadership and team decision-making systems; (2) performance

management system; and (3) hiring, merit, and promotion systems. The findings, recommendations, and progress-to-date of each team are summarized below.

Leadership and Team Decision-Making System Project Team (LTDMSPT)

This Team was charged with formulating a set of recommended actions that would improve the Libraries' decision-making system with a focus on clarifying leadership roles of the Libraries' various stakeholders including Leadership Council members and Team Leaders, and studied the design, structure, and expectations from cross-functional, area, and project/task teams in the Library.

To accomplish its work, the Leadership and Team Decision-Making System Project Team reviewed relevant policy documents and reports, and administered three in-house staff surveys. The first two surveys were targeted toward Team Leaders and Team Members and focused on empowerment and decision making; the third survey was administered to all staff and focused on leadership issues. The survey results indicated that most teams used consensus as a decision making tool and shared leadership emerged as primary team model. However, there was a lack of agreement on and consistent practice of a clearly defined leadership model. There was also a lack of clarity in some areas about the model of consensus and the leadership roles in a Learning Organization.

Based on its findings, LTDMSPT made the following recommendations to clearly define both the roles and the responsibilities of leaders and individual staff:

- Carefully define various leadership models to determine if the Library will be led from the top down, from the middle, or by shared leadership;
- Individual staff be held responsible for their participation under the Libraries' new leadership and decision making structure;
- Consider restructuring Leadership council as part of reorganization process to possibly include some team leaders;
- All members of Leadership Council attend leadership training together and periodically participate in team building exercises;

- Provide ongoing mandatory training to all team leaders on subjects like communication, facilitation skills, project management, team building, and managerial skills;
- Reduce the number of standing cross-functional teams; and
- Modify the Libraries' current meeting structure.

All of these recommendations were addressed by the Libraries during its reorganization in 2009. The Reorganization Project Team recognized that to achieve a dynamic organization:

- leaders must lead from within the organization, not from above;
- authority must be vested in the appropriate staff throughout the organization, rather than held only at the top;
- there must be clearly stated measurable goals, but also the ability to adapt and make timely changes to achieve those goals; and
- there must be a unified purpose and a determined focus on work that advances that purpose.⁹

The model also clearly identifies the leadership roles of individuals within the organization:

- The *Vice Provost for University Libraries* is ultimately responsible for the overall success of the University of Connecticut Libraries. In administering the Libraries, the Vice Provost consults with many constituent groups including other University administrators, the Provost's Library Advisory Committee, the Director's Council, The Libraries' Planning Team, the Libraries' Team Leaders and external entities.
- The *Assistant Vice Provost for University Libraries* and the *Program Area Directors* are responsible for the success of their program areas, and together with the Vice Provost, the overall success of the Libraries.
- *Team Leaders* are responsible for the success of their teams. The Team Leaders meet informally twice a month to provide support to each other on management and leadership issues, discuss important developments, explore opportunities for collaboration, and to have honest discussion about larger library issues such as staff morale, trust, and

communication. Attendance is entirely voluntary and there is no formal agenda. Every other bi-weekly meeting is also attended by the Vice Provost of Libraries. This "face time with VP" gives Team Leaders an opportunity to raise any issues of interest or concern.

- *Library Staff Members* are responsible for successfully carrying out their individual position duties, their team assignments, and for suggesting and implementing process improvements to better serve the library users. The new Library structure supports matrix relationships among staff members outside established Program Area Teams. Each staff member has one supervisor, but many staff members have both a primary reporting relationship to their Program Area Team and, by virtue of their position duties, a secondary (non-reporting) relationship to a team outside their home program area.

A "Decision Table" clarifying the decision-making authority of various entities under the new leadership model was developed and shared with all staff. This table identifies the key entities including the Vice Provost, the Director's Council, Program Area Directors, Collections Budget Team, Planning Team, Area Team Leaders, and Cross Program Teams and indicates their decision making role. The table identifies such core operations as charging and populating standing and project teams; allocating budgets; personnel decisions; setting library hours; hiring and promotion and clearly identifies who is in-charge of making decisions for each such function.

