CURRICULA OF LIS PROGRAMS IN THE USA: A CONTENT ANALYSIS

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Abstract. Close to 3,000 courses, both required and elective, listed in each curriculum of the 45 ALA-accredited LIS master's programs in the USA are analyzed qualitatively as well as quantitatively. Based on the changes observed in the core, electives and particularly courses that appear being created recently, this study finds that more and more elective courses are offered in LIS education while the number of core requirements is reduced to as few as two courses. In either case, a wider range of subject topics seem being covered nowadays than in the pre-Internet era. On the other hand, approximately 10 percent of all the LIS courses sound new in that they are designed to deal with emerging subjects and latest developments in the field besides reflecting the growing interdisciplinary nature of LIS. This research also shows that catalysts for LIS curricular transformations do not come from technology alone, but also originate from the cultural and societal dimensions. In other words, a holistic approach should be taken for enhancing LIS curricular contents to prepare information professionals for leadership in the time to come.

Introduction

It is inarguable that developments in our society, technological or otherwise, have brought significant changes to library and information science (LIS) education all over the world. Among all the changes occurred in LIS education, the ones that are most visible and observable can be found in the LIS curricula. That is, a curriculum for LIS education usually mirrors what is being offered to train librarians and information professionals who will not only acquire the essential knowledge and skills to become qualified personnel in the field but also meet challenges the ever changing information society brings.

Since we strive to prepare our students in LIS for leadership in the new age, we often revisit and revise our curricula so that our graduates would indeed be equipped with what they need to succeed and thrive after they obtain their master's degrees in LIS. However, little research is done in examining curricula followed by LIS programs in the USA to reveal, for example, what the required core is and what electives are offered. Compared with the LIS curricula in the pre-Internet era, what new courses have been created and added to the curricula of American LIS programs? More importantly, what implications those curricular changes would have for us to meet our goal of educating information professionals for the new age? In order to address the above questions, the present study performed a content analysis of the curricula of the LIS master's programs accredited by the American Library Association (ALA) in the USA.

Literature Review

LIS curricula have been a subject of research over the years, especially when quite a few indicators (e.g., the advent of computers and the emergence of the Internet) show that our field is in the center of an information society and plays a crucial role in the digital age. As one effort within the framework of UNESCO's ASTINFO Program, over 15 experts and specialists worked together between 1995 and 1998 in developing guidelines for all countries in the Asia-Pacific region to create and enhance curricula for an information society (Moore, et al., 1998).

Many more studies were carried out to examine the LIS curricula from different perspectives. For instance, Callison and Tilley (2001) tried to describe the LIS education evolution in 1988-1998 as reflected in new course titles besides job announcements and ALISE (Association for Library & Information Science Education) descriptors. The authors found that a total of 695 new course titles were added to the LIS curricula with different orientations in three different periods of time between 1990 and 1998. After surveying academics in North America, Southeast Asia and the Arabian Gulf region, ur Rehman, Al-Ansari and Yousef (2002) suggested that the most important competencies LIS curricula should cover include: knowledge of information theory, information use and users, the social context of information, and about one dozen more areas.

Approaching the theme of LIS curricula conceptually, Stueart (1998) stated that "the traditional approach to the development of a core curriculum has been to provide students with basic professional skills, such as simple cataloging, reference and bibliographical search skills and professional values". He further pointed out that a second equally important dimension in the core should address topics on the nature of information; how it is used and managed; systems, mechanisms, institutions, and tools to facilitate that use; and all of those factors and facets placed in the larger social, economic, political and technological context of society. Similarly, Sturges (1999) believes that LIS education has been shifting from a formally collection-dominated profession to a content-based tendency with the following emphases: 1) accessing and filtering content; 2) [re]intermediation between the user and technology; 3) negotiating ethical and regulatory difficulties; 4) designing user-oriented services; 5) managing knowledge resources; and 6) creating value-added information packages. Stoker (2000), after revisiting issues about LIS education (e.g., the core curriculum, and theory versus practice), raised two more issues. One is the relationship between librarianship, information management and knowledge management while the other is about the changing student body in the UK. In Stoker's view, LIS education can no longer be delivered in a single slice. Rather it should be a continuing process.

