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The Passing of Guy Bensusan

Drs. Don and Elizabeth Perrin, editors

It is with great sadness that we report Dr. Guy Bensusan passed away on Tuesday, October 2, 2001. His remarkable achievement in developing an effective paradigm for peer learning online gained worldwide attention from educators and learners. The Bensusan Method improves the quality of learning. His frameworks - Hexadigm, Bias, and Ladder - facilitated learning for thousands of his own students, and for students wherever his method has been adopted.

A tribute from Stephen Downes on the DEOS Listserv captures the essence of the man and the educator:

I really have no words to speak. I am saddened, dispirited, humbled, afraid&

Dammit, I feel I was only beginning to get to know Guy Bensusan, and then this.

I spent most of yesterday wandering around and thinking. Mostly, what I thought about is the nature and character of a person who dedicates his life to teaching. It seems to me that this is the ultimate in self sacrifice. Most of what you do will not be realized until the next generation, sometimes beyond. I think that teaching really is the highest calling, and I think that Guy was an exemplar of the profession - writing, sharing, communicating, giving.

Stephen Downes, Cronulla, NSW, Ausstralia

sdownes@ualberta.ca <http://www.downes.ca>

Dr. Guy Bensusan was truly a creative and effective teacher, beloved by his students. He taught on Interactive Television for the Northern Arizona University in the early 90's and was an early adopter of online learning. Approximately 400 students enrolled in his courses this semester. Dr. Guy, as he was affectionately called by his students, generated great enthusiasm for learning. Excerpts of their work were published in recent issues of this Journal including the current issue.

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Guy was a prolific writer. USDLA is proud that more than 40 of his articles were published in Education at a Distance Magazine and Journal in its print and online editions. Additional Guy Bensusan articles will be published as they are made available to us.

Guy Bensusan bibliography

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Examples of online submissions of Dr. Bensusan's students are found in the monthly STUDENT EXCHANGE section commencing August 2001, and in the following articles:

Oct 2001 A Student's Journey - Gretchen E. Chamberlain

http://usdla.org/15_publications.htm

Jul 2001 Communities of Learners: - Class Dialog Online

http://usdla.org/ED_magazine/illuminactive/JUL01_Issue/article08.html

Nov 1999 Unedited Student Reactions to a Distance Learning Class by Dr. Guy Bensusan, Northern Arizona University http://usdla.org/15_publications.htm

(1) These articles were published as part of the *Writings of Guy Bensusan* Series.

Note: A biographical sketch of Dr. Guy Bensusan can be found on the Northern Arizona University website at: <http://jan.ucc.nau.edu/~hgb/itt.html>

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Peer to Peer Learning

Michael J. Buell

Introductory Post September 24, 2001

Hello Adrienne!

Happy to hear from my "road trip", cross-country traveling classmate! When I first composed this section's introductory post, I was contemplating the actual "layout" of the electronic classroom. This past spring I participated in my first Internet experience, and the style of that "program" differed sharply from the environment of this course. The "system" did not use the concept of "individual, personal spaces", and followed more of a "newsgroup" format. Even NAU appears to have multiple "online" learning environments operating concurrently. For this course we are using WebCT, and the "personal space" approach to correspondence. Another NAU site offers a classroom of "dated" postings. In other words, the assignment itself represents the first post, and from that point on other posts are "turned in", and a linear "time" line of posts develops.

Someone will complete his/her assignment and post it "below" the instructors initial post. Then someone might respond to the post, or another classmate might "record" his/her assignment, and the next person could respond to both posts. All of this is accomplished by scrolling from the first response down to the most recent. The posts are placed in numerical (date) order, and one finds oneself scrolling back and forth, and it lacks the organization of the "personal space" approach. Another draw back to this approach is that at times it can be very challenging to relate a particular response to a given post. This is where the "personal space" approach (and its internal news group format) definitely simplifies the "connectivity" between a particular post and a given response. On the plus side it is "impossible" to miss a post, since they are all visible and numbered, just as long as you begin at the top and follow the (one) thread to the end. Of course the skillful use of "mark all read" (as it is available in our WebCT course) also eliminates the potential for missed posts. Thus, I was thinking of course format, and I am so curious as to your concept of the "personal side", please explain (Big Smile!).

In regards to the "Internet text" taking the place of lectures, I have a slightly different perspective that might be related to having experienced some of Guy's courses in the pre-internet era. In fact, when I consider the format of Guy's courses I have a difficult time applying the term "lecture", for his courses always consisted of peer to peer questioning and exploration, with Guy acting much more as a group facilitator (directing the flow of traffic when the intersection became too crowded, or, on occasion, "bump starting" a stalled "car" with a "well, Michael, what do you think

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about that?". The documents that are now online for "Carmen" used to be in "hardcopy", and while the subject of the lecture - I would say interaction - was related to the reading assignments, they in no way limited or constrained the "free flow of ideas" that are so much a part of the Bensusan Experience.

I might be a little biased, but the structuring of Guy's pre-Internet courses appear to flow naturally into the Web environment. Students would be required to read the assignment outside of the lecture, and come prepared to interact with their peers. The same is true for the electronic classroom, with the added bonus that, as Lynda Lee Vo noted, a tangible "record" of student growth exists. In the traditional classroom peer to peer interaction can at times become quite frantic, and important "discoveries" can be lost. It is difficult to take notes, follow the flow of the discussion, and participate verbally all at the same time. The Web environment avoids this frantic, at time emotionally charged situation by allowing for the asynchronicity of post, reply, contemplation, and post - without worrying about missing an idea in the exchange. The classroom interaction is all written out before your eyes, and this allows for a deeper analysis of the thoughts expressed during our 24 hour, seven day a week lecture format.

So Adrienne, I hope I have expressed clearly why the idea of "Guy" lecturing seems so foreign to me. He has always provided the resources for his students to explore (the Carmen publications), and left it the hands of the students themselves to interact and learn from one another - just as we are doing here! I also "feel" that your closing sentence so clearly expresses the "relaxed" atmosphere that exists in a Web course. Inherent in its design (asynchronicity) is an appreciation for the reality of what I would refer to as "differential rates of learning". Homogeneity of the classroom is far from a norm, since students often enter "the learning environment" differing levels of academic skill. The online classroom inherently allows for what I would refer to as "learning compensation" - the ability of the Web environment to provide "unlimited" access to the resources of course interaction (the dialogue, discussion groups, and other lecture materials). This "access" grants the gift of learning to working parents, part and full time employees, people living in remote areas, and those who might "doubt" their abilities (students who might feel intimidated by the traditional classroom environment for a whole host of reasons).

In fact, I personally know a number of individuals who have either not embraced the college experience, or did so with a great deal of fear, due to physical and mental deficits - such as speech impediments, learning disabilities, or other "personal" issues that they "believe" might hinder their interaction in a traditional classroom. Another example would be a student who might be afraid that they would not be able to fully follow the rapid discourse of the "verbal" classroom, and would prefer to have the discourse in writing. This might include those with hearing disabilities, and those with poor eyesight (given the recent and rapid development of speech recognition software - for both the verbal imprinting of words into text documents, and the "computerized" reading of electronic documents (our discussion posts or the course assignment).

So, a long answer to a fairly simple question, but I hope you enjoyed all the thoughts your post brought to my mind, and I thank you Adrienne for an evening of entertaining thought! Please remember to let me know what you "view" as the "personal side" of the online equation - I am so very curious. Michael

About the Author:

Michael Buell is an undergraduate student at NAU. He has had extensive experience in a number of Distance Learning formats. We appreciate his insights and his analytical

expertise.

My Understanding of the Hexadigm

William Leek

Humanities and Mathematics Assignment #1

September 04, 2001

The Hexadigm is a six-part framework that can be applied to any subject to cast this subject within a broader humanistic picture. It is a tool that is designed to assist a person with viewing beyond their current nationalistic or cultural experiences. The application of the Hexadigm to any subject matter will portray that subject within the grand scheme of the human endeavor. The first part of the Hexadigm is to consider the cultural sequences involved within the intended subject matter. Next we consider the mutual influences of these different cultures and what affects this might have on the intended subject matter. As we do this, we keep in mind regional diversities that may help explain different approaches to our subject matter from differing cultures. These first three parts (Cultural Sequences, Mutual Influences, and Regional Diversities) may be considered as a triangle where each vertex can influence another. We then apply the final three parts of the Hexadigm model to this interacting triangle of viewpoints. We consider the effects of modernizing technology on our previous three-part picture. This allows us to focus on how human development has changed what was the past into what is now the present. From this broader view of our subject matter, we expand our comprehension and revise our interpretations. These six parts are intended to guide a human viewer into seeing the bigger picture as it applies to any specific subject matter. Dr. Bensusan gave us an example of the Hexadigm framework applied to the subject of American History.

This semester we will be asked to use this Hexadigm approach to view a subject of our own choosing. Keep in mind that this is a Humanities class, and we will be viewing our chosen subject matter from a broad humanistic approach. Using the Hexadigm, we will gain an important and powerful view of our chosen subject matter as it applies to the human endeavor. To better explain my view of the Hexadigm, I will briefly give an example of using it on my chosen subject matter for this semester, Mathematics. In order to give the right feel to this example, we will use our imagination. Imagine that you are producer for a PBS (Public Broadcasting Station) special. You have been given a subject to present to a large and culturally diverse audience.

Your main goal is to present the topic in an interesting and broad approach so that it could appeal to a vast amount of people. Imagine that your topic is mathematics. There will be some mathematicians in your audience, and you could present new research on high level topics that they would enjoy. Yet this would cause nearly 99.9% of your audience to turn the channel.

You need an approach to the topic of Mathematics that would seem interesting to almost anyone. You decide to use the Hexadigm approach and cast Mathematics as an interesting human activity. You decide to divide your documentary on Mathematics into six parts. You will first consider how different cultures entered into the activity that we now call Mathematics (Cultural Sequences). You will investigate its origins and show how Mathematics developed very differently in different cultures and at different times in human history. You will trace how these different cultures interacted through trade and conflict to understand how Mathematics grew from this interaction (Mutual Influences). You will consider regional diversities and how they affected different approaches and methods (Regional Diversities).

From this broad historical approach, you begin to focus on the driving force of technology. You study architecture, navigation, business, and communication among others. You trace how Mathematics affected each of these areas of technology, and how these areas of technology affected the growth of Mathematics (Modernizing Technologies). As your interacting historical approach comes to an end, you step even further back and begin to draw conclusions about the study of Mathematics. You explain how all these cultures and applications were drawn together within the same study that became known as Mathematics. You expand your comprehension of what the subject is and how it has affected humanity. You revise your interpretation of what Mathematics is to you, and instead view it from a humanistic approach (Expanding Comprehensions and Revised Interpretations). With this approach, you know that you have a PBS special that many would enjoy watching. It would not exclude any culture or nationality. It would treat all people's input into the subject of Mathematics equally and seek to unite this understanding into a broader definition of the subject. It is even a special that the mathematicians would still enjoy.

This explanation of the Hexadigm highlights many of its attributes. It is a tool that we can use to view any subject on a humanistic level. Yet like all tools, we must know their strengths and weaknesses before we can use them effectively. We would not try to use a hammer to cut down a tree, nor would we try to use an ax to pound in a nail. Each tool has its specific use and is specially designed for this purpose. Similarly, the Hexadigm is designed to present these broad and all-inclusive pictures of any subject matter. It is designed to treat all cultural influences equally, and highlight the humanistic nature of any subject.

If you are a PBS producer, a student in a Humanities class, or a curious human being looking for the big picture then the Hexadigm is a good tool for you to use. Yet did you notice that this imaginary PBS special on Mathematics did not focus on teaching very much Mathematics? It is unlikely that our special would teach us how to calculate the third derivative of $f(x)=\ln(x)$. It is unlikely that our special would contain the proof of Fermat's last theorem, or explain how the elliptical nature of the torus was involved. This PBS special is designed to give us the big picture. This picture is interesting and attractive to almost anyone. Yet if I were a student in Calculus, I would not expect to get an 'A' on my next quiz just because I watched our imaginary PBS special. If seeing the big picture were not the specific goal, then this PBS special would be just another way to waste an hour sitting on the couch.

There is certainly a great deal to see when one steps back and looks at the big picture of things, yet there should be equal importance placed on viewing the details and intricacies of a subject. If the Hexadigm approach was the only approach to Mathematics, then there would be no Mathematics in the world. Humans must and should see the big picture, yet they must also live in a world that is highly focused on the present details. Therefore I celebrate the tool that Dr. Bensusan calls the Hexadigm for its ability to give us an important view of life and ourselves. Yet I also caution that this view is certainly not the only approach to writing reports, for guiding research, or for viewing life. To each tool there is a designed specific use. The use of the Hexadigm in a Humanities class is certainly helpful and warranted, and I hope my example can be helpful to others.

About the Author:

William Leek is a student in an online Humanities course at Northern Arizona University. He offers an interesting and creative analysis of both Mathematics and Humanities using the Hexadigm as the analytical tool.

Hexadigm, Cultural Evolution and Lifespan Development

Carole Ann Seeley

Tuesday Sep 04, 2001

I was completely fascinated by Dr. Guy's explanation of the hexadigm, and as I read his theory of the hexadigm as a way of defining cultural evolution, it seemed to me that we could view a person as a microcosm of cultural evolution and metaphorically compare the hexadigmatic principles to lifespan development.

Comparing the hexadigm layers beginning with cultural sequences: before a child is born, it is imprinted with the DNA of its parents; these will determine its sex, race, and physical attributes. Similarly, whether you subscribe to divine creation or the "big bang" theory, your view proscribes how the world came into being and what its characteristics were at that time.

The second layer, or regional diversity, the environment into which the child is born, is predicated upon her parents - whether they are married or not, their socio-economic status, ethnicity, and culture, whether the child was "wanted" or not. All these things directly influence how that child will perceive her own birth in the future. It could also be said that the view of explorers who "discovered" different parts of what we now call America and their subsequent historical accounts were impacted by that part of the country where they "emerged." In almost every case, there were previous inhabitants with their own culture, mores, and values that were superimposed upon those of the explorers.

As the child grows out of infancy, other factors begin to have some bearing on her life. Her awareness of different people and environments expands to include extended family, parental friends and acquaintances, doctors, babysitters, and strangers in a multiplicity of setting and varied circumstances. She may experience differences in routines, foods, or ways in which she is treated. The diversity of activities in which she engages will increase as her abilities unfold. This mimics the hexadigm's third level of cultural sequences wherein mutual influences are combined to create a marvelous potpourri of ethnicities in our country.

Continuing the comparison to our country's cultural evolution, the remaining three factors of the hexadigm - modernizing technologies, expanded comprehensions, and revised interpretations - are all equally intrinsic to how the development of the child will progress.

Some of her growth, as affected by these three aspects, will be dictated by the cultural and socio-economic circumstances of her family of origin. If she is born into a family of wealth and status as measured by the standards common in America in the 21st century, it is likely her world will be dominated and strongly shaped by the many technological innovations that are surfeit in our nation. She will more than likely have her own room and bathroom, furnished with her own TV, telephone/DVD recorder, stereo system, and computer. There will be little physical labor required of her, for machines will do it all; she will likely live in a gated community, in a home guarded by a complex security system complete with intercom and hidden cameras; she will probably be dependent upon technological gadgets to get through her day - Palm Pal to schedule her activities, cell phone and/or pager to keep in contact with her family and friends, laptop computer upon which to do her schoolwork, and FAX/modem/email to handle her social and business correspondence, and give her instant access to international news and information sources through ever-faster and

more powerful upgrades to her computer system.

She might attend a private school with the most modern, scientific equipment available to enhance her learning opportunities via satellite downlink and electronic media presentations. It's very likely she would be transported to and from school and her many extra-curricular activities in a car fully-loaded with every electronically-powered and computerized automotive advance available; if she gets lost, sophisticated computerization will guide safely to her destination. She may perform a programmed workout combining weight-training and treadmill in a high-tech gym, while electronic devices monitor and measure her heart rate and calculate how many calories she has burned. She may have her physical attributes altered by laser surgery and her appearance computer-enhanced and electronically transmitted to potential suitors.