Leadership Council was renamed the *Directors' Council* and while it still consists of the Vice Provost for Libraries, the Assistant Vice Provost, and the Program Area Directors, its role and charge have been modified. The Directors Council advises the Vice Provost on the overall administration of the University Libraries, charges standing teams, and approves operating budgets, staffing requests, and library-wide policies.

A new Planning Team that also reports to the Vice Provost for Libraries was established. The Planning Team facilitates collaboration among staff members both within and outside their program areas. The Team is charged with setting

the Libraries' strategic priority goals, charging and populating cross program area project teams, updating the Libraries' strategic plan at least once every five years and administering the carry forward budget designated to fund strategic initiatives. Five members, one from each program area, with staggered two-year term are eligible to serve on the Planning Team. Members are elected by the library staff area by area.

A Diversity Advisory Team was charged to coordinate the Library's diversity related initiatives. Reporting directly to the Vice Provost for Libraries, the Team is comprised of rotating members reflecting staff diversity both in term of human identity (e.g., ethnicity, national origin, gender, sexual orientation, and age), as well as program areas teams, and regional campuses within the Libraries. The Diversity Advisory Team serves as a resource to the Vice Provost for University Libraries and the University Libraries staff. It also works with the Library Student Advisory Council to seek continual student input on library collections, services, and diversity-related projects and initiatives.

As recommended by the Leadership Project Team, Leadership Council members attended intensive interactive leadership training together and also received individual counseling in 2009.¹⁰ Leadership Council members subsequently try to schedule one meeting a month to follow up on interactive leadership principles.

The Libraries also instituted a mandatory training program for all Team Leaders and Team Members. The Interaction and Leadership Training Program covers topics such as providing feedback to others, resolving conflict, interaction skills etc. All Team Leaders and Members attended workshops in 2009 and refresher sessions were held in 2010 for Team Leaders.

As part of the reorganization, over fifteen cross functional project teams were decommissioned and the Libraries' meeting structure was modified. Facilitating communication among all staff is an important aspect of the Planning Team's work. Each month, the Team organizes town hall meetings where staff can share ideas; propose and discuss new initiatives; learn about important developments within the Library and beyond; and provide and seek feedback on

projects. These meeting have been well attended by staff and have contributed to increased awareness of institution-wide issues.

In addition, the Planning Team conducts a "Strategic Goal Development Fair" every six months. This offers staff an opportunity to submit proposals that would enhance user services and contribute to the Library's five year Strategic Plan. The Fair offers staff a venue to brainstorm and develop ideas, garner feedback, and identify interested partners for collaboration. Subsequently, staff members submit written proposals to the Planning Team, who reviews them against a set of criteria. Besides increasing staff involvement in planning and decision-making, this process has generated goodwill and good-spirited competition among staff to forward ideas that would increase user satisfaction and contribute to the Library's strategic plan.

Performance Management Project Team

This Team was charged to investigate performance management issues such as goal setting, coaching, performance evaluation, staff development, and progressive discipline.

To carry out its charge, the Project Team consulted existing forms used for goal setting and reporting of annual activities and achievements. It also studied the current performance evaluation practices including training opportunities available to supervisors. Feedback regarding the existing goal statement form indicated that most staff members found the form confusing. Lack of explanations led to varying interpretation of terms such as strategic, operational and individual goals; and outcome measures. The Project Team also identified a need for quarterly performance reviews to ensure that performance evaluation became a yearlong exercise rather than once-a-year activity. It pointed out that quarterly reviews would facilitate regular dialogue between employees and supervisors regarding progress made on mutually agreed upon goals, assist in clarifying work priorities, set expectations and remove any surprises in the end. Mandatory performance review training for all supervisors emerged as another issue requiring attention.