In 1997 Lee and Chuang predicted four trends in LIS education: 1) Developments in information technology and services have a major impact on curriculum design, and it is common for a curriculum to change with the time and technology. 2) It becomes harder to determine the core while electives tend to be the mainstream in course selections. 3) There appears to be an increasing emphasis on theory and research in course content. 4) Lifelong learning becomes the focal point in curriculum development. The last point is clearly echoed in the concluding remarks of Stoker (2000) while the first three predications, by and large, attract a lot of attention and discussion in the field over the years.

Although the current study's objective, as briefly stated before, appears similar to what has been reviewed in this section, the methodology applied and research focus emphasized in this study differ from previous studies. First, some publications recapitulated above (e.g., Lee & Chuang, 1997; Stoker, 2000; Stueart, 1998) are purely theoretical discussions without actual collection and analysis of curricular data. Second, among the studies that indeed gathered and used data related to the LIS curriculum (e.g., Callison & Tilley, 2001; ur Rehman, Al-Ansari & Yousef, 2002), none of them examined the entire curricula from 45 LIS programs like this present research. Oftentimes, one study typically considers one curriculum at one institution (e.g., Ocholla, 2001; Stilwell, 2004; Zimmerman & Jorgensen, 1998). It is true that some studies did cover one country in their research but without an analysis of all the LIS program curricula in the respective country. For instance, South Africa is the subject country in a comparative discussion paper (Dick, 1998). Bruce (1999) questions why Australia's LIS schools are marginalized while all the indicators say that they should be the most vital part of the professional education landscape. In contrast, Curry (2000) interviewed the directors/chairs of the seven LIS programs in Canada for identifying the common issues facing them. Sulistyo-Basuki (1999) presented, among other things, the most recent developments in the LIS curriculum in Indonesia.

Whenever there is a new movement or trend in our society, LIS curricula would respond accordingly by creating new courses. Examples of studies on such newly created courses can be found for Digital Libraries (Spink & Cool, 1999), for Information Architecture by Latham (2002), for Ethics by Rogers (1994), for Research by Schrader (1993), for scientific/technical information specialists by Penniman (1998), and for Information Technology by He (1999). Studies of this kind can no doubt show one aspect of LIS curricula development. However, a comprehensive understanding of LIS curricular changes would only come from research that examines the curricula in their entirety. This appears the very reason for the present author to conduct this study.

Methodology

A review of existing related literature indicates that various methods have been employed in studying the LIS curriculum and related topics. For instance, survey was the chosen approach in ur Rehman, Al-Ansari and Yousef (2002) while interview was adopted in a research project by Curry (2000). Curran and his colleagues (Curran, et al., 1998) highly recommended focus group for reviewing LIS curricula. Content analysis was the method applied in Callison and Tilley (2001) for exploring job ads, ALISE descriptors and new course titles they collected. Given the nature of this current study, content analysis is considered the most appropriate technique to use.

Data Collection

Data for this study was collected progressively from the identification of proper LIS programs to the gathering of individual course titles and descriptions. The following subsections specify the entire data collection process in three steps.

LIS Programs

The first step in collecting data for this research involves the identification of ALA-accredited LIS master's programs in the USA. The reason for doing so is due to the fact that the present author has been teaching in that country since 1993. A list of such programs is extracted from http://www.alise.org/membership/instmembers.html by excluding LIS programs in Canada or not yet accredited in the USA. There are 49 LIS programs that meet the criteria of inclusion in this study. However, after each of the 49 LIS programs' websites was visited for locating its corresponding curriculum, it is found out that one of the LIS program websites is in Spanish, a language in which the current writer has no proficiency, and is thus excluded from this study. Three other programs' curricula are either incomplete or not available at their websites. As a result, a total of 45 LIS programs are selected for this research project. A list of those programs and their curricular URLs can be found in the Appendix.