The older she becomes, the more she will probably expand her comprehension because her horizons are constantly increasing. Not only does she have unlimited electronic access to anywhere in what, in elitist terms, is called the "civilized world," but her wealth would enable her to physically travel literally anywhere in the world she may want to go. If her travel itinerary should include visits to so-called third world countries, the world, as she construes it, may well undergo a revised interpretation as she is able to see firsthand, perhaps for the first time, what it is like to live in conditions that would be deemed impoverished by her urbane, cosmopolitan standards.

Conversely, if our metaphorical child were born into what would generally be considered less fortunate circumstances, she would be "deprived" of most of these technological marvels. Optimally, she might, instead, be surrounded by many family members of several generations living in overcrowded, low-income housing in a neighborhood where people gather in the street in the evening to exchange community news; she will probably walk to a neighborhood elementary school with her brothers and sisters and ride a bus to her junior high and high schools.

She might watch TV, if someone else in the family happens to be watching something she's interested in on the only available TV in the house, but it is more likely she'll hang out with her friends at the mall or neighborhood park. Her entertainment may include reading library books and listening to the local pop music station on the radio. She may or may not attend a school equipped with modern equipment, but it is likely to be overcrowded in either case. She will need to rely on her imagination and intuition to gain the knowledge and skills she will need to be successful in a world where the criteria for that success are usually defined by white, upper-middle class, conservative males. She will likely be sustained by a culture rich in religious and national traditions, and take pride in her ethnicity. As she grows older, her interpretation of the world will probably change as she becomes aware of the disparity in socio-economic strata and political agendas that often discriminate against lower-income and/or ethnic minorities.

In either case, the worldview of our metaphorical child will be shaped and discerned within the framework of her composite experiences; her truth will be determined by the reality of her life.

About the Author:

Carole Ann Seeley has returned to the university setting after 35 years of homemaking and child rearing, in her words, "to find out who I am and what I want to be when I grow up." She is completing her baccalaureate degree in Speech Communication. Her classes and the WEBwork involved compete with the hours she spends in her full time job. She has grandsons and an 18-month-old granddaughter who bring great joy into



her life.

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December	USDLA Annual Report and 2001 ACCOMPLISHMENTS	Online	November 5	November 9

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Editor's Note: This is an intriguing and powerful resume of the current extensive and varied human involvement in learning. Sometimes, history records, knowledge was highly valued but equally highly restricted. Ms. Davis, through her broad scholarship and in-depth experiences within the Distance Learning field, brings to her readers the intense excitement of a learning age where knowledge will be freely accessed, profoundly abundant, and offered in a cornucopia of formats.

What E-Learning Can Learn from History

By Shirley M. Davis

The world is embarking on a new age, an Age of Learning. Never before have so many people been involved in learning at all educational levels, from schools to colleges to workplaces, in formal and informal settings. Increasingly adults of all ages are recognizing the need for lifelong education for their own career development. School is no longer just for the six-to-22-year-old.

Those of us involved professionally in education welcome this new Age with excitement and optimism. Not only are learners ready to learn, but technology is propelling us forward into new ways of reaching this increasingly diverse audience with a variety of flexible, compelling, and more effective learning opportunities. [*Ed. note:* for an extended discussion of the impact of the Age of Learning, see author's article in "Ed at a Distance," Volume 13, Issue 7, July 1999.]

In the center of this growth is e-learning, creating its own maelstrom of questions as well as its proponents and detractors. Numerous colleges are offering e-learning opportunities to their on-campus students as well as serving nontraditional students through distance learning. According to Market Data Retrieval's College Technology Review 2000-2001, 70% of all U.S. colleges and universities offer Web-based courses. Many colleges, such as Columbia University, are certain enough of the future of e-learning to have established for-profit subsidiaries that focus on the e-learning market. Other colleges have joined together in consortia to develop and offer online learning, such as the 16 universities linked with the Thompson Corporation to create the for-profit Universitas 21 Global.

Similarly e-learning has made its way into the public sector. For example, the National Governor's Association endorses distance education in its two recent reports "The State of E-Learning in the States" and "A Vision of E-Learning for America's Workforce," although some concerns are expressed about the need for research and development to assess quality courses and quality learning. Despite the economic downturn of 2001, e-learning companies like the Apollo Group, owner of the University of Phoenix, and

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Sylvan Learning Systems, have, at the end of the second quarter, outperformed companies in the broader technology industry. As quoted by CNET.com, "the online learning industry is expected to grow from \$6.3 billion in 2001 to more than \$23 billion in 2004," according to market researcher IDC. (CNET News.com, June 26, 2001, "E-learning companies making the grade," by Rachael Konrad.)

Keeping up the swirl in the maelstrom is the recognition that undoubtedly some predictions about the growth of the Internet and e-learning were overly optimistic. The 2001 ASTD State of the Industry reports that workforce training worldwide has fallen far short of predictions that 23% of all training would be delivered online by 2000. In fact, it may not even have reached 10% as employers are recognizing the high cost of creating and maintaining e-learning operations and are often unable to quantify increased learning benefits.

In the current swirl of e-learning, the messages to us involved as professionals are several. We have to continuously seek to understand what factors add up to excellent delivery of e-learning, that is, effective learning that meets the educational needs of an increasingly diverse population of learners with a wide range of expectations. Furthermore, as competing education providers seek to serve this burgeoning market, we must be sure that we "get it right" the first time. In our eagerness to provide learning opportunities online, we may be guilty of not recognizing what we have already learned through best practices in distance learning. And in their eagerness to learn, students are increasingly impatient with providers who don't give them what they want and expect. Once lost, these learners may well not return for a long time.

While e-learning is relatively new, a phenomenon of the past three years, it isn't as though distance learning is new. We have years of experience to build on, and while e-learning presents us with opportunities for new approaches as well as new obstacles, much of what we have learned during the past 30 years of technology-assisted distance learning is still relevant.

One of the keys is recognizing that distance learning requires different pedagogical approaches from classroom learning. In the late 1960's and early 1970's, numerous colleges embarked on live televised distance learning, an approach often referred to as the "candid classroom," using two-way video and one-way audio. Initially the concept was "sold" to faculty from the perspective that they did not need to do anything they weren't already doing in the classroom -- standing up and teaching. The camera people would do the rest. But it wasn't long before course administrators and faculty themselves realized that other issues needed to be dealt with, from sending handout material ahead of time to having an appropriately controlled environment for distant participants in the synchronous class. As students became more sophisticated participants, their evaluations revealed the need for other changes -- a redesign of the lecture format to be more interactive, graphics that were more legible than blackboard or newsprint writing, and tapes available for delayed viewing. In short for this mode of distance learning to be meaningful to learners, the faculty had to do much more planning and make some conscious decisions about pedagogical changes. Despite the additional support needed and the cost of building the production and distribution infrastructure, interactive video has remained the distance learning medium of choice primarily for four-year institutions.

In the early 1980's another form of video-based distance learning began to evolve: telecourses. The outreach possibilities that the televised classroom provided for large universities were mirrored by telecourses in the smaller colleges and community colleges. Unlike the synchronous classes, telecourses are highly produced video documentaries or dramas that present information related to the learning objectives and

are often broadcast by PBS stations or college cable channels. Students attend class, so to speak, in their own homes and, with VCR's, are able to tape and time-shift class viewing. Because telecourses are designed for a national audience of learners, they are enriched by the guidance of national advisory committees and generally rely on one or more of the major textbooks in the field. Individual faculty who teach telecourses modify the course syllabus and requirements to fit the standards of their college and their own teaching preferences.

Lessons learned from the telecourse experience that carry forward to e-learning emphasize the necessity to validate equivalent learning acquired through distance learning, to provide learner support services that reduce the isolation of learning, and to ensure that students and faculty can communicate easily with each other. The value of providing learners a quantifiable goal cannot be underestimated. At the outset of PBS' "Going the Distance" project, colleges now able to offer full degree programs at a distance found that their course enrollments doubled. For colleges, the benefit of telecourses is that they provide a low-cost way to serve large populations of non-traditional students using excellent learning experiences that are the result careful instructional design. Like the televised classroom approach, telecourses are widely used to this day; on any day, over 1000 colleges are offering one or more PBS telecourses, together enrolling nearly 500,000 students a year.

The decade of the 1990's saw the phenomenal growth of the Internet, with its impact felt in our lives in dozens of ways. For distance learners it has meant new ways to link with classmates and faculty and new ways to access information. Most faculty of both synchronous televised classes and asynchronous telecourses have embraced e-mail for communication and some have moved beyond that to augment their courses with Internet-based discussion boards, collaborative learning, and online research assignments. Whether faculty-generated "candid classroom" courses or institutionally licensed telecourses, both modes of distance learning have been affected positively by innovative faculty who have capitalized on the wide acceptance of the Internet in this country.

The e-learning model of distance learning that has emerged in recent years is completely online, taking advantage of both the synchronous and asynchronous nature of Internet communications. Many institutions are also exploring hybrid courses, ones that blend media, such as including face-to-face sessions with online learning, or combining the video of telecourses with online learning. Just as the two previously discussed video models do, Web courses follow both modes of faculty and institutional involvement: (1) the original creation of an online course usually as a new iteration of an existing face-to-face course and (2) licensing an existing online course that is adopted and modified by the teaching faculty. The latter option appeals to colleges and faculty who want high-quality courseware but do not want to make the large investment required to support course production and maintenance.

Many faculty have opted for the first route, to put their own courses online. This has proved to be an exciting new mode of teaching, and course management system providers have encouraged faculty to think of this as a quick and easy process. One such firm runs ads claiming that it is possible to put a course on line in 15 minutes. While a few faculty may have the insight, time and resources to do this well, it appears that many have ignored the lessons we learned from the televised classroom experience about the need for course redesign when moving to a new medium.

The asynchronous nature of online courses appeals to students for much the same reason telecourses do: flexibility of when and where they study. Students also applaud the greater access they have to faculty, a perception that sends faculty searching for

gentle methods to control the number of hours they spend interacting online. Unfortunately, too many faculty enter into the e-learning world naive about the time-consuming monster they can create unless they take steps to control student expectations about responses. Safeguards are usually built into courses designed for national licensing.

Institutions are also discovering the high cost of creating and maintaining online courses making the alternative of licensing already-developed online courses very appealing. Those institutions that found success with licensing telecourses have been the first to license online courses for their distance-learning students. And there is an increasing number of courses to choose among. During 2002, PBS alone will offer thirteen teleWEBcourses and Webcourses from Quisic in the undergraduate business curriculum, two Web courses from the University of Delaware in basic Internet literacy and multimedia production, 10 undergraduate courses in the associate degree curriculum from DALLAS TeleLearning, over 60 online professional development modules from PBS TeacherLine correlated to certificates for K-12 teachers, and twelve University of Washington Webcourses for current or future Web professionals leading to four certificates in Web administration, Web production, Web consulting and e-commerce.

Each of the producers of these courses has struggled with instructional design questions and related bandwidth and student support issues. For example, the University of Washington, developer of the courses for web professionals, has an extensive team of faculty, instructional designers, web developers and video producers who have created the twelve courses for web professionals under a \$1.6 million grant from the U. S. Department of Education. Interaction is used frequently in the courses to make the learning units conform to what we know about the attention span of learners. Videostreaming with optional use of videotapes is part of all courses, in recognition that much affective learning can best be acquired through seeing and hearing people involved in the business. The courses will be piloted by PBS during Fall 2001 and Spring 2002 and will be available for general licensing during Summer 2002.

Quisic, producer of thirteen high-end Web courses for the undergraduate business curriculum, has pioneered the story-telling strength of multimedia combined with the powerful interactivity of the Internet. Exemplary case studies are shown vividly through video, and interactive graphic examples help learners master critical concepts. Serving a different audience, PBS TeacherLine, an emerging online service for K-12 professional development funded by the U. S. Department of Education, makes use of a modular format, competency-based evaluations of achievement, and streaming video for examples of theory put into practice in the classroom. While use of video online offers effective learning, exploitation of the possibilities of online multimedia today requires judicious use by a technically savvy designer. If students have trouble or experience excessive delays in downloading a lesson, you may well lose them from e-learning for many years.

As we learned, colleges offering complete degree programs at a distance through telecourses saw learner numbers and completion rates increase. Especially when learning at a distance, adult learners need tangible outcomes to sustain their motivation to learn. Certificates, such as those built into the University of Washington courses and based on tests developed by the World Organization of Webmasters, as well as CEU's or other recognized state credentials, like those offered through PBS TeacherLine, are important to achieving enrollment goals and bolstering student completion of e-learning courses.

As we learned from both the televised classroom and telecourses, faculty teaching

distance learning courses need to take time and spend institutional resources to learn the tricks of teaching online. Course producers provide extremely helpful Faculty Manuals that lead both new and experienced faculty through the features of the course they are preparing to teach as well as provide general guidance for teaching online. Recognizing the key role that module facilitators play in online instruction, PBS TeacherLine offers a one-day face-to-face instructional session with a six-week online follow-up to launch those new to this role. (Putting this training fully online is one of the project goals.) Many colleges have recognized the need for similar training for online faculty as well as training for new online learners. For example, Penn State's World Campus provides modules for both of these groups to get them started teaching and learning in the right ways and with appropriate expectations (Faculty Development 101 and World Campus 101, respectively). As more and more institutions and educators believe, we have to get e-learning right the first time if we want to succeed - and that includes having satisfied instructors and learners.

While educators can learn most of the lessons we need to learn from distance learning history, there are some new challenges offered by online education that have no precursors. One of the most significant is the increased emphasis on designing both varying instructional approaches and substantive interaction into the courses to involve students in a variety of ways. These activities are designed to help meet the needs of those with differing learning styles and to capitalize on the special strengths of online learning. Ten years ago, before the publications of Howard Gardner (1993, 1999) and others who looked at multiple intelligences and, later, different learning styles became widely read, little thought was given among educators to meeting the differing needs of learners. Similarly without having had relevant experiences, we had little concept of the possibilities of technologically mediated collaborative learning and web-based simulations. These are approaches we have needed to learn from the ground zero, and in my opinion we haven't fully mastered the topics yet. Further research and skillful application of the results are needed to develop the understanding and sets of best practices that can guide us successfully forward.

In conclusion, as we enter this new Age of Learning with a citizenry eager for learning on their terms and the technology tools to help us frame and disseminate this learning, we dare not pretend that e-learning is a totally new enterprise. We know the engaging power of video as a teacher, and when distributed via the Internet, the learning successes it can engender; we know the power of modularized approaches and frequent interaction; we know the power of good instructional design. Past research and experiences in distance learning point the way to many of the solutions that are needed to help us get online learning right the first time.