The Project Team made the following recommendations to improve the Libraries' performance management systems:

- Revise and Clarify the Goal Setting and the Report of Activity and Achievements Forms: To eliminate staff confusion, the Team proposed revising the forms by clarifying terms, streamlining categories, and including additional identifying information. For example, the Team recommended replacing strategic, individual and/or personal goals with a performance goal category. The performance goal is defined as a mutually agreed upon goal by supervisor and employee about what the employee is going to achieve. It is based on an employee's current work assignment and is aligned to the Area and strategic plan.
- Training on Setting SMART Goals: Employees and Supervisors receive training on how to set Specific, Measureable, Attainable/Accountable, Results Oriented, and Timely (SMART) goals.
- Performance evaluation training for all Supervisors must be made mandatory, and must be made available for new supervisory staff arriving after Performance Management period training has ended.
- Mandatory contributions by all team leaders to team members' evaluations.
- Quarterly reviews of all staff to help ensure performance management is an ongoing process throughout the year rather than a brief, once-per-year discussion.
- Development of an intranet site to serve as a repository for documents related to performance management including best practices.

Five of the six Performance Management Project Team's recommendations (excluding the intranet site) have been implemented. The revisions proposed to the Goals Setting form and the Report of Activities and Achievements forms were accepted and adopted by the Libraries in 2009. SMART goals setting training for all employees is offered and mandatory performance management training for supervisors is required. Team Leaders who have team members with assignments on multiple teams must receive input from non-supervising team leaders when completing performance evaluations. Quarterly reviews were adopted as standard practice and the Quarterly Review form developed by the Project Team is being used by the entire Library system. The quarterly reviews allow staff and

their supervisors to touch base on a regular basis and monitor progress on mutually agreed goals, adjusting them if needed throughout the year to address competing priorities, new developments, and workload issues.

Hiring, Merit, and Promotion Systems Team

This Team was charged to formulate a set of recommended actions that would improve the Libraries' hiring, merit, and promotion system. The Team was to focus on the processes used, the involvement of peers, and the clarity of the goals and criteria. It is important to note that the frameworks of the Libraries' hiring, merit and promotion systems are set by the University or by collective bargaining agreements, therefore, any changes to the Libraries' policies or practices must fit within those frameworks.

The Team collected and reviewed data in the following areas: approximate average search costs, in dollars and in staff time; UConn Office of Diversity & Equity, UConn Human Resources and UCL search policies and practices; UConn and UCL promotion policies and practices; merit policies and practices; historical data from 2001-2006 on Library merit awards; the OCDA Final Report; comments from the OCDA focus groups; and the results of a questionnaire sent to UCL staff. The Team also held a joint meeting with the Performance Management Systems Team to discuss shared concerns.

Fewer opportunities to interact with and provide feedback about job candidates emerged as one of the major staff concerns. The advancement opportunities available to the Libraries' staff were found to be adequate; nevertheless, the Project Team recommended various enhancements to the current systems including additional educational opportunities for staff. The Team also made a set of recommendations to make the University's Discretionary Merit System more fair and transparent. Listed below are various recommendations of this Team:

Hiring

- *Search Committee Composition:* The immediate supervisor and at least one member of each job class in an open position's team membership should be on the search committee. Whenever possible diversify the

search committee as needed by including, for example, departmental faculty, a staff member in a comparable position, or a counterpart from regional campus libraries, etc.

- Form search committee early enough in the hiring process that committee members can review job duties, job qualifications and job postings before they are submitted to the Human Resources. A shared understanding of the job expectations for the position would make the search committee's work easier and consistent.
- *Improving the Search Process:* Provide additional avenues for feedback from staff members not serving on search committees.
- *Departures:* Revise the current exit interview questions. Assess and prioritize the vacant position's duties if they are to be assigned to one or more staff, including what will not get done. Solicit volunteers, system-wide if possible and allow people to build on skills and interests. If the vacant position's duties are not going to be distributed among existing staff but still need to be carried out in the short term, hire an end-date or special payroll employee to cover those duties until a final decision is made about filling the position.