LIS Curricula

Each LIS curricular URL listed in the Appendix was followed to retrieve its actual curriculum. Several LIS schools included in this study offer more than one program. For example, Washington offers both MLIS (Master of Library & Information Science) and MSIM (Master of Science in Information Management) programs. In such cases, only the curriculum for LIS is considered. In addition, some institutions allow cross-listing courses in their programs at different levels (e.g., undergraduate versus graduate). In such cases, course collection is strictly limited to those courses that are mainly designed for the LIS program. If, for instance, a doctoral course can also be taken by master's students, that would not be collected for this study. On the other hand, if the course is designed for master's students but doctoral students are permitted to sign up for it, that course would be included in this research.

Once a LIS curriculum was located, a hard copy of it was printed for data entry purpose afterwards. Meanwhile, a soft copy of the curriculum was saved for possible reference during this research. This part of data collection was completed in about one week in late September 2005 in order to minimize the temporal variability in all the curricular data collected.

Course Titles & Descriptions

Course titles and related information (e.g., required or elective) were entered into a database using Microsoft Access. During this process, courses that appear unique (e.g., Introduction to Philanthropy & Institutional Advancement) or being created recently (e.g., Digital Libraries, Information Architecture) were identified and marked accordingly after consultation with respective course descriptions. Occasionally, syllabi are available on the Web for some courses, which greatly help determine contents of the courses under consideration. Since only about one dozen unique courses were identified during the data collection process, they will not be examined any further in this study.

Data Analysis

Exactly 2,757 individual courses offered by 45 LIS programs are analyzed based on their course titles, descriptions, and other curriculum-related information. First of all, required courses are extracted and examined to discern any pattern in the LIS core curriculum. After new or unique course offerings are pulled out from all the 45 LIS curricula, the remaining electives are grouped according to their subject contents for displaying an overall picture of LIS education outside the core.

Both quantitative and qualitative methods are applied for analyzing data gathered for this study. As content analysis is the major approach adopted for this study, the present author is fully aware of the qualitative nature of this undertaking and therefore makes efforts (e.g., multiple inspections of the same data set and several revisions of the elective course clusters generated – see Table 3) to ensure the validity and reliability of this study.

Results & Discussion

Every LIS curriculum included in this study consists of two parts: required core and elective courses. Required cores in total account for 8.5% of all the courses listed in the 45 LIS curricula. Table 1 provides several summary statistics for the required and elective courses in the field.

Table 1. Summary Statistics of Required & Elective LIS Courses

	# of Required Courses	# of Elective Courses	All Courses
Maximum	9 (Washington)	113 (Illinois)	115 (Illinois)
Minimum	2 (Illinois)	34 (Clarion, Denver)	39 (Clarion)
Mean	5.2	55.5	60.7

As far as required courses are concerned, Washington takes the lead by requiring its students to take nine courses (34 quarter credits) out of its 63-credit program. In comparison, Illinois indicates that only six (6) out of its 40 credits are required (two core courses). The majority of the LIS programs selected for this study have five to six required courses. On the other hand, Illinois outnumbered all other LIS programs in this research by offering close to 70 electives labeled as Topic: XYZ (e.g., Topic: Evaluating Programs & Services; Topic: Information Modeling). Other programs do have an elective course pool of similar nature but either the magnitude is much smaller or they are not explicitly enumerated in the curriculum like Illinois. For instance, Long Island tends to list all its electives on a trial or temporary basis (e.g., specialty of visiting professors) as Special Topics without giving a permanent course numbers. Likewise, quite a few LIS programs set aside one to several course numbers specifically for such offerings. Overall, as shown in Table 1, there are typically around 55 different courses in a single LIS curriculum.

What has been presented so far is basically from a quantitative viewpoint about the LIS curricula under discussion. The next part of this paper will focus on the subject dimension of all the courses the 45 LIS programs offer.

The LIS Core

Similar to the disparity observed in the number of required courses each LIS program sets up, what constitutes the core in each circumstance appears anything but uniform. There are 233 required courses in all the LIS offerings gathered for this study, and their subject distribution is illustrated in Table 2. As LIS course titles often vary from curriculum to curriculum, the course names listed in Table 2 and other parts of this report are simply close representations, and may not be the exact wording in a particular curriculum.