Where to find information on Online Courses

For a complete listing of college-level distance learning courses currently offered for licensing by PBS Adult Learning Service, see:

<http://www.pbs.org/als/guide/courselistings/index.html>

Quisic Web Courses

Access online previews at <http://www.pbs.org/als/quisic/>

- Introduction to Business

- Introduction to Business Math
- Introduction to Business Statistics
- Introduction to Computer Literacy
- Introduction to Management
- Principles of Accounting, Part 1
- Principles of Accounting, Part

Quisic TeleWEBcourses

Access online previews at <http://www.pbs.org/als/quisic/>

- Introduction to Business Communication
- Introduction to Entrepreneurship
- Introduction to Microeconomics
- Introduction to Macroeconomics
- Introduction to Marketing
- The Legal Environment of Business

University of Delaware Web Courses

Access online previews at <http://www.pbs.org/als/preview/onlinepreview.htm>

- Internet Literacy
- Multimedia Literacy

DALLAS TeleLearning TeleWEBcourses

Access online previews at <http://www.pbs.org/als/preview/onlinepreview.htm>

- America in Perspective
- Choices and Change: Macroeconomics
- Choices and Change: Microeconomics
- It's Strictly Business
- Living with Health
- Nutrition Pathways
- Shaping America: U.S. History to 1877
- Sociological Imagination: An Introduction to Sociology
- Voices in Democracy
- A Writer's Exchange

PBS TeacherLine: Online Professional Development for K-12 Educators

For descriptions of currently available modules:

<http://teacherline.pbs.org/teacherline/modules/catalog.cfm>

Demonstration of a module:

<http://teacherline.pbs.org/teacherline/modules/modules.cfm>

Modules are now available in 25 states through participating PBS stations; see:

<http://teacherline.pbs.org/teacherline/community/feature.cfm>

For access to the Virtual Math Academy:

<http://teacherline.pbs.org/teacherline/academy/virtual.cfm>

-

University of Washington Courses for Web Professionals

See article at:

<http://www.pbs.org/plwebcgi/fastweb?getdoc+als+als+1997+0+wAAA+Webmaster>

Courses available from PBS for general licensing Summer 2002

About the Author

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Editor's Note: Stephen Downes is an extraordinary, multi gifted educator, technologist and a well-recognized leader in Distance Learning. We are privileged to present this research and creative analysis of the complex, controversial issues within present academic structures, practices and philosophies. A wry analogy illustrating Stephen's Downes' personal philosophy on Distance Education follows: "everybody keeps trying to stuff the DE cat back into the F2F bag. I'm going to do my damndest, in my own small way, to help the cat stay out. It's well and truly out. But that does not stop some people from holding and even defending the bag. My own interest, of course, is in the cat.

Unrest in the Ivory Tower: Privatization of the University

By Stephen Downes

Academics must resist the trend toward the commodification of education or universities will become privatized is the position well stated and supported by Steve Eskow and many within academia. On the contrary: the more professors resist, the greater the likelihood that privatization will happen, and that would be a tragedy.

Stephen Downes, August 7, 2001

Introduction: Mensa and Academia

I once had a desire to join Mensa. I'm bright enough; their IQ tests are pleasant diversions but no real challenge. And I enjoy hanging around with bright people as I have for the two decades I've spent in an academic environment, quaffing a few fine ales at Dewey's or Dinnies Den, debating matters far and wide of varying degrees of importance.

As I learned more about Mensa, however, disillusionment set in. While one would have thought that society's brightest minds were focused on the pressing issues of the day, these minds were focused most of all on puns, word games and clever tricks. By comparison, even my regular trivia games have more merit. And my sudsy sermons Pulitzer prose.

Over time I have become less enamored of the university environment for similar reasons. Not that universities even approach the banality of Mensa; the people across the road continue to amaze (islet transplants, fun with phage cancer treatments, human livers in mice...) and the university is recognized - here, at least - as the city's key economic engine. But university professors can and do obsess over the minute. They can put their own momentary comfort over the needs of academia and society. And

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they can be as self-absorbed as the most narcissistic Mensa meeting.

I say this lovingly, of course. Nobody spends two decades associated with institutions and people they despise (or even dislike). Twenty-first century academia is a treasure, one of humanity's shining pillars of achievement. It is worth saving, or at least, spending a few hours on a Tuesday morning talking about how it may be saved.

The Privatization Scenario

I now turn to a hypothesis, popularized by David Noble (1998) and others, that is gaining increasing currency among academics. It is what Steve Eskow (2001) calls the "Privatization Scenario."

Hypothesis: There is a growing movement afoot in the US and elsewhere to identify distance education as one of the knives to achieve the dismembering, and the death, of the university.

Proponents of the hypothesis argue that distance education and online learning are being used to subvert the nature and purpose of a university education.

They argue that this form of subversion is often unconscious and is often disguised as a desire to "improve" the university, to make a university education "more affordable" and the process of teaching and learning "more efficient."

These critics point to a pattern whereby the effort to improve education leads to the objective of privatizing education on the grounds that the "market" is a more efficient guarantor of quality than the "elite" guild of academics.

This essay is a response to the Privatization Scenario, and in part, a response to the position held by those groups represented by Drs. Noble and Eskow.

I most certainly agree with this part of the hypothesis: there is a movement toward privatization. It is a trend affecting all of learning, not only universities. The move toward charter schools, home schooling and various alternative education projects highlights this trend in the elementary sector. Trade schools and colleges face increasing competition from private institutions.

Moreover, it is not only the institutions of learning that are being privatized. Their product, the books, journals, ideas and opinions produced by professors and their colleagues are being increasingly placed under corporate lock and key, whether through funded research or collected in fee-based archives such as XanEdu (See Downes, 2001). Patents and copyrights are moving the learning that used to be freely circulated in the public domain into a closed marketplace of privatized knowledge (See. e.g., Lynch, 2001).

Universities and especially university professors are easy targets precisely because, like Mensa members, they become self-absorbed. Part of that comes with the territory - you cannot be expert at anything unless you become a little fanatical - but part of it comes from a blindness, an inability or unwillingness to look at some wider trends sweeping society, trends that have the potential to sweep the university system with them.

So let's subsume the 'Privatization Scenario' under this larger picture, the one in which human knowledge itself is being privatized.

Why Defend Universities?

As I mentioned above, I am a defender of the university. Perhaps you may not believe that, given my staunch defense of distance and online learning, and given my occasional carping about universities and university professors. But I am a defender of the university because I am a defender of knowledge and, in particular, that view of knowledge as a public trust, intended (and to be used) for the benefit of all of humanity, freely shared and freely used.

If we were talking about money, not knowledge, I would be classed as a socialist, perhaps even a Marxist or communist. I am not sure whether there is a corresponding term for the public ownership and free distribution of intellectual capital (I may as well take yet another stab at historical significance and call it Downesism). Whatever it is, it is that that I support and my support for universities is as a means to this end.

This is important: universities are not worth defending in and of themselves. They are worth defending only insofar as they foster the free distribution of knowledge, whether it be by means of allowing people an affordable education, by means of discovering and announcing fundamental truths, or by means of advancing our science, technology and human sciences for the good of society as a whole.

Knowledge is different from capital, and from material goods, in that there is no inherent scarcity to knowledge. A piece of knowledge, once produced, may be replicated almost for free, distributed around the world in the blink of an electron, fed almost as easily to one person as to one billion people. Oh sure, there are some pragmatic issues: knowledge can be expensive to create, and as those of us involved in distance and online learning will attest, distribution is not free. However for the greater good, people in a society - and across societies, in a global society - pool their resources, funding public universities for the production of knowledge, and a public education system for the distribution of knowledge.

We allow and accept a market system for the distribution of knowledge where it is appropriate. We recognize that a person owns his or her own ideas, and that the inventors of new technologies have the right to profit from their work. We allow that money may be exchanged for knowledge. So long as the objective - the widespread creation and distribution of knowledge - is met, we can allow a multiplicity of methodologies. And just so society today has created great public universities, great private universities, public-private collaboration, government sponsored research, and corporate research. When we look at the intellectual achievements of the twentieth century, we regard not only M.I.T., Harvard and Stanford, but also Xerox PARC and Texas Instruments, NASA and National Geographic as equally significant contributors.

Now the 'Privatization Scenario' is concerned about the privatization of universities. It argues that the privatization of universities is being accomplished via a set of processes and paradigms that I will look at below. And so it is true: these processes and paradigms are being used as the thin edge of the wedge by those who would privatize universities, and indeed, privatize knowledge generally.

But these processes and paradigms only accomplish the goal of privatization if they are effective. Were they not effective, they would not be a danger to universities at all. Nobody is trying to privatize universities by means of beer sales or fox hunting competitions, because there is no great demand from the public for university beer sales or fox hunting competitions. The people who are advocating privatization are hitting the universities where it hurts: and they are appealing to society's larger objectives in an effort to transform the university system.

The advocates of privatization are aided and abetted by those who resist many of these changes, for while many of these changes would result in an improved educational system for all, the reluctance of public universities to adopt them is, by itself, the single greatest cause of the privatization of universities. University professors, by taking the parochial view, hasten their own demise.

The Means of Production

The 'Privatization Scenario' proposes that the process follows a distinct pattern, a pattern characterized by: first, the "three Ms" of massification, marketization and managerialization; second, a changing rhetoric of education, using such words as "customer" and "efficiency"; and third, changing processes of quality and control. Let me look at each of these three patterns, beginning with the three Ms.

A. Massification

Massification, in my understanding, is the employment of the instruments of mass production for the development and distribution of knowledge and learning. By this is meant not only the production of goods or services in mass quantities, like the safety pin, the automobile or the McDonald's burger, but also the use of specialization and standardization as essential components of production. If a pre-massification scenario could be illustrated by a single tailor making a few shirts, each shirt by hand, then a massified enterprise would be illustrated by a team of workers, each performing some small part of the task of making a shirt, each day producing hundreds or thousands of shirts.

Critics already point to the massification of education even today. They point to such institutions as Britain's Open University and the concept of mass education as espoused by Sir John Daniel. They point to the segmentation of the learning process into neatly standardized classes, each of which teaches a certain subject, through which students progress year by year, tier by tier, as though on an assembly line. And they see this process making inroads into the teaching process itself, where the process of teaching a class is, as Jeffrey Young (1997) described it, "unbundled."

Yet insofar as massification has entered the world of the university, it hasn't been a disaster. Modern medical labs, for example, resemble production centers much more than they do Thomas Edison's garage. Teams of scientists, following strict protocols, work in assembly to synthesize, test and produce thousands of compounds. The sequencing of the human genome was possible only through mass techniques. Such researchers also use the means of the mass to disseminate their knowledge: journals are mass-produced and shipped to every corner of the globe where identical scientists in identical labs reproduce their discoveries. Scientific progress is not possible without massification.

Only in the field of teaching does academia seem to have successfully resisted massification. Only in the field of teaching is the product the result of the individual craftsman, toiling alone, each bit of lecture a custom fit for the small group of students assembled before him. It is a source of continual frustration to society as a whole - why can't we devise a means of reaching everyone, and not only those favored few with the time and money to spend attending university lectures? And when we look at the challenge of providing a university-level education to a global population of 7 billion and more, it becomes obvious that teaching must evolve. Were cars hand-made, only a fortunate and wealthy few would have them. The same is true for education.

A profession that insists that all its products must be handcrafted dooms itself to

oblivion. As long as university professors assert that the only form of teaching must be the in-person lecture they are hastening the development of non-university alternatives that prove otherwise.

B. Marketization

Marketization is, in my understanding, the treatment of education and learning as a commodity, to be displayed and selected for consumption by a paying public. Marketization (and not online learning per se) is the major objection David Noble offers in his critiques of distance and online learning.

Defenders of the university may then be surprised to hear me defend marketization. I have even written (half-written) a paper called "The Learning Marketplace." Why would I do so, if marketization is so contrary to the university culture?

The fact that it is contrary to the university culture is why the paper had to be written, but I have no intention, subconscious or otherwise, of thereby dismantling the university system. Quite the contrary, in my view, marketization may be the salvation of much of the university as we know it today.

Private enterprise theorists often argue that the market is the most efficient way to distribute a resource. Universities have steadfastly resisted that doctrine, maintaining instead a monopoly and control over the distribution of knowledge, reserving it either for their peers or for the select few who attend university classes. But clearly there is some evidence, is there not, that markets do provide an effective means of distribution? Otherwise we would not have grocery stores; we would have government food outlets. Otherwise we would not have restaurants, we would have government eating stations.

Markets work on the principle that the exercise of choice is more efficient than the exercise of control. The reason for this should be obvious: people are much more willing to decide for themselves what they want than to have it decided for them. Moreover, when someone must decide for them, there is an increased likelihood that they will make incorrect decisions. As John Stuart Mill famously observed, the best indication in a society that something is valued is that people value it. The best indication that something is good for people is that people desire it as a good.

Where market theorists err is in their slavish adherence to the principles of the marketplace in all times and in all contexts. But marketplaces are known to fail, as anybody buying lumber in Florida in the wake of Hurricane Andrew can attest. Markets work only if there is a sufficient supply of a commodity. Choice is only efficient where choice may be effectively practiced. Where choices are forced, where commodities are in short supply, the marketplace collapses in on itself, spiraling out of control, rewarding the rich and powerful and leaving the mass without.

When something is in short supply, a call for the marketplace to distribute that good can (and should) be seen as folly: for the advantage rests entirely with the distributors, and none with the consumers. Thus it may seem that having the market distribute education may be called a folly, because education is, as anyone can see, in short supply. People today spend the equivalent of a price of a modest house for a university education. I saw recently five-day courses offered by Queens at a price that would buy a small car. Putting education into the marketplace in such conditions would be folly: it would be licensing the owners of knowledge to print money, and condemning the vast majority of humanity to doing without.

But there is no reason why learning must be a scarce commodity. Indeed, it is arguable that it is a scarce commodity only because universities and university professors have

created a false scarcity. It is as though the news media of the world decided that the only way people could really understand the Balkan conflict would be to hear about it in person from a professional journalist. The result of such folly would be evident: people would pay thousands of dollars to listen to average journalists (not everyone can afford a Cronkite) while the vast majority would have no access to this information at all.

There is no reason why education must be scarce, and every reason why it can be produced in mass quantities for mass consumption. And in such an environment, there is no reason why learning cannot be distributed via a marketplace, and every reason why it should. For the best indication that something needs to be learned, as Mill would say, is that people want to learn it.

C. Managerialization

Managerialization is, to my understanding, the process whereby an academic relinquishes some control over the production and distribution of knowledge to a team and where that team is run, not by the academic, but by a manager. The manager, of course, knowing nothing about the subject in question, can be relied on to make poor decisions.

As a sometime software designer, I am certainly sympathetic to this line of reasoning. Indeed, an entire culture - the Dilbert Culture - has developed in the software community to make fun of the pointy-haired bosses who think they have some understanding of software design. I have no doubt that the same is true in other areas of endeavor, and were I promoted to coordinate the design of, say, a learning project in the field of microbiology, my academic interference would be as welcome as a focus-group expert at a hacking convention.

The problem, of course, is not the practice of employing teams to develop learning material: the problem is pointy-haired bosses. In the software industry, almost nothing is created outside a team. Even some of the most heralded individual achievements - Unix, say, or Linux - have over time become the project of dozens, even hundreds, of dedicated individuals - each person working on his or her own area of expertise, suffering the indignities of more or less coordination by a manager. Indeed, looking at the wider world, only professors, it seems, have the wherewithal to resist working as part of a team, so much so that the term 'Lone Wolf' has been coined to characterize much of academic endeavor.

And, of course, no professor (or very few, at any rate, since I obviously count myself as one of the exceptions) has the expertise to professionally provide all aspects of educational delivery. It is no wonder professors say that the best and only means of teaching is in-class and in-person: no professor has the skills or the time to do anything else! But by their own dogmatic adherence to individualistic 'lone wolf' production methods, they make their own prediction a self-fulfilling prophecy.

A prophecy, moreover, which is demonstrably false. Teams of people working in unison in other fields have managed educational attainment far beyond that of any individual professor. Look at what the advertising and entertainment industries have accomplished. Hundreds of millions of people could reliably create a Big Mac (two all-beef patties, special sauce, lettuce, cheese and a pickle on a sesame seed bun). Millions more could state with conviction why a 2-5-5 defense is ineffective in a football game, analyze the comparative merits of Randy Johnson and Nolan Ryan, comment knowledgeably on the weather, sing a Beatles song and play a round of golf (correctly, within the rules, though perhaps not well).

And: so long as professors refuse to work as part of top-flight educational teams, more or less competently managed, their achievements will be eclipsed, over time, by teams of skilled professionals producing top-flight educational materials. And when professors, teaching alone in a classroom, are widely recognized as an inferior (not to mention expensive) form of education, the call for privatized education will take full flight.