Merit

- *Establish a Standard Framework for University Merit:* Align "library language" with "University merit language."
- *Communicate Criteria for University Merit Effectively to Staff:* Supervisors should clarify criteria for merit in conjunction with annual goal setting meetings.
- *Make a Clear Case for Merit Recommendations:* Direct supervisor should clearly explain on the University merit form how an employee's achievements are merit-worthy.

Promotion

- *Educational Opportunities.* Libraries' Union representatives should arrange for annual brown bag sessions to help library staff understand their options for promotion or reclassification. Supervisors should understand the promotion options available to each staff member they supervise. Supervisors should encourage their staff to pursue promotion and provide timelines.

- *New Career Ladders:* Investigate and implement a tiered promotion ladder for non-UL/non-ULA UCPEA (University of Connecticut Professional Employees Association) and classified staff.
- First time candidates for promotion, regardless of rank, should be assigned a mentor to guide them through the process.

Considerable progress has been made related to hiring, merit, and promotions. New Search Committees charged since 2009 have incorporated several of the Project Team's recommendations including committee members with diverse background and forming search committees early enough to allow committee members to participate in drafting job postings and job description. All new hires are assigned mentors and are provided an "orientation checklist" to ensure that they are introduced to the Libraries' services and collections in a systematic way. In coordination with their supervisor, new staff schedule one-on-one meetings with relevant teams, areas, and library staff associated with their responsibilities to learn more about local policies, procedures, and issues of concerns.

A standard framework that aligns library examples with university merit language was established and communicated in 2010. This framework provides more guidance to supervisors on how to evaluate and rank staff performance for merit.

Conclusion

The ClimateQUAL® results and the follow-up with OD Consultant helped in identifying potential problem areas within the Libraries' internal systems. The OD Consultant made recommendations that led to the development of concrete roadmaps, benchmarks, and associated strategies to improve the Libraries' leadership, organizational structure and decision-making models; hiring, merit, and promotion systems; and the performance management system. The Libraries progress on the Strategic Plan which includes relevant LibQUAL+® metrics will serve as the barometer for gauging the effect of these changes.

The UConn Libraries will participate in LibQUAL® again in 2010 and will likely re-administer the ClimateQUAL® survey in 2012 to

assess the staff's perceptions of actual progress toward creating a healthy climate that is in congruence with its values as a team-based learning organization. They hope to continually improve and contribute to customers' success by providing a supportive climate where teamwork, diversity and justice are reflected in the Libraries' policies, procedures and practices.

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Notes

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The Relationship Between University Assessment and Library Assessment

David Shulenburg

Association of Public and Land-grant Universities

It will not come as a surprise if I say that these are difficult times for universities, especially for research universities. In the 20 years leading up to 2008, states cut real per student appropriations to Carnegie very high research universities by an average of 17% and by 15% to Carnegie high research universities.

Then, of course, the deluge struck with the recession that began in fall 2008. During the last two years, states on average cut higher education appropriations by 6.9%, with 35 states cutting appropriations and only 11 adding to them. In some states the two year cuts in total higher education appropriations were huge: Alabama, 26%; Nevada, 19%; Iowa, Louisiana, New Mexico and Florida, 17% each. Thus, the average cut in real state appropriations per student experienced by public research universities from 1988 to date is well over 20%.

Of course, it was not just public universities that lost funds. Every university with a meaningful endowment saw declines in endowment values in the 20 to 35% range during fall 2008 and spring 2009. Private research universities tend to have larger endowments so the reversal affected them more than it did public universities. A drop of that magnitude in endowment value generally forces an even larger cut in operating funds flowing from endowments because large, unavoidable obligations that had been made into the future based on earnings from 100% principal had to be covered out of a principal that was suddenly 65% of its former value. Contractually obligated expenditures like payments on building bonds or salaries for tenured faculty crowded out current operating expenditures.

For the last two decades nearly all public university presidents and provosts and, for the last couple of years, nearly all public and private university presidents and provosts, have had

budget cutting on their minds. Yes, they also had revenue enhancement front and center, but budget cuts had primacy because revenue disappeared so suddenly.