Table 2. Subject Distribution of Required Courses in LIS

Frequency	Required Course
44	Organization of information/knowledge/materials
39	Reference/Information resources & services
38	Introduction to LIS/Information environment
30	Management
22	Research in LIS
14	Information technology
11	Collection development
9	Information use & users related courses (e.g., Information use & users; Human information behavior; Information needs; Understanding & serving users)
7	Internship/Practicum
5	Information related courses (e.g., Information & society/in social context; Understanding/Lifecycle of information)
5	Ethics & information policy related courses (e.g., Ethics for LIS professionals; Information policy; Issues in LIS)
9	All other single topics (e.g., Choice of learning; Conceptual knowledge processing; Evaluation of information systems; Information systems, architectures & retrieval; Libraries in American Society; Social systems & collections)

Table 2 clearly demonstrates that traditional courses such as Cataloging and Reference remain the top core offerings, followed by an overview course that is commonly titled Introduction to LIS in the past and that increasingly assumes a different name such as Information Environment in recent years. Management, ranked #4 on the core offering list, stays in 30 (66.7%) out of the 45 LIS curricula, which manifests its lasting importance in the field. Approximately half of the LIS curricula examined in this study (i.e., 22 out of 45) have kept the Research course despite queries about why a professional LIS degree program needs a research course in its curriculum (e.g., Schrader, 1993).

The percentage of LIS programs that offer any of the remaining required course groups listed in Table 2 does not exceed 32 (about 1/3 of the 45 LIS program). Among such course groups, Information Technology seems to be a new addition while Collection Development and Internship/Practicum belong to the traditional required courses. The fact that only seven out of the 45 LIS programs still insist that their students do an internship or practicum sounds surprising, if not astonishing, in that LIS programs are after all practice oriented. As predicted by Lee and Chuang (1997), this reality makes the theory-versus-practice pendulum in LIS undoubtedly swing toward the theoretical side at least from the perspective of required courses. As for the course groups that relate to Information Use & Users, Information, or Ethics & Information Policy, they seem by and large falling into emerging content areas of LIS. The remaining nine stand-alone required courses can, to a certain extent, be regarded as outliers in the LIS core.

The LIS Electives

The analysis of LIS electives, needless to say, appears more challenging because the core courses, as indicated above, take up only 8.5% of the 2,757 courses listed in the 45 LIS curricula analyzed. During the data entry process, the present writer notices that electives from each LIS curriculum, although sometimes named differently, can be easily placed into clusters by subject content. Traditionally, most of those course clusters are often variously treated as course tracks, area concentrations, and the like. Table 3 lists the elective course clusters formed in this study.

Table 3. LIS Elective Course Clusters

Cluster Name	Typical Courses
Archives & Preservation	Archives Archives & manuscripts administration/description Conservation/Preservation Electronic records management Records management
Information Technology	Computer programming Database design & implementation Library automation Microcomputer applications Systems analysis & design Systems evaluation Telecommunications
Issues, Ethics & Information Policy	Economics of information Information ethics Information policy (international, national, etc) Intellectual property Issues in LIS
Libraries/Librarianship	Academic library Public library School Library Media Centers (SLMCs) Special library • Art & Museum • Business/Corporate • Law • Medicine • Music • Theology
Management	Administration & management Library public relations Marketing of information services