Massification, Marketization, Managerialization - to the degree professors resist these, rather than embrace them, they are hastening their own demise. It seems to me that the best minds in society could find ways to make the 3Ms work for all of society - but instead they sit in their little offices, careless of society, wondering how their pleas of 'quality' can be possibly relevant to the many millions of people who never shadow their hallowed walls.

Language, Truth and Logic

The second part of the "Privatization Scenario" focuses on the changing rhetoric of education. It points to, and laments, the description of students as "customers". It criticizes the description of college as a trading company or enterprise, importing and exporting, seeking overseas "markets". It rails against colleges using "standards" that can be "measured," course "brokers" and "productivity," "efficiency" and "accountability." And worst of all, "quality control."

As any linguist knows, the words we use are used to reflect reality, either as it is or as we would like it to be. Thus, words such as 'phlogiston' fell into disuse as our concept of reality came to encompass oxygen, and our use of the word 'girl' declined, with much encouragement, as a reflection of our desire to minimize the diminution of women. A vocabulary is like a mirror into a person's world view. Words express meaning; meaning expresses reality, either shared or solipsistic, faithful or fancied.

The words listed below fall mostly into the category of representing the world as we wish it to be, a fact that proponents of the "Privatization Scenario" seize upon to assert that their use reflects a hidden agenda. For any person without effort can find instances which prove that the university system is not, as he suggests, customer (or learner) centered, efficient, effective, or productive. The typical university lecture does not adhere to any standards (at least none that I can detect), learning is measured only in the crudest of fashions, and professors - the bearers of ultimate job security - are certainly not accountable.

In an email to DEOS, Steve Eskow points to John Chambers of Cisco who popularized the notion that "education is the next 'killer app'." One doesn't have to be Freud or Jung, says Eskow, to see the implications of both "killer" and "app," or to sense the possibility that one of the things that has to be killed by the app is the university.

When Eskow quotes John Chambers as describing online learning as the next 'killer app', he implies that university education is what will be killed by some new technology. Perhaps so. It is worth noting that the term 'killer app' was devised, not merely because it was fatal to some preceding category of products, but because it was widely used, wildly popular, and became a paradigm for the applications that followed.

Mosaic - later Netscape - became a killer app, popularizing the World Wide Web and the Internet in general because it bucked conventional (and I might add, professorial) wisdom, by allowing people to view graphics. People familiar with the history of the Internet are familiar with its academic origin: and such people say (sometimes cynically) that only university professors would think that pictures and graphics would

not be needed for online communication.

Email flourished as a killer app because it replaced an outmoded and inefficient organization: the post office. Today the flow of messages by email far exceeds the capacity of the post office. The writing of messages on paper, the placing of paper in envelopes, the procurement of tariff stickers (called stamps), the trek to the post office box, the wait while the physical package is collected, sorted and distributed (by foot, no less) - all this was a technology waiting to be superseded by a more efficient, productive (and dare I say, standards-based) replacement.

I have heard the lament, more often than I care, that the web has produced a wealth of poor graphical design and that email has produced an endless supply of drivel. Perhaps it has, from people who never engaged in graphic design before the advent of the web, and from people who never set pen to paper when mail was a cumbersome task. And the same critics overlook the awkward design of most publications in print (not everything is National Geographic or the National Post) and the steady deluge of junk mail that flows, even today, into our mailboxes. Much less the time and cost of producing pens, paper, envelopes, stamps and a worldwide pedestrian delivery system.

The fact is, killer apps become killer apps because they're better, and when John Chambers suggests that online learning will become the next killer app, it is because he thinks it will be better - much better - than the contemporary pedestrian product.

And how might it be better? The new vocabulary - used not only by potential privateers but also by people genuinely interested in education - tells the story.

A. Choice

Students as 'customers' - or in the more common parlance of educators, 'student-centered learning' or even 'learner-centered learning' - a reflection of the desire to create a system where universities exist to serve students' needs, and not professors' needs. This does not (necessarily) reflect a 'customer-is-always-right' attitude - as any patron of McDonalds will tell you, the customer is often perceived as wrong (you get a pickle whether you like it or not). But it does reflect an understanding and even an ethos that the purpose of the institution is to provide students - the customer - with what they want (not to mention, paid for).

A lot flows from that assumption, but I will key in on one thing that encapsulates the difficulty contemporary universities have with the student-centered approach: choice.

Aside from some very broad choices (will I study engineering or philosophy?) students have very few choices in a university. Having selected a program, they are routed to a faculty, given a small selection of options and a bevy of required courses, and are assigned professors (if they are lucky, they will learn about and manage to avoid the particularly bad professors). Inside the classroom, they have very little choice about the course content, nature and number of assignments, criteria for passing, time and place of course offerings, labs, workshops or seminars. They have no choice at all regarding their classmates, limited choice in assigned texts and readings, and are unified in their quest for a single (obligatory) goal, the university degree.

No doubt all of these decisions are made for the benefit of students. Sometimes - often, actually - these decisions will in fact be correct decisions. It is a nice healthy line-up of educational nutrition. But imagine a grocery store where, once you have selected your food type (Italian, Chinese, Indian), you are routed through a certain set of aisles. You are given one or two of each product item to choose from, and you have a set of required products you must purchase. You are required to show that you are able to

prepare the food correctly before you leave, but you must prepare it in a certain way depending on the whims of the cashier. You will buy - and only buy - a full year's worth of food. No doubt many of these decisions regarding food and nutrition are correct decisions, but the experience is entirely unsatisfying and, to a diabetic, fatal.

It's a simple thing, choice. Yet if John Chambers can develop an online learning application that provides educational choice, the killing fields will be littered with ivy-covered rubble.

B. Standards

Standards - of course university professors are notorious for resisting standards, at least so far as the practice of their profession is concerned. This has the result of creating frantic student consultations in the halls and campus pubs in a determined effort to avoid the notoriously bad professors (my own experience cannot be that unique, can it?). It is difficult even within a single institution to determine what constitutes a first year logic class, let alone to determine this across a nation (much less world-wide).

In no other field is such a crass disregard for the nature and quality of the component parts of a product or service so brazenly displayed. Those very academics who rail against standards would be appalled were they to learn that the airplane they are flying was assembled, ad hoc (no doubt by a team of skilled craftsmen) without regard to wiring, fuel or aviation standards. They would not dare drive were they to learn that the reliability of their tires was not proven. They would not eat food that may or may not contain arsenic (much less peanuts), would not drink water, which could not meet certain criteria of safety. They expect that the wiring in their home will not only be up to standard, but also that it will be inspected by a third party to make sure. Yet in this, one of the most important investments of time and money a person can make, they expect to fly without standards.

I personally see no reason why there cannot be a 'standard' Logic 101 in use world wide, or at the very least, a common vocabulary and curriculum. The principles are fairly well understood and have been accepted without a significant change for the last two thousand years. A common base of examples exists and makes the rounds in any case. Tried and true techniques for teaching reasoning - from Venn diagrams to truth tables - exist. Yet there is no such thing, and no concept of what would constitute quality teaching of logic, and successful learning of logic. Except, I should add, for the innovation of a private standards-based test in logic, which is used only grudgingly (if at all) by academics (but most enthusiastically by people who teach logic online - what a surprise).

C. Efficiency

Efficiency - it makes no sense to have a highly skilled teacher spend half his or her time producing mediocre research so that he or she can get tenure or promotions. It makes no sense having a highly skilled researcher teach a class in order for him or her to keep his or her job. It makes no sense for either teacher or researcher to sit in front of a class while a test is being conducted, languish in the back of the room while a video is being shown, spends hours debating parking policies at a faculty staff meeting, and more. And when you have a hundred million graduate students to teach, then it makes no sense having eight students in a graduate class, no matter how good the exercise, because it means that most of those students will receive no graduate education at all. I'm surprised they haven't taken to the streets.

I have only picked up on a few examples here, but it seems clear and obvious: if Cisco

could produce an online learning system that was learner-centered, standards based, efficient, productive, and accountable, then people would abandon universities in droves, and more to the point, governments would be very hard pressed to justify spending a lot of money on the public system when the private system is doing the same job for more people and for less money. And even more to the point: we are already beginning to see signs of this today.

Recently, DeVries was given accreditation in Alberta. This means that this private institution is now competing on a level playing field with the publicly funded colleges in our province. Should they prove more popular and more effective, our government will not be able to justify spending money on demonstrably inferior and more expensive alternatives. In Pennsylvania recently, a charter school offered classes online - thereby drawing the ire of proponents of the traditional public system but the praise of parents who found this particular alternative a giant leap forward in ease of use and efficiency.

To the degree that universities and university professors drag their feet in becoming student-centered, efficient, standards-based, accountable, and the like, that is the degree they are cutting the slender branch on which they all rest.

Quality and Control

This leads to the third component of the "Privatization Scenario," the changing structures of quality and control.

Critics point to a drift away from the traditional practice of peer review and toward "quality control" in the tradition of the factory system. They point to references to ISO 9000, Dunn and Bradstreet, business organizations, and industrial organizations as models for the university to emulate.

Much of this criticism trades on distaste for factories, accountants and perhaps industry as a whole. But it disregards some of the more important features of a quality control system. As I suggested above, I sincerely doubt that anyone would fly in an airplane evaluated solely by peer review, but that points not so much to the silliness of his argument as it does to a misunderstanding of evaluation and review.

Let me talk briefly about ISO and the 'quality' movement in general. What we have here is actually several things combined and sold as a package (as such it is a deeply flawed package, but it contains enough that is good to be marketable):

- First, it embodies the idea that quality can be measured, and
- Second, it embodies a business ethos which asserts that quality can always be improved
- Third, it establishes a team-based structure of quality circles in order to impel and enforce these quality improvements

Second, it embodies a business ethos which asserts that quality can always be improved, and

When I think about 'quality', my mind always goes to a picture printed about a decade ago in the Globe and Mail's Report on Business magazine (a nice, glossy, short-lived tribute to the corporate way) of a group of young and earnest looking Japanese workers, seated around a table, called the 'Paddington Bears,' whose sole objective in life (so the caption went) was to reduce the number of scratches in TV monitors from 8 per million to 1.

Now: reducing the number of scratches in TV monitors is good. We would complain if we bought a scratched TV, and we would complain if the cost of TVs were doubled because every second monitor must be discarded. But: spending all day reducing the number from 8 to 1 per million is foolish; and making it the basis of society is ridiculous.

What we want to do here is separate the concept of quality from the corporate ethos in which it has been packaged and marketed as 'total quality'. We want to keep the good: airplanes that fly reliably, food that is safe, water that is potable, education that is effective. And we want to discard the bad: individual subsumation to the wants and needs of the corporate entity, to the exclusion of all else.

Critics, in deliberately conflating those three components of the quality movement, do their readers - and education in general - a disservice.

Focusing on quality only, we need to distinguish two types of quality. I have in previous emails referred to these as 'semantic' and 'syntactic' quality. One might think of them as 'qualitative' and 'quantitative' quality respectively. But I prefer 'semantic' and 'syntactic' to get away from the idea that the former consist only in touchy-feely emotions and that the latter consists only in cold-hearted mathematical calculations.

Now in the evaluation of student work, professors employ both forms of assessment on a regular basis. In the syntactic mode, they assess whether the student has his dates right, her facts straight, has correctly parsed a sentence, correctly applied a proof, use appropriate symbols in an engineering diagram, written a program that compiles, quoted Mill correctly, or successfully identified Shakespeare as English. In the semantic mode, they assess whether a historical description captures the mood of the times, whether a recitation of facts is relevant, whether a sentence flows, whether a proof is elegant, whether a diagram is neat and illustrative, whether a program is easy to use, whether Mill makes sense and whether Shakespeare's English is understood in context.

Obviously, no assessment of student work is complete without both the semantic and the syntactic mode of evaluation (though teachers are often criticized for ignoring grammar and spelling, even accuracy, in student essays, searching for that soft and fuzzy 'meaning' underlying the garbled scribble they see before them). So also it is with university instruction. Ignoring the syntactic misses the question of whether they are learning at all; ignoring the semantic ignores the question of how well they are learning. Ignoring the syntactic misses the question of whether a journal article follows correct procedure; ignoring the semantic ignores the question of whether it says anything worth reading. Two forms of assessment: and necessarily, two forms of evaluation.

Now the kicker: academics' evaluation of themselves, insofar as it occurs at all, is almost entirely semantic. Or to put the same point another way, there is almost no standards-based measurement of an academic's performance except, perhaps, for adherence to the all-powerful (and misapplied) bell curve.

'Peer review' is argued to be the traditional mode of academic evaluation. No doubt it is traditional, and widely practiced. But it is only half of a reasonable evaluation, and not even a very good half at that.

In my country, and no doubt in many others, we have a polite fiction called 'trial by your peers.' The idea is that in a jury trial, guilt or innocence will be determined by a panel of citizens similar to yourself. As I say, it's a polite fiction. I recently discovered that in Alberta (perhaps elsewhere), potential juries are selected from the set of people

who have driver's licenses. This explains why I have never been selected for jury duty: I don't drive. But it also de-selects a certain, lower, stratum of society (one, oddly, corresponding with the set of 'peers' of many a convict, but I digress). Similar selection practices in other countries demonstrate a similar bias: selecting juries from the list of registered voters, for example, de-selects those people who, for one reason or another, are not registered to vote. Again, the weighting here is toward the upper stratum of society.

But there's more. When a particular individual is brought before the court, both the prosecution and the defense have the right to veto a certain number of jurors. Any number of criteria come into play: people are disqualified because of their race, gender, occupation, residence, and more. Often, they are disqualified because of their opinions. Because I am an opponent of the death penalty, for example, I would never be selected as a juror in a capital case in the United States (so I understand). Naturally, this predisposes the jury toward a panel that will opt for the death penalty in such cases.

I have long wondered why gang members, homeless people, and other social outcasts never seem to be selected for juries. Of course, it's because the concept of 'trial by your peers' is a fiction. It really means, 'trial by your betters'. Or at the very least, 'trial by people who think in the right sort of way.'

In popular opinion at least - and I am of the same view - the reliability of jury trials is questionable. Since the not so recent OJ trial, or the less vividly remembered Claus von Bulow trial, people have come to see jury trials as not so much of an exercise in justice as in manipulation. Social activists will reel off a list of people wrongly convicted by juries on the scantiest of evidence. Jury trials, at least some of the time, are much less an exercise in justice than of prejudice.

Now imagine the same system, but without any standards at all: without rule of law, to guide guilty and innocent verdicts and appropriate penalties; without rules of evidence to distinguish fact from fiction from hearsay; with no limits whatsoever on the biases, prejudices or qualifications of jurors. In essence, mob rule, with none of the standards that today (sort of) protect the innocent from wrongful incarceration, the guilty from dangerous liberty.

Such is the essence of peer review. Is it any wonder it draws a society-wide roll of the eyes?

'Peer review' in academia is no such thing. Otherwise, we would see graduate students and even interested lay people on academic review committees. No, journal review boards especially are populated with the academic elite, those whose publications and scholarly presentations have established their authority in the field. Nor is their selection random: constructivist journals do not select rabid anti-constructivists to review articles; Marxist journals do not recruit people from the Fraser Institute to edit their publications.

The actual review is secretive and closed-door. Nobody knows what process of reasoning, if any, occurs when professors are evaluating a colleague's work. The results, at least from the eyes of the lay person, are less than impressive: reams of dime-a-dozen articles in unread academic journals, arcane dissertation topics suitable especially for ridicule by the national newspaper, forgotten theses read by an audience of three (and here I think of my own unlamented "Models and Modality"). Authors do not even know who their reviewers are, much less whether they are peers in any meaningful sense of the word. And woe betides the author who is not willing to acknowledge duly established Authority. 'Trial by people who think in the right sort of way' indeed.