For most research universities the only significant source of net revenue available is from tuition. Additional tuition revenue comes from charging more, enrolling more students or a mixture of the two. Unfortunately, additional revenue from increased tuition receipts carries with it a moral obligation to spend it for items of direct benefit to the educational process or student welfare. Thus \$1M in additional tuition revenue cannot be used simply to replace \$1M in lost state appropriations or endowment payout. Research faculty salaries, research facilities, specialized library collections and computing resources are politically very difficult to fund from tuition sources. So while some universities succeeded in replacing lost appropriated or endowment revenue with increased tuition revenue, cuts in the non-education portions of the budget were nonetheless required.

My organization, the Association of Public and Land-grant Universities, surveyed its provosts last fall and again this fall to learn of their short run and long run strategies to cope with these budget reversals. In the short run, nearly every budget item was slated for cuts; the long-run plans focused on strategic reviews of most major activities. Some of those strategic reviews have been completed and budget realignments are underway; other reviews are still on-going.

What is most at risk from being cut as a result of these strategic reviews? If you judge from the frequency with which activities were to be subjected to strategic reviews, it is administrative structures, for 85% of schools with appropriations cuts of more than 10% intended to make them a focus of strategic review. But the second area

most frequently targeted for strategic review is academic support services, with 79% of the schools intending to do reviews. Of course, the university budgeting category in which libraries appear is “academic support services.” While IT and miscellaneous other functions are in this area, libraries constitute a major portion of it. The third ranked strategic review area is academic programs, with 67% of universities putting this area in which the largest proportion of the university budget is spent under strategic review.

So, how do you do a “strategic planning review”? A standard dictionary definition of the term is “the process of planning the activities of a business so that it competes well with other businesses and makes a profit.” Now, the universities represented by librarians in this room do not have profit-making as a goal. (But I would note as an aside that the for-profit universities so much in the news of late appear to spend only tiny fractions of their budgets on libraries.) While universities don’t have the simple element of profit to maximize, they nonetheless have bottom lines. Let me list a few of them:

For undergraduate programs:

- student recruitment
- retention and graduation
- student learning
- time to degree
- cost per credit hour
- cost per degree granted
- placement in employment and graduate schools
- earnings of graduates

For graduate and professional programs:

- student recruitment
- attrition
- graduation rates
- time to degree
- placement
- National Research Council rankings of programs

For Research Programs and individual faculty:

- the array of bibliometric measures
- external grant production
- teaching effectiveness
- patents and licenses
- companies started

For the institution as a whole:

- NSF funding rankings
- NRC composite program ranking
- placement in any of the 11 international university rankings

If your provost begins a strategic review and asks that the library specify its degree of effect on any of these university bottom lines or, more likely, asks what the impact on them would be if there were a 10% cut in the library’s budget, how do you respond? “Our serials would have to be cut by A%, our monographs by B%, our hours by C%, our uncatalogued acquisitions would increase by D%, and our document delivery would decline by E%?” Or perhaps you supply what a friend used to call “Aunt Emma Stories,” which are essentially anecdotes from patrons who benefitted in some way from library activities that might be cut or who suffered in some specific way in the last round of cuts. Neither approach is responsive to the provost’s question.

As provost for over a decade, I sifted through mounds of such responses during the four budget cuts or rescissions that occurred on my watch. I tell you from experience that that kind of evidence is not very convincing. The university world is increasingly data-driven and the data that counts relates changes in an activity to changes in one of the critical university outcomes. Provosts don’t always get such data, but when they do it is very powerful.

On September 14 I found a gem in my e-mail in the form of an announcement that ACRL had just released a new volume entitled *The Value of Academic Libraries*, prepared by Megan Oakleaf.¹ Most of you had the opportunity hear Megan deliver a plenary presentation on this volume’s topic yesterday morning. My judgment is that her work is on target and farsighted.