	Theory of systems management
Organization of Information	Abstracting & indexing
	Advanced cataloging
	Cataloging & classification
	Cataloging of specific types of information (e.g., maps & multimedia)
	Descriptive bibliography
	Descriptive cataloging
	Thesauri construction & controlled vocabulary
Rare Books, History-related, etc.	History of libraries
	History of books & printing
	Oral history
	Rare books
	Special collections
Resources & Services for All & Specific Subject Areas (including Information Retrieval)	Online search strategies
	Information storage & retrieval
	Resources & services for the humanities
	Resources & services for Social sciences
	Resources & services for Science & technology
	Resources & services for Business, corporate & economics
	Resources & services for Health science
	Government publications
Resources & Services for Specific Groups	Adults
	Children & young adults
	• Storytelling
	• Literature
	• Services
	Multicultural/International/Diverse groups
	People with disability (e.g., Computing & disability)
	Women
School Library Media Centers (SLMCs)	Administration of SLMCs
	Curriculum & supportive resources
	Instructional design & development
	Information technology in educational organizations
	Leadership in SLMCs
	Media services
	Resources in SLMCs
Technical Services	Collection development
	Serials
	Technical services
Other Courses	Communications science
	Design & production of multimedia
	Information literacy instruction/User education
	Library cooperation & networks
	Scholarly communication
	Theories & applications of mass communication
Individual Options	Field project
	Independent study
	Master's thesis
Experimental courses	Seminars
	Special topics

With the exception of the last three clusters in Table 3 (i.e., Other Courses, Individual Options, and Experimental Courses), all others have been the standard electives an ALA-accredited LIS program would offer. As change is a constant in the LIS domain, some courses are becoming obsolete (e.g., Library Automation, Microcomputer Applications for LIS) and on their way out of the LIS curricular landscape. Other courses are modified to incorporate new contents to meet the needs of today's society. For example, Metadata or Knowledge Representation is sometimes a renamed course for Cataloging & Classification while Design & Production of Multimedia seems to be a new title for the conventional Audiovisual (A/V) course.

Noticeably, all the electives listed in Table 3 are established courses with little reference to the ones that have been recently created and added into the LIS curriculum. The following subsection is exclusively devoted to this very intriguing topic.

New LIS Courses

As briefly mentioned earlier, new courses in all the LIS curricula examined are identified and labeled accordingly. They were then grouped into clusters by their subject content (see Table 4). Those clusters generally do not exist in our traditional LIS curricula before the Internet era.

Table 4. New LIS Course Clusters

Frequency	New Course
27	Digital libraries
24	Website design; Web applications; …
22	Computer/Information/Internet networks
12	Digitization; Digital preservation/design
11	Information architecture
11	Cyberspace law & policy
10	Knowledge management
10	Competitive/Business/Strategic intelligence
10	Human computer interaction (HCI); User-system interaction
9	Interface; User interface
9	Metadata
8	Computer/Network security
8	Internet reference/applications
7	Information seeking behavior
6	Multimedia/Moving images
6	XML; JAVA/C/Script languages
5	Digital publishing
4	Natural language processing (NLP)
3	Electronic commerce
3	Visualization
3	Usability
3	Distributed systems
2	Computer supported cooperative work (CSCW)
79	Other single courses (e.g., Beyond Google; Data mining; Gender & computerization; Matching mechanism)

There are 292 courses that have been labeled as new courses in this study although the actual number should be larger, if not greatly, than what is listed in the 45 LIS curricula due to the fact that most LIS programs do not enumerate their special topic courses. On the other hand, this number is just one-third of what Callison and Tilley (2001) reported in their study although their new course titles were obtained differently. Close scrutiny of the new courses reveals that among the three courses that have the highest frequencies in Table 4, Digital Libraries apparently leads the rest in that it is taught in 27 out of the 45 LIS programs selected for this study. Spink and Cool (1999) found via an international survey that few programs in LIS and computer science at that time started offering a course on digital libraries. Obviously, the same is no longer true based on the findings of the current investigation when more and more digital libraries emerge and function in this digital age. The other two new course clusters, extracted from about half of the curricula of the 45 ALA-accredited LIS programs in the USA, are both related to the Internet. One cluster focuses on Web Design, Web Applications and the like with 24 offerings while the other cluster, consisting of 22 courses, is variously titled as Computer Networks, Information Networks, or Internet Technology & Applications. Another cluster in Table 4 with three courses named as Distributed Systems, though much smaller in size, would fit naturally into this Network group. These three top ranked clusters in Table 4 account for nearly 25% or one quarter of all the new courses noted in the 45 LIS curricula.