In the case of journal articles and publications, peer reviewers at least (we think) read the works they are reviewing. No such exposure to the actual product being reviewed occurs in the case of teaching. It is folly - and rightfully recognized as such - to dub the review of a professor by peers who have never seen him teach as some sort of assessment. Such a review has everything to do with how the itinerant behaves in the Faculty Club and nothing to do with the sort of education he or she has left behind in the mind of his or her students.

Peer review has its place, as does any sort of qualitative assessment, but to make it the sole - even the primary - determinant of academic merit is beyond foolishness. It creates, quite rightly, in the minds of the public the image of a self-serving cadre of Old Boys who all think they are wonderful and who collectively exhibit wisdom so great that the word 'genius' is an insult and a slur. Closed-door self-evaluation is as reliable in academia as it is in the airline industry or the food processing industry, which is to say, not effective at all.

Academia would do well to open its system of assessment and review to (a) quantifiable standards, and (b) an open review process. Something like a system of standards - call them learning objectives, performance outcomes, whatever you will - should apply to graduates of a given class. Society should be able to know, without having to take Jo Blogg's word, that an A in logic 101 means that the student can recognize some basic logical fallacies and can string together a simple argument. That's not so hard: and there's even a standardized test for critical thinking.

And there is no reason why academic performance cannot be the subject of open and public review. There is no reason to restrict readers to a panel of three mysterious experts: works up for review should be publicly viewable and reviewed by anybody who cares to read them. Journals may even rely on those very reviewers, but the publication of a poor article by even a good journal will be widely recognized as such. And there is no reason why students cannot evaluate professors, and if the results cannot be posted on a website, then students should at least have the option of expressing their views by taking the same course from another professor or even another institution.

None of this infringes on the professor's ability to do as he or she sees fit: however, when a review process exposes poor and shoddy work, as it inevitably will, such perpetrators will invariably be held to account. Which is as it should be: in academia as much as in airplanes.

The Implications of Reform

Let's revisit the "Privatization Scenario" as a whole before we conclude.

The privatizers, runs the argument, want to massify, marketize and managerialize education. They want to change its vocabulary. This new vocabulary brings with it the practices of industry, not the practices of the new information economy, but older factory based notions of production, Total Quality Management and ISO 9000.

Academics are being asked to choose sides. They are being asked to determine whether ultimate privatization is the intent of the new rhetoric and the new directions in learning, especially online and distance learning. And they are being asked to decide whether they support or oppose the drive to reform education, to reform it, as they say, in the image of business and industry. They see those people who are advocates of reform as being, wittingly or not, allies of the drive toward privatization. And they - and I - believe that the future of education hinges on this decision.

It would be better, I submit, if academics such as Steve Eskow and David Noble would avoid framing the argument in such a false dilemma. It would be better not to use such loaded terminology, calculated as much to inflame as to argue. This seems close to the tactics of southern lawyers arguing toward a carefully preselected and predisposed jury. They want to paint all advocates with the same brush, and they are not above quoting some carefully selected Freudian mythology in order to drive their points home. They would have you believe that if you support any part of the reforms described above then you are the same as the Great Satan, the corporate sellout, the soulless butcher who would cut the throat of a fair institution in a minute if only given the chance.

But: those people who are persuaded by this crusade are hastening that very act of homicide, sure as the sun rises in the east. By perpetuating the idea that any change in academia is a knife in its back, they are freezing the university system into an unsustainable stasis, ensuring that even the slightest attempt at an improved system from the corporate side of the house will be successful.

It is interesting - ironic, even - that the opponents of reform paint two divides: on the one hand, the collegial university system; on the other hand, the cold, calculating world of business and industry. But there are not two solitudes here, there is only one. Were they to look about society around them, they would find that all manner of enterprises follow the dicta of client service, accountability, efficiency and reliance on standards. Not only industry, but also sports, recreational travel, home repair, cooking, amateur astronomy... absolutely, utterly everything but education (and perhaps some handmade wooden crafts shops).

It turns out, in the wider world, that people do not want to spend their time and money (a) meeting someone else's needs, (b) paying for work that doesn't need to be done, (c) not knowing the results, (d) not knowing what is being produced, and (e) more than they can afford. If this is the picture of academia that the traditionalists are defending, then it is doomed, and if by falling it must fall into corporate hands, then their own logic has as its inevitable consequence the privatization of education.

And that would be a bad thing: but not simply because some academics don't like it (and not simply because it doesn't meet their arbitrary standards of quality - whatever that is) but because, remember, they are opposed to standards.

Intellectual Wealth and Society

At the beginning of this treatise I spoke of the privatization of knowledge. I would like to say here that if the university system (and the public education system in general) fails, then this will result in the privatization of knowledge. Even that is in itself not a bad thing - I have already acknowledged that there ought to be latitude for ownership of knowledge, whether it be by virtue of copyright on an essay, ownership of a patent on an invention, or some similar claim to intellectual or emotional property.

But the market economy, as I also suggested, works only if there is an adequate supply of the commodity in question. Once a scarcity is achieved, the market breaks down: We move into a monopoly (or duopoly, etc) mode in which prices rise all out of proportion to the value of the commodity and in which a substantial portion of the population is forced to do without.

With the rise of the information economy we have seen not only a concerted attempt to privatize knowledge but, concordantly, an effort to create artificial shortages in knowledge. Where once books circulated freely, were shared and loaned, read by the

thousands in libraries, sometimes photocopied, sometimes transcribed by hand, there is today a movement afoot to create the single-use book, an entity that may be viewed but never reproduced nor shared nor copied in any form. Where once academics freely circulated copies of their article abstracts, exchanged ideas at conferences and conventions, today we see sponsored research, per-user subscriptions to e-journals, non-disclosure agreements, and more.

Clearly this is damaging to the intellectual wealth of society as a whole, because not everybody can afford to pay \$24.95 for each knowledge-product per annum, much less amass a permanent and useful library of e-readings. Where once we could at least alleviate some of the strife in developing nations by sending them books and magazines, today we are told that such action constitutes a violation of copyright - it is not even legal to load our used copy of Windows 3.1 on used computers to send to East Timor, as some Australians found out.

But it is damaging also because it limits the voices we can hear. Just as top 40 radio streams consumers into a megastar mentality, so also dissenting voices disappear when knowledge is controlled by corporations and dispensed in pre-approved (and costly) allotments. We are all too aware of the Russian programmer, recently arrested in the United States for writing forbidden software, or the professor in (as I recall) Princeton who was ordered not to publish a decryption algorithm. But it is much more pernicious and much deeper than that. It is the expulsion of a boy who wore a Pepsi shirt to 'Coke Day' at his school. A privatized system of education will not allow students to express, or even hear, a dissenting voice.

The World Championships in Athletics are being held here in Edmonton as I write. The championships are sponsored (in part), and thereby essentially owned (in part) by Nike. As a columnist in the Edmonton Journal observed, Nike's influence is pervasive. At a press conference in which a renowned anti-doping athlete was asked to comment on the reinstatement of a competitor, the Nike spokesman intervened to assert that athletes would not be answering questions about doping. Bad for the image, you see.

We tend to think that the corporate control of information is about big things, like freedom of speech and the right to protest: and it is. But it is manifest in a deluge of little things, and bit-by-bit, our knowledge and our freedom are slowly eroded. And we're back to being the Paddington Bears, not merely because we cannot utter any opposition to this ethos, but because we cannot conceive of one.

The fall of public education in this country and in this world would be a disaster of the greatest magnitude, resulting in the descent of a corporate curtain of ignorance. Failing to move, failing to respond to the need for a greater, more vigorous system of public knowledge than ever, is to silently, stupidly, acquiesce.

I am astonished that educators today are not knowledge guerillas, silently and stealthily subverting the corporate agenda through the covert education of as many people by whatever means possible. I cannot believe that academics today steadfastly defend their bastions of privilege, ignorant of the fact that the castles they so rigorously fortify will defend a totalitarian regime that will upset their tottering rule. Academics must, in order to survive at all, obtain the support of the people, but they will not do this if they withhold from people the one thing they value.

I know that there are many open-source and open-content academics in the community working hard to stem the advance. It is a race against time, creating public domain knowledge management systems, public domain encyclopedias, courseware, almanacs, maps and illustrations, literacy guides, media readers, free textbooks, trying like townspeople in the face of the invading army to hide as much of the community chest

as possible before the hordes descend to lay claim to everything they see. Hide, hide the knowledge where they'll never think to look for it - among the people.

Academics who defend their privilege in such a short sighted and misguided manner are like those who, citing the long-standing tradition of ownership and privilege, sit on their treasure, thereby safeguarding it for the arrival of the invaders.

I really think that universities best protect themselves by doing the one thing they can do better than corporations: producing and distributing knowledge. But they must do it in such a way that it remains better than the corporate alternative. This means mass education. This means a marketplace of educational opportunities. This means top-flight educational resources produced by teams of experts. This means a student focus. This means efficiency, accountability and productivity. This means open standards and open evaluations. This means, above all, reform.

Academics are at the crossroads. They could, collectively, use new technology and new techniques to produce a flowering of human intellect the like of which has never been imagined. Or they can hunker down, cling to their privilege, and usher in the twenty-first century equivalent of wage labor and cutthroat knowledge capitalism.

Remember, the chains you most fear are the chains you forge yourselves.

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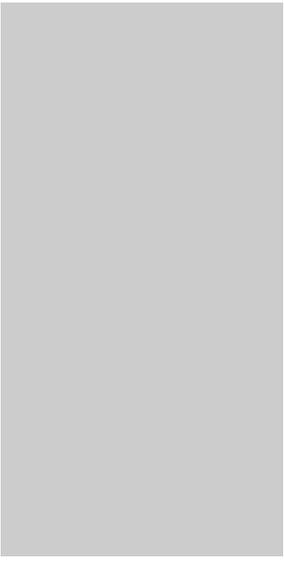
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Past Issues

Editor's Note: Dr. Tehranian accurately predicts the influence of technological innovations on teaching and learning in higher education. He sees how computers and telecommunications will transform the role of the university in creation, preservation and transmission of knowledge and result in programs of self-renewal to provide for the needs of the 21st century. The editors are grateful to Dr. Tehranian and to the Information Society: An International Journal, for permission to republish this article.

THE END OF UNIVERSITY?

By Majid Tehranian

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The end of the century seems to have generated a great psychic effect on the minds of many scholars and pundits. Of late, it has become fashionable to declare the end of nearly everything-- ideology (Bell 1960), history (Fukuyama 1989), geography (Mosco 1994), modernity (Mowlana & Wilson 1990), journalism (Katz 1992), racism (D'Souza 1995), work (Rifkin 1995), and now university (Noam 1995). Is there anything to these prophecies? How would life look like in the 21st century without the fun and frolic of history, geography, modernity, journalism, racism, and university?

In the absence of any hard evidence, it is comforting to note that nothing seems to be coming to an end-- except the 20th century. And since time and centuries are figments of our own imagination in order to punctuate our conditions of finitude, their end also seems to be illusory. As Jean Baudillard (1994) has argued in a brilliant essay, all notions of "the end" are founded on linear concepts-- of history, geography, modernity, journalism, work, university, etc. True, linearity is coming to an end in the postmodern age. But new trajectories of meaning are inventing new histories, geographies, modernities, journalisms, works, and universities. "So far as history is concerned," Baudillard (p. 2) notes, "its telling has become impossible because that telling (*re-citatum*) is, by definition, the possible recurrence of a sequence of meanings. Now, through the impulse for total dissemination and circulation, every event is granted its own liberation; every fact becomes atomic, nuclear, and pursues its trajectory into the void." In this sense, history and modernity are both accelerating and decelerating. Technological innovations are accelerating social change, but social inertia is presenting passive resistance against change. Witness the rise of neo-traditionalism (a.k.a. "fundamentalism") in a variety of religious traditions. As Baudillard (1994, 3) notes again:

"This is the most significant event within these societies: the emergence, in the very course of their mobilization and revolutionary process... of an equivalent force of inertia, of an immense indifference and the silent potency of that indifference. This inert matter of the social is not produced by a lack of exchanges, information or

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communication, but by the multiplication and saturation of exchanges. It is the product of hyperdensity of cities, commodities, messages and circuits. It is the cold start of the social and, around that mass, history is also cooling. Events follow one upon another, canceling each other out in a state of indifference. The masses, neutralized, mithradatized by information, in turn neutralize history and act as an écran d'absorption."

Nevertheless, the phantom of the "end, " contains an element of reality. Since the university is closest to my heart, and I would grieve were it to disappear from the face of history, let us focus on that disappearing act. In an essay, Eli Noam (1995) has argued that the current telecommunication revolution is turning universities into dinosaurs. The three most important functions of the university (creation, preservation, and transmission of knowledge), he argues, are being rapidly usurped by the telecommunication networks (broadcasting, cable, Internet, World Wide Web).

Let us first look at the case for the end of the university as we know it. Scientific knowledge, Noam argues, is growing exponentially at the rate of 4 to 8 percent per annum with a doubling period of 10 to 15 years. The main response to this phenomenal growth has been to specialize. But there are financial and physical limits to how specialized a university can get. The ever-narrowing experts, who get to know more and more about less and less, have had to find refuge elsewhere - in think-tanks, consultancies, corporate research and development departments, and government research institutes. The first function of universities as creators of knowledge is thus being overtaken by the better-funded and far more specialized government and private research institutions. Moreover, universities used to have the advantage of having a critical mass of scholars present on their campuses who could interact among themselves to the benefit of all, but modern transportation and telecommunication have offered alternatives that are rapidly growing in use.

In fact, however, universities have never had a monopoly of knowledge in society. The modern electronic networks such as the print, broadcasting, and micromedia (copying machines, audio and video recorders, personal and laptop computers, etc.) have historically served to disperse and democratize knowledge. We should be all grateful for that. Cyberspace is further deschooling, or rather, schooling society. The real policy issue, however, is how to avoid a new kind of information feudalism that may come out of a total commercialization of the knowledge networks. If access to information becomes too costly and out of reach of the less fortunate in society, we may be facing a grim and explosive future in the development of a permanently unemployed and unemployable underclass. The recent rise of functional illiteracy in the United States to the alarming levels of about 28% is not a reassuring sign. Privatization of information in an Information Society is inevitably driving some information consumers out of the market. There is some historical precedent for this. In the English Enclosure Movement, common pastureland was gradually "enclosed" into private property for large-scale breeding of sheep and production of wool. Something like that is currently happening to public information, which is being rapidly processed into Value Added Networks (VANs) and priced out of the reach of common folks. For instance, Lexis-Nexis contains some 500 million documents growing at the rate of 30 percent per month. It is arguably the world's biggest electronic library, but access is limited to those few who can afford it. In a democratic society, the open access traditions of public universities and libraries must be maintained in order to avoid a bifurcation of society into information-rich and information-poor.

The second function of universities is the preservation of knowledge. Libraries as the repositories of such knowledge are often thought of as the heart of a university. But as the production of knowledge grows exponentially, so does the cost of acquisition and

storage. "For example," Noam observes, "in 1940 an annual subscription to *Chemical Abstracts* cost \$12; in 1977 it was \$3500; and in 1995 it was \$17,400." University libraries are thus finding it increasingly difficult to keep up with the volume and cost of information storage. Consequently, they are turning to investment in electronic access rather than physical storage. But universities have never had a monopoly in storage of knowledge as witnessed by the public library system in the United State. Again, the challenge lies in making sure that the public and university libraries are enabled to catch up with the rapid rise in storage facilities by a shift to the new, cost and space saving technologies (online data bases, optical disks, etc.).

The third function of universities is transmission of knowledge-- their teaching role. "Already," Noam argues, "electronic distant education is available for a wide range of educational instruction through broadcast, cable, on-line, and satellite technologies." He goes on to cite the examples of Agricultural Satellite Network (AGSat), International University College, and Mind Extension University (on which Newt Gingrich has lectured), all of which employ communications technologies to offer courses of instruction entirely on their own or in cooperation with traditional institutions of higher education. To this we might add a number of others, including Arizona University with the largest on-line student registration in the United States and, increasingly, a number of online degree programs conducted by traditional universities.