In this digital age you are in possession of a valuable resource, library transactions data for your student, staff and faculty patrons. That data can be used to evaluate the impact of library services and resources on outcomes of value to the university. As Megan puts it, “. . . until libraries know that student #5 with major A has downloaded B number of articles from database C, checked out D of books, participated in E

workshops and online tutorials and completed course F, G and H, libraries cannot correlate any of those student information behaviors with attainment of other outcomes.”²

Let’s examine a case study involving sophisticated use of assessment. Kalamazoo College was an early adopter of the Collegiate Learning Assessment test,³ first administering it in 2005-06. The CLA consists of several open-ended essays in which students use information from various sources to make an argument and to critique an argument. The essays are scored to measure the student cohort’s high level cognitive skills development in critical thinking and written communications.

Administration of the test to samples of freshmen and seniors tells a school whether its students are improving in these critical cognitive areas and, if so, whether the improvement is better or worse than would be expected in comparison with other schools with similar students.

(An important aside is that Kalamazoo used the CLA, but the ETS instrument CAAP and the ACT instrument MAPP can be used to measure the same cognitive outcomes.⁴ Similarly, student portfolios can be scored using rubrics to determine whether student critical thinking and writing is normatively above, below or at the level it should be. Don’t fixate on the measurement instrument used in this example; focus instead on findings about student cognitive development that can be and are being generated robustly from many measures.)

Fortunately, Kalamazoo students routinely received “above expected” gains in critical thinking on the CLA. But careful analysis of the results demonstrated that not all students experienced that gain. To understand why this was and what could be done about it, four Kalamazoo faculty members assembled a data base that grew to include each student’s CLA scores, transcript, SAT and ACT scores and responses to the National Survey of Student Engagement. Finally, they interviewed each student.

What they found was that most of those students

not demonstrating above expected gains in critical thinking were majoring in the natural sciences. NSSE data told them that these underperforming students had fewer long writing assignments, fewer assigned textbooks and were required to make fewer judgments about the value of information than were other students. Interviews plus NSSE showed that these students also felt less confident in their foreign language proficiency. Ultimately it appeared that a significant portion of natural science majors became very narrowly focused on their labs and coursework to the point that they gave short shrift to broadening experiences that would have given them opportunities to apply their considerable analytical skills to non-science fields or to the wide array of situations they will certainly encounter after graduation.

With this knowledge in hand, the faculty of Kalamazoo has begun to imagine ways to revise the educational experience to ensure that all future Kalamazoo students, including those in the natural sciences, grow in their critical thinking abilities. Absent the ability to assemble multiple data sets on individual students to get a snapshot of the range of their experiences at Kalamazoo and their feeling about them, the story I just told you would not have happened.

A book authored by Richard Arum, Josipa Roksa and Esther Cho entitled *Academically Adrift*, which will be published by the University of Chicago Press next January, is based on longitudinal CLA testing in many universities of thousands of college students when they were freshmen, rising juniors and seniors. That book will report that roughly 45% of college students fail to demonstrate any gain in their critical thinking skills while in college.

I predict that this book is going to cause a scramble by those who really care about learning as they seek to discover why such a large proportion of students don’t progress. Perhaps this book will cause in depth assessment like Kalamazoo’s to occur on many campuses and improved learning by a higher percentage of our students will result.

Now, back to the Kalamazoo story. The one thing even those of us who are not Sherlock Holmes fans know from his work is that the truly

important dog is the one that does not bark. What dog did not bark in the Kalamazoo story? It was your dog, the library dog. Suppose that to the collections of data sets assembled on each student at Kalamazoo was added the student records of library usage. Perhaps clues about the development of critical thinking would have led to variations in the use of library collections or library services. Perhaps the Kalamazoo faculty would have reached the conclusion that the best way to ensure that all students learn was by investing more in the library. Of course, they did not reach this conclusion; unfortunately, they did not have access to the data that would have permitted them to do so.

The Kalamazoo story focuses on learning outcomes, but the technique used could have helped understand retention, graduation, time to degree—any of the important undergraduate outcomes. The same technique could help understand graduate outcomes or faculty research or grant success outcomes.

I know you do not have the resources to perform your current functions as well as you might like and here I appear to be suggesting that you divert resources to do statistical studies, but for the most part that is not my suggestion. You already collect the data but most of you use then only for activity counts, not for in-depth assessment purposes.