Other course clusters listed in Table 4 are created to cover additional emerging subject areas of our profession. The cluster with course names such as Digitization or Digital Preservation/Design, to a large extent, symbolizes our efforts in making information more accessible digitally and for a long time to come. Information Architecture (IA) becomes a new course in 11 LIS programs in recent years when, for example, several IA summits have been sponsored by ASIS&T (American Society for Information Science & Technology) and IA is specified as a major theme in a considerable number of other conferences.

By comparison, other new course clusters in Table 4 show an increasingly more noticeable interdisciplinary nature of the LIS field. For example, the 11-member cluster on Cyberspace Law & Policy indicates its connection with the field of law. Courses related to Knowledge Management (10 course), Competitive/Business Intelligence (10 courses), or Electronic Commerce (3 offerings) bear a strong relationship with business information management. Furthermore, correlations between LIS and the following fields can be unmistakably observed:

- Psychology/Computer science in course clusters such as Human Computer Interaction (10 offerings), Interface (9 courses) and Computer Supported Cooperative Work (2);
- Computer science in course clusters such as Computer/Network Security (8 courses) and XML/JAVA/C/Script languages (6 courses);
- Sociology/Psychology in the Information Seeking Behavior (7 offerings) cluster as well as in other individual courses such as Information Needs Analysis and Understanding the Information User.

In addition, several clusters of new courses in Table 4 are derived from a large topic that has been part of LIS curricula in the past but with a fresh and more focused perspective. Examples of such course groupings include Usability (3 courses) from Systems Evaluation, Visualization (3 courses) from Graphic Presentation, and Natural Language Processing (4 offerings) from Artificial Intelligence (AI). Courses in those clusters are, in general, more specialized and in depth than the ones from which they are originated.

What remains to be discussed with regard to the new LIS course clusters presented in Table 4 comprises Metadata (9 courses), Internet Reference or Internet Applications (8 offerings), Multimedia or Moving Images (6 courses), and Digital Publishing (5 offerings). Although they all belong to the camp of established courses in LIS, latest developments are surely covered in those new offerings. For instance, in the Metadata course, such metadata standards as Dublin Core and RDF (Resource Description Framework) would be closely examined. Digital reference software like LivePerson for chat service and 24/7 Reference for real time referencing is no doubt explored in the Digital Reference course.

As exhibited in Table 4 and the foregoing discussion, the LIS curriculum has continuously been updated and revised to accommodate changes the new age brings upon us. On the other hand, technology does not appear being the only catalyst for LIS curricular changes. Rather, cultural changes (Stoker, 2000) and societal changes (Curry, 2000) have an impact on LIS education as well.

Concluding Remarks

A content analysis of the 2,757 courses from the 45 ALA-accredited LIS programs in the USA from both the quantitative and qualitative viewpoints enable us to draw the following conclusions regarding the LIS curricula examined.

First, more elective courses are offered in LIS education while the core requirements are reduced to as few as two courses. The latter was predicted by Lee and Chuang (1997) about a decade ago. Both the core and electives, nevertheless, cover a wider range of subject topics nowadays than the pre-Internet era. The fact that only seven out of the 45 LIS programs designate Internship or Practicum as a required course does show an inclination to theoretical education in the theory-versus-practice spectrum. However, more empirical research is needed to draw something conclusive.

Second, although a large percentage of the electives analyzed can naturally form the so-called course tracks or area concentrations, approximately 300 new courses (i.e., 10% of all the 2,757 courses examined) are created to incorporate recent and latest developments in LIS education. Moreover, some courses are renamed to more accurately reflect their changing orientation and contents.

Third, the availability and ubiquity of the Internet, particularly the Web, influences the LIS curriculum in many ways in that copious courses are designed to educate our master's students to understand as well as become proficient in this dominant technology in today's world. Nevertheless, technology alone does not represent all the changes that take place in the arena of LIS education. Rather, other factors also contribute to the transformation of the LIS curriculum. For example, a user-centered approach to information systems design and services receives growing attention in the LIS curriculum

while interdisciplinary almost becomes a keyword and thus embedded in courses designed for our field. Many LIS programs, meanwhile, try to deliver LIS instructions specifically tailored to individual students who are changing not only in their composition (e.g., experience and educational background) but also in other facets (e.g., aspiration and expectation) of their lives.