Are the cards thus stacked against conventional universities? Will they survive? Can they survive the combined blows of technological obsolescence, legislative underfunding, rising costs, moral browbeating, and declining students lured away to the new, perhaps more efficient, and less costly alternatives for higher education? A look at the origins of modern universities might provide a clue to what would probably happen. There is conclusive evidence to suggest that the invention of print technology in Europe undermined the authority of the Church and boosted the nascent secular institutions of learning in the modern universities at Padua, Bologna, Montpellier, Prague, Vienna, Paris, Oxford, Cambridge, and Heidelberg. However, the Church did not disappear from the face of the earth. It survived, but it was transformed from the monolithic institution that it used to be into a diversity of Catholic and Protestant churches reflecting national ethos, class divisions, and individual preferences. The rise of a new secular priesthood, namely modern scientists, also gradually took away the monopoly that the Church enjoyed over revealed knowledge. The Bible became subject to a diversity of interpretations. Churches gradually became primarily the refuge for spiritual healing, social gathering, and moral education rather than centers of learning.

Similarly, the new network technologies are further dispersing the sources of production and distribution of knowledge. It is still hard to tell what impact they will have on conventional universities. However, it is safe to assume that universities have to respond to this challenge by reinventing themselves. Universities can no longer pretend to be the ivory towers of yesterday. Since the new network technologies are global in character, education must become global in scope. Since they have blurred the institutional boundaries between government, corporate, and academic worlds, universities must be willing to respond to the needs of other institutions in society. Since lifelong learning has become a necessity, they must also adapt their programs to suit an older generation of students. There is ample evidence to suggest that conventional universities are responding to all of these challenges. In fact, universities have been on the forefront of the educational uses of Internet and World Wide Web. We may criticize them for their institutional conservatism and slow rate of adaptation, but they are gradually adapting to a new open learning environment.

Noam neglects, however, to mention four other central functions of universities that

cannot be easily performed by the networks. These may be considered to be *professional certification, moral education, scientific socialization, social criticism, and elite recruitment*. In modern societies, universities have served as the primary agents for the performance of these functions. Universities continue to be the main clearing house for educating and certifying the professionals in industrial societies. Other sectors of society have so far gladly relegated that function to universities, but if universities fail to keep up with the changing job markets, they will be replaced by other institutions. In the United States, there is already a corporate system of higher education that rivals conventional universities in its budgetary outlays. Moreover, conventional universities themselves are increasingly under the spell of corporate demands and patronage. In a *cri de coeur*, Lawrence C. Soley (1995) has lamented the corporate takeover of American universities during the past few decades. Governors of 11 Western states also recently met in Denver to advance the cause of virtual universities in order to save on costs (Blumenstyk, 1995). In some states, demand for college education is expected to rise significantly, and the governors wish to pre-empt spiraling budgets. In Utah, for instance, it is projected to double in the next 20 years. The certification function of conventional universities can thus be passed on to virtual universities without much ado.

However, there are dissenting voices such as that of Governor of Hawaii, Benjamin Cayetano, who argues that many of his values were shaped during college and doubts if a virtual university can replace that (Blumenstyk 1995, A1). But universities' function of moral education has been under attack in recent decades. In a November 1995 Republican gathering, while introducing Rush Limbaugh, Newt Gingrich spoke of his genius and how it has been left uncorrupted because Limbaugh dropped out of college after his second semester (CSPAN report as conveyed to the author by Rob Kling)! In the United States, under the banners of political correctness and its critics, the town-gown rituals of mutual recrimination have thus taken on new dimensions. Is a new Age of Darkness upon us? If conventional universities are disbanded tomorrow, society would have to reinvent them to provide for the moral education of the young during their most volatile, adolescent years. Otherwise, society may have to suffer the self-righteous arrogance of many half-educated and unreflective pundits and politicians. The moral moratorium of college campuses has worked in the past to refine the intellect and spirit of youth. In conjunction with other institutions in society such as the family, the church, and the schools, universities have an obligation to morally educate the young in our traditions of civility while allowing them to explore alternative life styles and personal identities. In this process, too, cyberspace has already supplemented conventional campuses as the arena for migrating identities testing competing personas in their search for meaning, self-definition, and identity crisis resolution (Turkle 1984, 1995; Anderson 1995). Just like universities, Internet also has come under attack by moralists for allowing "too much" self-expression.

Universities, most of all, teach students how to learn. Given the exponential growth rate of scientific knowledge, learning to learn is the best bequest students can receive from their education. This requires scientific socialization of a high order. The development of a scholarly temperament, including a passionate commitment to the search for truths combined with rigor and dispassion in method, tolerance in practice, and humility in errors, are all qualities that are often conspicuous by their absence on and off campuses. But those are the qualities that good universities nurture in their faculty and students. It is difficult to see how virtual universities by themselves can socialize the students in these values.

Closely related to this function, of course, is the universities' function of social criticism. Modern societies are, above all, reflexive societies. They monitor themselves

and take note of errors of judgment and behavior in order to correct them. Universities, along with the religious and media institutions, are particularly charged with this responsibility. Modern universities are expected to criticize society from the standpoint of its own ethical standards. The principle of academic freedom and the tenure system have been established at the universities in order to safeguard their function of independent social criticism. During the past two decades, however, universities in the United States have been threatened by the excesses of censorship, self-censorship as well as vocationalization and commercialization of education. If critiques of conventional universities mean that they are not self-censoring, commercializing, and vocationalizing fast enough, that criticism is asking universities to change their fundamental character.

Finally, elite universities in the United States and elsewhere are also performing another function as well-- elite recruitment. The high tuitions they require may be regarded not only as the going cost of education but also as the elite club membership fees. Former Harvard President Derek Bok once admonished that "if you think the price of education is too high, try ignorance." Rising tuitions, dwindling scholarship funds, increasing reliance upon corporate support, and the weakening of the middle classes, are currently raising the moral and material price of elite education. A self-perpetuating and non-circulating elite threatens not only democracy but also the moral and political basis of its own legitimacy. Higher education faces a real threat of bifurcation into a system of conventional elite universities and an emerging system of virtual and ghetto universities tending to the needs of the masses.

A liberal education, encompassing most of the above functions, entails modeling, mentoring, nurturing, guidance, and interaction. It aims at the development of the whole character of a person rather than focusing only on the acquisition of certain facts or skills. This calls for the development of an inquisitive mind and a moral sense of rights and obligations towards the community at its progressively higher levels of order and complexity, from local to global. Physical proximity and interaction are the *sine-qua-non* of this kind of education. As distance becomes less and less important in acquiring *additive* knowledge (science and technology) through electronic networks, proximity will assume greater importance in obtaining *regenerative* (moral) and *transformative* (spiritual) knowledge. Regenerative knowledge is the kind of knowledge that each generation relearns through its own trials and errors, pains and sufferings. By contrast, transformative knowledge comes about only when and if the gap between additive knowledge and regenerative knowledge grows so wide that the need for a new paradigm of thinking is felt by all. Such may be the human conditions at the end of the 20th century. We are passing from modernity to postmodernity. Linearity is dead, yet we hear "Long Live Linearity!" We are becoming aware of other ways of seeing, yet we insist on our own single-minded ways of perceiving. The world has become a single lifeboat in a vast and apparently lifeless universe. Yet, our paradigms of thinking are still organized around single tribal, national, and institutional loyalties. In such a universe, once again, human intelligence has to adapt itself and its institutions to account for both distance and proximity, globality and locality, networks and institutions. The university of the future will be a combination of local nodes and global networks. It will hopefully combine the best features of face-to-face education and distance learning. In such a university, training can be relegated to the distant educational networks, but the education of the young is hardly possible in the absence of close and intimate educational interaction, mentoring, and modeling. Virtual universities will, no doubt appear and expand. They may serve the purposes of new types of certification for mid-career professionals or those who have missed the opportunities of conventional universities. But if the experience of some of the most well-known distant learning systems, such as the British Open University, are any

indication, those will succeed in such universities who have already acquired the self-discipline of autonomous learning, such as teachers and professionals of various kinds. From now on, quality education will have to combine face-to-face with distant learning (Tiffin & Rajasingham 1995).

What are the implications of all of this for higher educational leaders? First, do not despair. Despite state budget cuts, declining federal support, and parental grudges against high tuition, universities are here to stay. Second, just like churches some 500 years ago, universities have to adjust to a new social, cultural, and educational environment in which new communication technologies are blurring the boundaries between formal and informal education, schooling and lifelong learning, as well as primary, secondary, and tertiary socialization. Technological transformation is, however, presenting both risks of obsolescence as well as opportunities for institutional self-renewal that can maximize open learning and minimize classroom drudgery. If all goes well, the entire human society will become a university without walls and national boundaries.

Learning how to learn is becoming, more than ever before, the central function of all schooling. Universities must diversify, localize, globalize, and socialize. In all of these efforts, the rigid boundaries between the hallowed halls of academe and disciplinary boundaries will have to give way to cooperation with other institutions of society in the lifelong education of its youth and an aging population. The universities of tomorrow will be even more diversified than they are today. Some will primarily respond to the specific training needs of the corporations that sponsor them. Others will focus on educating broadly and liberally. The corporate sector will be hopefully wise enough to allow the universities to carry the burden of responsibility and cost of screening the liberally educated employment candidates for them because they know such candidates make better employees.

At the same time, universities must localize by responding to the social, economic, and educational needs of their own immediate environment. The traditions of land-grant universities are, in this respect, very relevant. However, universities can no longer stay aloof from the global society that has rapidly come into existence by the global markets, job opportunities, and language and cultural learning that all of this demands. Last but not least, universities can no longer afford the dubious luxury of staying within their ivory towers, aloof from the other social institutions and assuming a supercilious attitude towards the religious, military, economic, and political values and norms. Universities must engage the other institutions of society in a critical dialogue on societal goals and plans that transcend institutional boundaries by offering lifelong educational opportunities to mid-career religious leaders, military officers, corporate executives, and politicians in order as much to teach as to learn from them. For universities, mastering the emerging technologies of learning and power is as much a key to such strategies of survival and prosperity as any other single factor.

End Note:

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A Student's Journey

Gretchen E. Chamberlain

Editor's Note: One of the most cheerful aspects of editorship is the prerogative to select outstanding material for our readers. Usually this comes from recognized authorities in any number of fields directly or indirectly associated with Distance Learning - after all this is a Distance Learning Journal dedicated to praxis and research. Gretchen Chamberlain in "A Student's Journey" has captured a rare essence of scholarship. She is not a recognized DL practitioner, nor even a doctoral candidate. She is an undergraduate senior at Northern Arizona University: her major is Microbiology. However, her contributions to our understanding of the learning process within the Distance Learning arena are considerable. This is well worth a careful, thoughtful reading.

Learning About Culture

(Assignment #1 - First Draft)

The first thoughts I had about taking an Internet class were centered on fears of an altered style of learning. How could a student possibly be able to learn about humanities without listening to a Ph. D. certified instructor give his/her views on the matter? I did not realize that I would appreciate this style of learning so soon in the course. This initial thinking of mine is a prime example of the ethnocentric thinking of many American students like myself. Every culture is victim to this because of the source of knowledge given to an individual.

A child learns from his/her parents, who have in turn learned from their parents. This Ivan Pavlov pattern of classical conditioning modeled by a salivating dog prompted from a clanging bell is a sad reflection of much state university learning. Classical conditioning in the way one should learn in a college course has taken a toll on my brain shown in my initial feelings on this course. As I read the Hexadigm, I realized that I related too much at the suggested approach of looking at humanities, however the lid on my box is only beginning to open. The six layers of the Hexadigm suggested by Dr. Bensusan is an excellent alternative to the "traditional" approach of looking at any part of a culture.

The base of the Hexadigm consists of Cultural Sequences, Mutual Influences and Regional Diversities. These three pieces signify the simplicity of the model. In mathematics a base of two does not cover enough surface area to stack upon and using a base of four finds surface area being wasted. Bensusan makes a fine point about looking at history from a three-sided approach; looking at how people act, live and interact depending on where they are from and how and when they interacted with

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others. An important point that Bensusan notes is on the perspective from which a history is told. In an American history text that I read as a fifth grader I learned about American Indians and how they were savages that speared the colonists. I vividly remember even seeing pictures of dark skinned people in loin clothes throwing spears at unsuspecting settlers just trying to pass through. I can almost guarantee that a Native did not write that book. This image of Native Americans was nothing like I experienced this summer as I lived with the Oglala Lakota Indians from May to August. The reasons for my stay are not as important as the lessons I learned. I became the minority for the summer for the second time in my life and saw the damage that had been done to a people first hand.

There is no textbook that accurately describes a culture. There is no way a student or researcher can learn the true heart of a culture unless he or she travels to that culture and spends much time asking questions and learning how to be sensitive. Of course there will be people that do not want outsiders there. There will also be people who are excited that someone took the time to learn for himself or herself. This is perspective at its finest. The perspective of the individuals themselves tells a more accurate story of their people instead of one like myself telling about it later. The things that I experienced I could never express accurately, nor would I try to give my ignorant interpretation of the Lakota people. I credit those like Bensusan that try to teach those willing to learn about other cultures. I encourage that to be a base to learn the cultural sensitivity issues before entering the situation of the individuals. For example, before entering the Rez I was briefed on how to be sensitive to Lakotas when I am speaking to them. I learned from a non-Lakota that it is impolite to look an elder in the eyes because to a Lakota, eye contact is direct link into the soul. It is also impolite to walk in front of elders because they have earned the right to go whatever place they want to. These are a few of the many things that I would never probably know unless someone had taken the time to teach me.

This triangle base of ways to understand a culture is weighed down by the last three pieces of the Hexadigm: Modernizing Technologies, Revised Interpretations and Expanding Comprehensions. These three topics are best understood by splitting them as Bensusan did, into two parts. The first, Modernizing technologies is best represented in its own category, while the other two are connected. Technology is a vise that continues to narrow people's perspective on the world as it increases their needs. As more technology is made available, a person feels less able to live without it. Depending on the lifestyle that one chooses, there are certain aspects of life that are required. One could take the simplest approach and be homeless. It is certainly possible to spend every night at the Sunshine Rescue Mission and dodge finding a job (each day as they send everyone off to look for one), while reaping the benefits in the evening of a warm meal, bed and change of clothes. For a different lifestyle that would cause one to end up taking this course, a computer is needed. That is, if it was desired to change.

Bensusan gave a historical timeline of technology and as I read it, I wondered what the average college student would think if taking a "shower" in the morning required pumping water out of a well, heating it on the stove and pouring it into a basin. When water is not available from a faucet, "stinky" is not what results from a 20-minute jog. So often the word "need" is mistaken for "want". The last part of the paradigm of Revised Interpretations and Expanding Comprehensions deals with the action of the other four. Now that we have this perspective on humanities, what do we do with it? How do I change my thinking to a more open-minded approach to learning? How should I react to my new gained knowledge?

I could rebel and stop showering, let my armpit hair run wild and take up an image of

one who does not care what the world's standards are on appearance. I could throw away my TV and stop using the 30-second story interpretations of an over-made-up person as my source of daily news. I could even live permanently on the Rez and pretend that I am Lakota so that I can have a lifetime experience of another culture. Instead I choose to look like a rich American girl and watch as people judge me for my new Adidas shoes and new car. I do not want every Navajo that I encounter to know that I have sympathy for him or her even though I know something about their culture because of my one summer where I saw the effects that European settlers had on the Lakotas. I don't tell of the time I talked to an elder and he told me that he grew up in a boarding school where his mouth was washed out with soap for speaking Lakota. Even though my heart aches for the Lakota people, by changing my lifestyle I cannot take back what happen to that man. I can only be that man's friend, and try to show him that not all Anglos are like that.

Visiting a culture is the best way to learn that culture's perspective. Reading about it is only reading about someone else's perspective on that culture. This aspect of learning is the only topic that I would consider important enough to make the Hexadigm into a Heptadigm.