Your institutions generally have sophisticated institutional research offices with access to essentially all the data bases extant within your university that have data bearing on the key university outcomes I listed earlier. Their data bases have all the data on undergraduate, graduate and faculty experiences and outcomes except the library transactions data. Offer the institutional research office your data. They likely will fit them into analyses they already have under way.

Condition access to your data by their firm and solemn guarantee that after matching your data with other university data bases on each user, individual identifiers will be stripped from the data base so that no privacy concerns occur. Such a request will be granted as the registrar and other university guardians of data sets demanded the same privacy/confidentiality commitment before IR was permitted to use their material.

You will still need to be involved with the IR folks in interpreting the results. Such an effort will require some library time and resources, but the resource commitment may pay off by permitting the library to replace your activity counts and Aunt Emma stories with real evidence about impact that is difficult to refute. Even if the effort does not result in additional resources for the library, it should help you target library internal budget allocations to those expenditure items that appear to make the greatest difference for students and faculty.

Another key assessment story appeared this spring in the May/June issue of *Change Magazine*. The article, “Student Service Expenditures Matter,” is by Ron Ehrenberg and Doug Webber.⁵ They find that increases in student affairs expenditure appear to produce higher retention and graduation rates, especially for universities that admit larger populations of low income students.

Unfortunately, student affairs generally does not collect data on which students use various student affairs services, so the Ehrenberg-Douglas findings, while very interesting, don’t reveal which services produce these very much desired results. Thus their findings are unlikely to lead to the allocation of much additional funding to student affairs, at least until effective assessment is done that will identify the key services that produce results. Libraries have an advantage over student affairs because you have so much individual-specific transaction data. It is, of course, of little advantage to the library unless it is used in assessment.

We academics are idealists. We live in a world in which value is intrinsic to our activities. Transforming intrinsic value into measurable extrinsic value turns what is nearly sacred into currency of a more ordinary kind. I understand the reluctance to use this reverse alchemy, but I regret the poor choices that we often make in a world short of resources because we do not take into account the extrinsic value of our offerings and do not demonstrate the relationship between the objects of intrinsic value and the ultimate ends of the university, i.e., creating conditions under which students learn and research advances are made.

The authors of the Kalamazoo study described this tension. They said:

Data and stories from assessment of student learning provide "ground truth" that allows our heads to believe what our hearts tell us. We in the academic realm live, at some level, in the cerebral sphere of influence that makes us skeptical of hunches born outside of our heads. And yet, we "know" in our hearts—from noticing changes in demeanor, new twinkles in eyes, and more conviction in voices—that we effect significant growth in our students. Assessment of student learning helps cause the spheres of the head and heart to fuse into a powerfully convincing whole.

When scarce budgets are allocated it is better that we place those resources where they contribute most to ends that promote student learning and research. I have confidence in my heart that libraries contribute fundamentally to these ultimate university ends. Proper assessment should convince provosts and presidents that our hearts are right.

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Notes

1. Megan Oakleaf, *The Value of Academic Libraries: A Comprehensive Research Review and Report*, (Chicago: Association of College and Research Libraries, 2008), http://www.ala.org/ala/mgrps/divs/acrl/issues/value/val_report.pdf.
2. *Ibid.*, 97.
3. Paul Southerland, Anne Deweke, Kirwan Cunningham, and Bob Grossman, "Multiple Drafts of a College's Narrative," *Peer Review* (Spring 2007): 20-23.
4. See Stephen Klein (CAE), Ou Lydia Liu, (ETS) James Sconing, (ACT), et. al., *Test Validity Study*, September 29, 2009, http://www.voluntarysystem.org/docs/reports/TVSReport_Final.pdf.
5. Ronald Ehrenberg and Douglas Webber, "Student Service Expenditures Matter," *Change Magazine* (May/June 2010): http://www.ilr.cornell.edu/cheri/upload/cheri_wp121-2.pdf.

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