Needless to say, a lot needs to be done in order for us to meet the challenges the new age presents in educating information professionals. About half dozen institutions in LIS education have changed their names to iSchool (i.e., School of Information or Information School) in recent years as a measure to stay on the cutting edge of the LIS field in addition to the curricular revision. Further research is already planned by the current author to explore if any differences exist between iSchools and non-iSchools in their curricula. All the above suggest that the only constant in the rapidly changing LIS education is "change". Change in this context does not necessarily mean to include more courses related to technology, but also implies to revise the LIS curriculum holistically by taking into consideration other dimensions of the new age.

References

Bruce, H. (1999). A new perspective on information education from Australia. *Education for Information, 17*, 187-198.

Callison, D., & Tilley, C.L. (2001). Descriptive impressions of the library and information education evolution in 1988-1998 as reflected in job announcements, ALISE descriptors, and new course titles. *Journal of Education for Library & Information Science, 42*(3), 181-199.

Curran, C. et al. (1998). Using focus groups to gather information for LIS curriculum review. *Journal of Education for Library and Information Science, 39*(3), 175-182.

Curry, A. (2000). Canadian LIS education: Trends and issues. *Education for Information, 18*, 325-337.

Dick, A. (1998). Current trends and issues in information science education. *Mousaion, 16*(1), 43-58.

He, S. (1999). A content analysis of IT-oriented courses in LIS curricula: Distribution, changing ratio, curricula topics and consensus among four American LIS schools. *Journal of Information, Communication, and Library Science; 6* (2), 1-9.

Latham, D. (2002). Information architecture: Notes toward a new curriculum. *Journal of the American Society for Information Science & Technology, 53*(10), 824-830.

Lee, L.T.C., & Chuang, T.M. (1997). A study of the reformation of library and information science curriculum. *Journal of Information, Communication, and Library Science, 4*(1), 17-25. [Text in Chinese]

Moore, N., et al. (1998). A curriculum for an info society: Educating & training information professionals in the Asia-Pacific Region. Bangkok: Information & Informatics Unit, UNESCO Principal Regional Office for Asia & the Pacific. 97p.

Ocholla, D.N. (2001). Curriculum response to a changing national and international information environment: Theoretical and methodological paradigms on review and revision. *Education for Information, 19*, 143-167.

Penniman, W.D. (1998). Educating the scientific/technical information specialists: Description of the program at the University of Tennessee. *Science & Technology Libraries, 17*(2), 11-21.

Rogers, S.L. (1994). Accredited library school education in ethics. *Journal of Education for Library and Information Science, 35*(1), 51-55.

Schrader, A.M. (1993). The "R" word: The role of research in graduate education for library and information science. *Canadian Journal of Information and Library Science, 18*(1), 44-63.

Spink, A., & Cool, C. (1999). Education for digital libraries. *D-Lib Magazine, 5*(5), http://www.dlib.org/dlib/may99/05spink.html.

Stilwell, C. (2004). Alumni perception of a post graduate information and library science education programme at the University of Natal, South Africa. *South African Journal of Libraries & Information Science, 70*(1). 10p. [page # unknown]

Stoker, D. (2000). Persistence and change: Issues for LIS educators in the first decade of the twenty first century. *Education for Information, 18*, 115-122.

Stueart, R.D. (1998). Preparing information professionals for the next century. *Education for Information, 16*, 243-251.

Sturges, P. (1999). The pursuit of content. *Education for Information, 17*, 175-185.

Sulistyo-Basuki, L. (1999). Information technology and library education in Indonesia: Recent developments in the curriculum. *Education for Information, 17*, 353-361.

ur Rehman, S., Al-Ansari, H., & Yousef, N. (2002). Coverage of competencies in the curriculum of information studies: An international perspective. *Education for Information, 20*, 199-215.