However, Bensusan offers an important challenge to me in his six-stepped outlook in taking another perspective on world humanities.

The Beginning of Research

(Look for Sources - Post #1)

Like most of you, or some at least, research is something that is dreaded. For myself I begin to think of the long hours I have spent in the library trying to find the print form of the book or article that is viewed in front of me on my computer screen. Of course, the fact is that I have been in the library by this point for a total of 5 hours and have no research to research and I begin to feel frustrated, tired, thirsty and hungry all at once. My eyes begin to burn from looking at the computer screen for so long. I haven't moved from my chair in 2 hours. "How can the time be going by so fast?" I haven't even started reading any research about my topic. I am still looking for it.

I know that if you are having trouble with this assignment you are reading this. I know that if you are having trouble it could be due to the fact that you can't find any material to research. For those of you who are living on campus and taking this class you will benefit the most from this post. For those of you that are off campus and do not have access to the hard copies of the library, I think you will benefit as well. In the next moments I am going to take you step by step through my research process. Since I will have the liberty to comment on what I found later, I want to take the time to help those who are lost when it comes to researching a topic.

The first place I begin when I am researching is by doing a key word search over a search engine on the Internet. For example, I type <http://www.dogpile.com>. In the box to start searching I type in the topic I want to research about. This in my case is Epidemics. After I hit search I can scan through a list of hundreds of broad topics on epidemics. Some of them are lists of different epidemics that have occurred over time. Some are specific stories or new research being done on epidemics. From each web site I print out different site I have visited. IT IS VERY IMPORTANT THAT YOU REMEMBER THE URL OF THE SITE. On most printers it will print in the lower left hand corner. If it doesn't, you need to remember where that site is for future reference. It is very tempting to just print out the paragraph you need. When it comes time to CITING your source in a paper, you will not know who is to give credit to for what

you found. Since we are all honest and do not want to plagiarize, remember where you got it from. This will prevent you from being tempted to commit immoral acts at 3 a.m. when you actually sit down to write your paper and you can't find the source so you make one up. I know how this is because I have been in that spot.

The second place I look for information is in movies. This might sound strange but movies can give you an interesting perspective of an event. For my topic I could watch 'Outbreak' or 'The Plague'. These movies are about epidemics and can give me information and a visual feel of epidemics. However, movies are the least accurate usually and I must be careful when using them to do research. Just like with the Internet, I need to write down all the information about the movie for referencing purposes. I would make sure I have noted the Title, Producer, Film Company, Date and anything else needed for a works cited reference. I stumbled upon a website that gave me a list of movies relating to epidemics.

The third place I go to for information is the library. This is the place I dread because no one ever taught me how to use the online catalog. I would spend hours trying to find books and articles. Finally one day a librarian saw Gretchen at her breaking point crying for help. Here is where I will break down how I find information in our library.

The NAU library can be accessed by <http://www.nau.edu/cline/>. This website is very confusing but with a little knowledge can be navigated in such a way as if you are floating through the library. From the library homepage I usually begin finding books. Books can be found by clicking on the left hand side of the page where it says 'Search the Catalog'. I click here and pick either 'word' or 'subject' from the pull down menu. From here I type in what I wish to research. For my case I typed epidemics. This brought up an entire list of books on epidemics. I click on the books until I get to the page that tells me where in the library it is and if it is available at that moment. Because I am fairly unfamiliar with where the books are located in the library I write down its LOCATION and its CALL NUMBER. Here is where the librarians come in handy. I often times ask them for help. I have found that if I am prideful and do not ask I end up wasting more time than needed in the library. When I actually find the section of books relating to my topic, I almost pee my pants with excitement because there are so many!!!

The last place that I research is in the periodicals of the library. This is where those of you who live in Havasu will benefit because you do not need to be in the library to get this information. This research method is a very reliable source because it consists of articles published in accredited journals whereas the Internet in general can have Joe Schmo giving you his opinion on epidemics. Not that his is bad, but it is good to look at all angles. Now, to access periodicals from my home computer I must go to the NAU library home page and click on 'begin research'. From here I 'chose a database>>'. For epidemics I started with 'Arts and Humanities'. This will bring you a list of different databases that contain abstracts and articles from journals (magazines.) It is important to pick a database that has a little yellow icon next to the title that says 'Full Text'. This means that you can obtain the whole article. It isn't much help to read abstracts all day. I chose 'History Cooperative' to search from. This takes you to the website of that database where you can search different topics and be given articles that people have written on those topics. Periodicals are great for science topics because they give very current information that has been published. Today in my research I obtained an article from September 2001. That is great for researching topics that are always changing.

These are just a few of the research methods I used today while I was searching my topic of epidemics. I am interested in finding out how others researched so that I can

get more angles to look at my topic. I hope that for those of you who are lost at researching, this post was helpful. I know that I haven't commented much on the substance of my research but I wanted to give others a chance at feeling ease while researching.

The Source of the Matter

(Look for Sources - Post #2)

In my first post I described how I did my research. In this post I hope to effectively analyze the data I found. I will be asking the following questions about each type of research material while spending extensive time on books due to the fact that each book is different. What do I know about the author(s)? What is their perspective? How is that a bias for them? When did they write it? How does that affect their perspective? How can this reference material benefit me in a study of epidemics?

The first reference materials I obtained were scientific periodical articles from various prestigious journals. Applied and Environmental Microbiology is a journal that I have found myself turning to a lot in my major because many of the articles are written by famous Ph.D. scientists who have spent years researching particular topics in microbiology. I found several articles from this journal on-line through their website, one of which is entitled "Molecular Analysis of *Pseudomonas aeruginosa*: Epidemiological Investigation of Mastitis Outbreaks in Irish Dairy Herds." This article sparked my interest in my research study because it is about a microbe I have worked with. Many of these articles in this journal are on topics I cannot even pronounce let alone research about. This article is written by 8 scientists and contains information I can understand and is relevant to research when studying epidemics.

The perspective of the authors in this piece is strictly of a scientific interest in a study of the biological effect of epidemic outbreaks in cows. This cues me to the fact that they may have biases about their research fields. They may feel strongly about epidemics based on experiments they have done. They also have strong perspective scientific points. They do not care about the effects that having low cattle rates has on the people because of economy. They do not care about the social and political implications that this epidemic has. They are out to prove to me, the reader, about their findings. This is evident in the way they present the material to me. The article is broken down with physical subtitles such as, Introduction, Materials and Methods, Results and Conclusion.

The next type of research I found are Internet articles from the UsGenWeb Project, a Government funded program that studies epidemics. This site consists of a list of epidemics that have occurred over the span of two hundred years. This site is written by people who are being paid by the Government, of which I am not convinced always presents true data. Nonetheless, it is a perspective to consider when writing a paper. Some potential biases for me to consider when using this resource are that they do not care much about the social effects that epidemics have on Native Americans. This is evident to me in the fact that the list is composed of only epidemic outbreaks in the northeast US in towns like Boston, New York and Philadelphia. This site is great for my research in finding specific dates for outbreaks where other source might just say that the epidemic outbreak occurred in the mid 1700's.

The next source I found is books. This research tool is very important for several reasons. Books provide great introductions with the freedom to provide unlimited detail about history and instances. It is not animated like websites so most of the data is substantial and can be analyzed more in depth. However, books are written most

times by one or two people. This makes the perspective smaller with more bias. I checked out 10 books on epidemics and after reading the introductions I quickly realized that each other has a different style and interpretation of epidemics. For example, *The Coming of the Spirit of Pestilence* by Robert Boyd is a book about the diseases that Europeans have brought to the Haida people of the Northwest US. In his book he has Haida people tell their interpretation of epidemics while giving scientific evidence of epidemics in the area. This gives two perspectives in one book, both of which have their own biases. The Haida people are looking at it from a spiritual approach, describing the Europeans as Evil Spirits because they brought death. We all know that isn't true, or maybe it is. Boyd's biases include those of a non Haida trying to interpret their stories into his own style of writing. This changes the fact that I can't take the words of the Haida in these books as theirs. It is second hand story telling no matter how good Boyd's intentions are.

Other books I checked out include a medical book on epidemics, which again is very scientific and factual. Great because there is little room in science for personal opinions. I checked out several books that look at Epidemics from only the effects they have had on Europeans. This is a very ethnocentric point of view to consider when writing about my topic.

Lastly, I found book reviews written by Graduate Students from prestigious colleges such as Brown University and University of Oxford. These are great because it is another perspective on the same book that I am reading. I printed out two reviews from Boyd's book from different people. Both people provide a summary of how they interpreted Boyd's book. Interesting to compare that to my own Interpretations.....

There are several other sources that I obtained that also cause me to question them. I am thankful for reading the Hex and Bias Factor before beginning my research because it helped me to see that researching a topic takes many more sources that I like to find. However, it is great because it helps me to not be lazy in my research and just find enough to state the facts. I want to find out as much about Epidemics that I want to from all over. Over the next few days I will be watching movies about them. I will comment on movies in my next post. Until then... Does anyone have a perspective that I didn't see? Stupid question. Please comment on my post and ask me questions to get me thinking.

Final Thoughts on Sources

(Look for Sources - Post #3)

After a long week of trying to manage all of our other classes that require our time, we find ourselves struggling to actually find the time to go out and research for ourselves like we were challenged to do this week. I know that I have and I'm sure there are some of you out there that have too. To take one last stab at analyzing my sources I want to apply it to everything that I have learned so far in this course.

First, the hex's divine correlations to my sources.

Laura Pierce enlightened me to this viewfinder and I saw amazing ramifications the hex has on research. All of the stages of the hex can help me look at my findings more in depth. I envision all of my sources piling on top of each other in chronological order by the era that the perspective was seen in. This is its relation to cultural sequences. Most of my book sources would be similar to the bottom layer of the Indians. My movie sources would come next with the early colonials. The last three layers of Africans, Asians and European migration are similar to my periodical

sources. The way that each source has significance in my research is the same way that each culture has influenced what America is. Similarly in Mutual Influence, each source is bouncing off each other like my book reviews bounce off the book they are written about. The different perspectives of the narrators are my Regional Diversity.

Of course Technology plays its role in the different ways I am able to obtain my sources and also influencing how they are shaped. Movies have the ability to add entertainment to the picture while periodicals do not allow narrative interpretation as much. This leads to me. I become Expanded Comprehension and Revised Interpretation in my research. I am molded and changed because of what I have learned in my studies.

The Bias Factor has been touched on more specifically in my last post; however, another aspect to think of in regards to biases is how what I have learned in this class influences me to think certain ways about my research. Learning how authors are biased can definitely benefit me in being partial to their opinions. What about taking it to the next level?

Where I become bitter and outraged at an author because of his ethnocentrism and refuse to use him as a resource. At that point I am limiting my perspective and becoming another factor to the negative aspects of biases. I must learn to respect all sides of opinions in my research and be able to filter how I will use that person's perspective in reference to its context.

It is important to keep these ideas in mind while I am researching my topic and life. Using the skills learned of finding resources can also be applied to life.

Taking what I experience in its context and for what it's worth is important for keeping an open mind and an open heart to learning in life. The world is my classroom and using the Hex, Bias Factor and different sources I can become a better researcher of my life.

About the Author

Gretchen Chamberlain is a senior at Northern Arizona University and is prowling after a degree in Microbiology. She will be speeding across the country post graduation (December 2001) to work as a junior high youth leader of Trinity Baptist Church in St. Paul, Minnesota. Gretchen is mastering the ropes of the online experience through Dr. Guy Bensusan's Humanities 382 class. She is anxiously waiting graduation, however, she is a bit distraught that she had not engaged in this astonishing learning experience prior to this class. Gretchen is ecstatic to serve the young people of our country, sharing her gained knowledge.

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Editor's Note: Dr. Bensusan describes how successive generations of technology facilitated teacher-learner and learner-learner interaction leading to improved learning and student performance. He draws an analogy between development of his Collaborative Online Learning Algorithm and Toffler's Third Wave. He shows the crucial role of the computer and Internet to individual and peer learning and how it is accelerating effectiveness of his third generation learning algorithm.

"Toffler-izing" Teaching Online

By Guy Bensusan

Part One

Alvin Toffler's "Third Wave" appeared in 1991, my third year of teaching by interactive television across Arizona. Our system was a high quality technology contrasting greatly with older blackboard and desks in rows I had grown up in and taught with for forty years. Two-way video and audio, voice-activated microphones at every seat, three movable cameras, soundproofing, and classroom operators were at each classroom. We started with two sites and extended NAUNet to thirty-six locations across our big state, building new options for teachers, students and others. Beginning in a January, we in Flagstaff were keeping warm in the winter snows with sweaters, jackets and boots, sharing the TV screen with Yuma students in short-sleeved shirts, shorts and sandals.

The visuals were a great advertisement for Arizona tourism, but the learning tool was a gem, uncut, and about to display many facets. Pointing cameras at land- and skylscapes, juxtaposing the shots on our "tee-vee," we could show objects side-by-side and talk of comparisons and contrasts. We observed arts, buildings and artifacts in their cultural contexts, refining definitions and vistas by talking with each other. Everyone had a front-row seat; we saw faces, and did not have to turn to see who spoke. Being on the screen raised some personal issues, but we quickly learned who wanted the close-up and who preferred to be seen in the context of a three-shot --- a good example of individualizing with technology.

For maps, notes and other printed visuals, the pad camera was highly effective with its ability to zoom, and it had a special attachment (with zoom) that allowed us to show slides without dimming the lights. We could put two slides on screen, as well as show close-ups of portions of them, creating wonderful comparative discussions. I no longer had to lecture on regional contrasts because we looked at and discussed them. We were learners together --- since I was learning about the students as persons and about different ways they approached and learned these subjects. Through practice and time we all learned how to gain more students into discussion by the ways we posed questions.

We were neither a television broadcast nor a typical class session, but a little of both as teacher, technical personnel and students in all sites advanced step by step, stumbling a bit while struggling and surviving in gaining the balance that would foster effective learning. We went far beyond the immediate needs, and glimpsed some of what then was the future. Since I still taught one course in the traditional manner, the new experiences thoroughly jolted my sense of what might be accomplished. I had new thoughts and ideas about the subjects I taught, and experimented to diminish what I delivered to the students from my own knowledge and ways of thinking, and increasing what I called the lateral approach. I would ask a question and get an answer from a student, and then would ask another student to comment on that answer. It did not take long to reorganize classroom socio-metrics. The more I encouraged discussion within a framework of comprehension levels, the faster interaction began and spread, providing me with paths for designing not instruction but *Learning*. Toffler's Third Wave was a roadmap, hinting of changes to come.

Peer-to-peer computer conferencing changed things for us all much more drastically five years later, when Caucus arrived on campus and was implemented by the newly hired virtual conference director, Mauri Collins. As moderator for the Distance Education Online Symposium list, she was deeply interested in ways to focus on student learning, and organized web course developments for Northern Arizona University, getting me over my initial cyber-culture-shock in the process. Caucus freed us from the earlier "real-time" constraints of the classroom. Instead of fifty minutes three times per week, we communicated whenever we wanted and it stayed there. Everyone could read what everyone else had to say and think about it anytime: all day, all night, all week, all semester.

With Caucus, limitations and drawbacks of traditional classrooms became obvious. We had more time to think and write, and we did so at our convenience rather than that of the imposed lock-stepped schedule. Once again, Toffler lit the way with his *Mass Customizing* concept: large numbers could be accommodated in ways and times that fit easily into personal schedules. More students could enroll in one course taught online, and each might get feedback from other students as well as the professor, though that meant some redesigning of the course. Clicking into the software we could also click on the list of assignments, click on the readings, click on personal workspaces where we would post our answers, suggestions and questions, and comment on each other's work. We only had to log in, which also meant that "absences" by students and teacher became a thing of the past. Another new world.