Zimmerman, N., & Jorgensen, C. (1998). Seizing the day: A case study of one school's core curriculum revision process. *Journal of Education for Library and Information Science, 38*(2), 134-147.

Appendix. LIS Master's Program & Their URLs for Curricula

Program Name	URL for Curriculum
Alabama	Www.slis.ua.edu/courses_mlis.html
Albany	Www.albany.edu/dis/courses/#500
Arizona	Timon.sir.arizona.edu/courses/course.html
Buffalo	Informatics.buffalo.edu/programs/courses/index.asp#LIS
UCLA	is.gseis.ucla.edu/courses/course_catalog.htm
Catholic	Slis.cua.edu/courses/catalog.cfm
Clarion	Www.clarion.edu/libsci/ → Graduate Programs → Graduate Courses
Denver	Www.du.edu/LIS/→ MLIS Core Course Requirements → LIS Course Descriptions
Dominican	Www.dom.edu/gslis/coursedescriptions.asp?schnav_id=2047&tschnav_id=1010
Emporia State	Slim.emporia.edu/programs/mlscurriculum.htm
Florida State	ci.fsu.edu/Current/Grads/ssd19_MastSpec_course_desc.cfm
Hawaii	Www.hawaii.edu/slis/courses/descriptions.html#lis
Illinois	Www.lis.uiuc.edu/oc/courses/catalog/catalog.html
Indiana	Www-slis.lib.indiana.edu/courses/comprehensive.php
Iowa	Www.uiowa.edu/~libsci/descriptions.html
Kent State	Www.slis.kent.edu/courses/catalog.php
Kentucky	Www.uky.edu/CommInfoStudies/SLIS/bulletin.htm#course_desc
Long Island	Palmer.cwpost.liu.edu/courses.htm
Louisiana	http://slis.lsu.edu/courses.shtml
Maryland	Www.clis.umd.edu/courses/course_descriptions.html
Michigan	Www.si.umich.edu/courses/
Missouri	Sislt.missouri.edu/descriptions.php
North Carolina at Chapel Hill	Sils.unc.edu/programs/msis/curriculum.html
North Carolina at Greensboro	Www.uncg.edu/lis/degree/course_catalog.html
North Carolina Central	Www.nccuslis.org/courses/coursesd.htm
North Texas	Www.unt.edu/catalogs/2004-05/gclibrary.html
Oklahoma	Www.ou.edu/cas/slis/courseinfo/
Pittsburgh	http://www.sis.pitt.edu/~dlis/degrees/coreRequirements.html
Rhode Island	Www.uri.edu/artsci/lsc/web/Academics/Courses/CourseDesc.shtml
Rutgers	Www.scils.rutgers.edu/courses/listing.jsp?SN=17&DN=610
St. John's	Archive.stjohns.edu/pls/portal30/sjudev.school.home?p_siteid=38&p_navbar=207&p_id=50633#203
San Jose State	Witloof.sjsu.edu/classes/coursedesc.htm
Simmons	Www.simmons.edu/gslis/academics/courses/all.shtml
South Carolina	Www.libsci.sc.edu/program/coursesoffered.htm
South Florida	www.cas.usf.edu/lis/gen/courses.html
Southern Connecticut	www.southernct.edu/departments/ils/coursedescription.htm
Southern Mississippi	www.usm.edu/slis/courses.htm#courses
Syracuse	istweb.syr.edu/courses/descriptions.asp
Tennessee	www.sis.utk.edu/courses/
Texas at Austin	fiat.gslis.utexas.edu/courses/course_descriptions.php
Texas Woman's	www.twu.edu/cope/slis/courses/catalog.htm#mc
Washington	www.washington.edu/students/crscat/lis.html
Wayne State	www.lisp.wayne.edu/courses/coursedescriptions.html
Wisconsin-Madison	polyglot.lss.wisc.edu/slis/academics/courses.html
Wisconsin-Milwaukee	www.uwm.edu/Dept/Grad_Sch/Publications/Bulletin/library_information_science.html#ug