We lived in both learning worlds from 1996 to 2000. I drove to class and conducted sessions with as many as 18 sites at a time and 150 students, and everyone wrote their responses to the assignments and posted them on Caucus. It was much easier not to have to fax things around from one site to another in order to read each other's work, to say nothing of the costs and time of duplication and distribution. A writing pattern emerged that became extensive and intensive, with students eager to build on each other's ideas, suggest information, sources and their URL locations. While I stood back and observed, students went deeper than on interactive television. They asked questions and got thoughtful responses from each other. They built ideas and contrasts with applications of our tools, extended their efforts and spent more time online. I consider the work being turned in was much higher in quality than what I had seen before: lengthy analyses, greater frequency, exploration into more levels and complexity, and much more willingness to engage and help each other. Why did the students do this? When I asked in the lengthy evaluations at the end of the courses, many said they did it the first week because it was required, but in the process, they found it was productive and fun, and it soon became a habit with valuable

consequences showing in their other courses. They selected their own topics to work on, and were encouraged to use many diverse sources of information as part of the analysis and evaluation of sources assignments. They cooperated even more when I eliminated competition by awarding the top A grades to all who worked hard and showed weekly improvement. Many cooperating heads made for better results than one, and everyone improved by creating community and helping each other.

A learning stairway grew out of this quite naturally. Successful academic work requires use of a tool kit of half a dozen ground-floor BASICS. All fields of study are human creations sharing the same general qualities. Each and every discipline has

- a history, epochs and leaders,
- components, techniques and data bases,
- levels of comprehension in the Bloom Taxonomic sense,
- a litany of biases, slants and limitations,
- accepted criteria for evaluating information sources and
- a spectrum of developing interpretations that both overlap and are slotted in with spectra from sister fields.

Learning is an active process that must be performed by learners. Teaching happens when teachers deliver or transfer information to student recipients. Myths confusing the two abound, and it took me a long time to see that. I clearly knew from the swimming pool swimmers learned and were not taught, and knew I had not transferred my ability to swim over to others. Yet my professors insisted that cognition was a different matter and that experts has knowledge that needed to be transferred. Okay, I was a graduate student and accepted the wisdom of my superiors and elders. But then I became the professor and found that no matter what I did in the traditional classroom, I fulfilled the prophecy of the bell curve. I debated this with colleagues, and was unable to make my case with them. It was not comfortable to be disparaged by those who controlled the peer evaluation that affected my wallet, and tried ever so hard to find some middle path that would dispel the conflict.

In the long run it is clear I was wrong, and on the one hand feel embarrassed by the waffling, while at the same time knowing that I learned valuable things about the many options, diverse strategies and alternative paths that I explored along the way. It is clear to me now that much teacher-talk about learning and about how they are teaching to learning is outright deception. Until teachers allow learners to function within personal zones of comfort to get started, their rhetoric is mere "Newspeak." Current euphemisms such as "grow the learners," "teach to learning" and "deliver learning" would be amusing if they were not so tragic. Altering emphasis does not shift paradigm. Why is it so hard to see that teaching and learning go in opposite directions?

Fostering Learning means students are encouraged to learn how to learn through engagement and practice, practice and practice. The new technology tools for enabling this appeared and become available in (1) the personalized interactive software combined with (2) the Internet as an encyclopedic information resource. In addition, innovative teachers saw new possibilities, universities began offering Web-enhanced and Web-based courses, while students enrolled and completed them. All these made the paradigm shift possible, and we are only just beginning to envision what the new methods imply and where following them may eventually lead us.

Shifting at this depth has not been easy, and we remain in the early stages. As usual, students helped make it happen. They made good suggestions, were willing to experiment, and were good humored if vocal about their anxieties and frustrations. We learned to encourage interaction and learning collaboration. We made changes each

term, then during the term, concluding as we went that we did not need to meet face-to-face. They asked over time not to attend as they came a few at a time to feel the classroom was now redundant. I agreed, and finished that last fall semester of 2000 sometimes accompanied by one or two hardy stalwarts, but eventually alone, talking and debating with hand puppets and an occasional student on the phone.

My interactive television classroom courses died a natural death, may they rest in peace! They were superseded by newer technology, in the same fashion as I had abandoned the traditional classroom for interactive television. How should we assess this? Was this an appropriate end, or "just desserts," or a new Toffler pattern of selective change? Many teachers are comfortable with the older ways, while others are gaining comfort over interactive TV. I went through the cycle, or is it more a cyclic pattern? One form or structure for all is NOT necessary, but much of today's rhetoric centers around very harsh attacks and criticism being leveled by groups who favor one versus the other, but seem currently unwilling to do the research necessary to examine either what the students might prefer or whether the work and amount of time devoted to writing and learning is truly more effective than the traditions. Labels such as "techno-philiac" or "techno-utopian" miss the mark by as great a distance as the opposing luddite implication of "technophobe."

Personally, there are many fond memories from both the lecture hall and interactive multi-site television eras. In the former I was focused upon personal research and writing into subject matters, and remain proud of the publications that came out of those years. In the latter, I developed a different type of research that resulted in newer publications and lecture tours for disseminating what I had learned. Not that these were easy passages --- each had gains, each brought losses. "My storage runneth over" --- classroom models I built over years gather dust, while younger television versions have been replaced by computer graphics and essays on my website. I struggled with principles deeply embedded from doctoral training and traditional college practices and rules concerning standards for grading or how many hours of face-to-face time equaled three credits. I miss the travel to all parts of the state by car and small plane, the classroom banter and other memories of yesteryear. But I don't live in that place any more, and would not go back for much more than a visit.

I see a definite connection between Toffler's Third Wave and Dr Guy's Third Stage, and frankly wonder what lies ahead. The Collaborative Online Learning Algorithm I developed could not have existed or even been thought of by me in 1960, 70, 80, or even 1990. It is a product of the "Y2K," of many experiences along the teaching-learning road, or interactive software, of computers, nets, links, web courses, and most of all, the Internet. These fine tools, organized and implemented in ways to foster student learning can be used for extremely high-quality peer-to-peer engagement. I am convinced more top-quality REAL learning takes place with frequent writing and interpersonal interaction online than in any other way I have taught.

At least, that is how I see things as the fall semester 2001 begins. Examining student expression in their writing, evidence gathering and performance growth, several thoughts come to mind. One is that what the students do on their own, in their own time and based upon their own initiative is far superior to what they had previously done in response to my earlier assignments in the traditional manner. I recently wrote online in one of the courses that "learners will work much longer and harder when they can see their own development than they will for a grade from a teacher." That is another change, and while some students remain enslaved by grades more and more frequently I find them turned on by the ideas of personal liberation of their thinking and becoming able to become self-directed in their ability to learn for the rest of their

lives.

Change seems to be the rule now. We will not ever get THERE because there is no there to get to and even if there were, it would also be in motion as we are. For those preferring stasis and finding right answers, this is a real dilemma. And as one of pals says, "You can be right or you can have the cheese, but not both." Change and acceleration are givens. I change, you change, students change, subjects change and evolve, information sources diversify, software and computers too, as well as that incredible ever-developing, seemingly-endless resource called Internet, with ever more data, contributors, sites and metasearch engines is bigger and more available to us every day.

It seems we are sailors-surfers on an ever-changing ocean. We must stay on our toes every moment, paying attention to and anticipating winds, currents, pressures, tides, shifts. Dead and gone are the days of courses being only focused on content. No longer can we acquire the skills of today's and tomorrow's world by being assigned a topic and trekking over to the library to gather whatever books might still be available, and read, formulate and write a report for a grade, and then forget it. Professors may still be teaching in that manner, with the still-dutiful and yet-obedient willing to work their way through the drill, but that approach is moribund, a relic, dead-on-the-hoof, even if still standing and seemingly healthy.

A new wave of learning opportunity has emerged in which learners select their own topic to study from a long and broad spectrum of arts and cultural elements. They then engage interactively in step-by-step exploration of that topic, together exploring the same critical thinking exercise as they see and discuss with each other the commonalities and the divergences affecting their specific topic. They may be akin to football players: all on the same team, all interested in mutual assistance, all with special duties which en masse contribute to the total accomplishment. Each one is a teacher, a learner and a critical contributor to the team, while the coach comes to appreciate the whole game ever more comprehensively from his senior vantage of learning and helping. And they learn also how to build community.

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Editor's Note: The Online Resource Page was published in September with an invitation to participate in its discussion. Here is a summary of key points that came out of the discussion. If you were unable to attend, you may wish to reread the Online Resource Page article in the USDLA Journal for September.

Online Resource Page: Using Technology to Enhance the Teaching and Learning Process

Brent Muirhead

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(IFETS)

Part II - Post-discussion Summary

The discussion of the online resource page occurred on the IFETS discussion list from August 27, 2001 to September 7, 2001. The dialog began by focusing on three basic questions:

What are the advantages and disadvantages of e-books?

How does the Resource influence the classroom learning environment?

How can today's instructors use the Resource to enhance online interaction?

Discussion participants explored the potential advantages and disadvantages of the new resource page that has been developed by the University of Phoenix. Ultimately, the goal of the new initiative was to enhance the online teaching and learning process. It is designed to be a place that will provide instructional resources for a variety of educational needs. For instance, the resource page has foundational articles that are tied to the course objectives. Yet, instructors have the freedom to use their subject expertise to add articles and other instructional resources for their students. Perhaps, it is better to view the resource page as a fluid document that has foundational materials but it is much more than just a set of e-books.

What are some of the concerns and observations about the Resource Page?

Debate over the educational effectiveness of using e-books (ex. Access issues).

Whether the Resource Page design will help stimulate relevant interaction with the course material and with other learners.

Instructional design issues involving the costs involved in creating an educational

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setting to effectively use the Resource Page.

The importance of having qualified online instructors.

The need for more research and the willingness of innovators to listen and learn from constructive criticism of their work to encourage academic collaboration and improve online instructional resources.

The discussion highlighted the importance of having trained teachers who are effective at facilitating online classes. It is vital that today's online instructors possess expertise in academic content areas and have the interpersonal skills that enable them to work effectively with a diversity of students. An effective facilitator will be able to create a friendly and intellectually challenging class that has lively dialog and relevant assignments that reflect high academic standards. The discussion moderator described the performance indicators that are often found in good online facilitators.

Performance Indicators

- The facilitator interacts on a regular basis with their online class.
- Messages are clearly written, formatted properly and reflect appropriate spelling & grammar.
- Uses personal & professional examples to stimulate discussion.
- Writes with good online tone (friendly, polite & professional).
- Interacts effectively with a diversity of students and works with lurkers.
- Responds to student questions in a timely (within 24 hours) and consistent manner.
- Demonstrates excitement/enthusiasm about the teaching and learning process.
- Monitors student learning groups and encourages collaboration.
- Builds upon student comments in a constructive way and uses creative prompts when necessary (ex. posts additional questions to help sustain and energize their dialog).
- Keeps the class focused on discussion questions & assignments.
- Provides timely and consistent feedback by carefully explaining grades and offering specific, detailed and constructive comments on papers.
- Provides a detailed syllabus and weekly instructional updates on class work

The resource page provides teachers with instructional resources that can help them promote deeper learning experiences. Instructors can offer supplementary materials that will enable them to meet the needs of students who possess different learning styles. Ultimately, online educators still hold the keys to making the online experience enjoyable for students. Spitzer (2001) relates that "the missing link in Rosset's DL experience was not the technology, but the lack of a human mediator who could provide the things that technology could not: relevance, personalization, responsiveness, and flexibility (pp. 51-52)." Research studies into interactivity in graduate education schools reveals that students want timely and consistent feedback. Students want personal attention from their instructors. It takes dedicated and effective facilitators that are frequently online to meet student needs. Traditional teachers sometimes have difficulty making the transition to working in the online environment. Being a good facilitator is a very challenging job and it is often far more demanding than traditional teaching (Muirhead, 2001).

The resource page offers students a variety of learning options that can individualize

their educational experiences and make them more relevant. The student-centered model of learning encourages teachers to view their students as academic partners who work together to produce relevant and meaningful learning experiences. It requires educators who are willing to change their standard teaching methods. Boud (1995) related that "they will need to become researchers of student perceptions, designers of multifaceted assessment strategies, managers of assessment processes and consultants assisting students in the interpretation of rich information about their learning" (p. 42).

The student-centered learning model challenges teachers to carefully use descriptive language in their written and verbal comments (phone conversations) to students. Teachers must develop dialogues with their students that foster personal and professional growth. Unfortunately, some professors, through attitude and verbal and written comments, treat their students as subordinates (Hawley, 1993). Obviously, the instructor's language must be caring and honest while providing constructive feedback that helps the student to have a clear picture of their academic work.

Conclusion

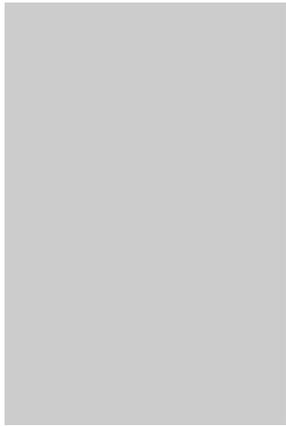
The discussion of the resource page reveals the need for distance education schools to carefully select and train instructors for their online classes. The resource page has the potential to enhance the learning process. Yet, it requires having qualified instructors to effectively use it. Also, the University of Phoenix realizes that it is a creative initiative that requires time to experiment with teachers and students. The university is using conferences and Internet discussions as vital opportunities to obtain feedback to improve the resource page. For instance, students might want to have the option to use both textbooks and e-books in their classes. The discussion participants provided excellent insights that will be useful in the on-going evaluation of the resource page. In the future, the school hopes to share a prototype for those interested in using the resource page for their organizations.

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Editor's Note: This excellent research by Drs Partow and Slutsky provides much needed insight into the exponential changes taking place in the broad business sector. The power of e-learning to challenge tradition business education is beginning to be fiscally significant to the bottom line of Schools of Business. This successful intrusion of non-university commercially developed business programs into industry training markets has had profound effect on the reassessment and re-organization of traditional academic business programs. And a large, new Internet based market, packaging and delivery of knowledge, provides basis for important further developments of the e-commerce sector. This research is well worth in-depth study.

Distance Learning as E-commerce

Partow Partow and Ludwig Slutsky

E-Learning as a System

Distance Learning, or E-Learning as it is now frequently called, is a large emerging sector of e-commerce: \$2 trillion worldwide marketplace for education and training from pre-school to retirement [Hall, 2000].

Globalization in education, information technology and communication leads educational organizations to employ e-learning as an e-commerce model. Combination of several market forces will expand further E-Learning business: demand from students, growing acceptance of educational technology as a household item, technological innovations, economic forces (as the need and frequency to upgrade business skills accelerates). Education does not have borders. One of the consequences of e-learning globalization is that it will facilitate global educational knowledge management across national and cultural boundaries. E-learning, implemented in variety of ways, has already redefined the educational landscape in many segments of education. But a successful e-learning strategy is required for an educational institution to plan, develop, and implement significant changes affecting their curriculum, administrative structure, processes and culture.

Many educational institutions get into e-learning because it is fashionable. But as we move further into a society dominated by technology and communication, both educators and students will increasingly use e-learning to minimize the costs of educational products and services (time, effort, and money).

The fundamental changes we are facing today with e-learning on the Internet follow radical changes in the online world. Concept of e-learning is no longer limited to transfer of traditional content with a new medium.

Typical e-commerce models are forming in the e-learning market. Selection of an e-commerce model for education depends on the diversity of e-learning products and services. New hybrid business models include a range of products (from the instructor-published materials to pre-built Computer-Based Training modules) and a

range of services (from online interactive training to on-the-job aids and online collaboration with experts-mentors and other trainees).

The number of e-learning content (e-content) developers continues to grow. Application Service Providers (ASPs) become more diversified in encompassing greater variety of e-learning service (e-service) needs and more specialized in offering brand e-learning service products. Education Service Providers (ESPs) -- such as universities, virtual campuses, learning organizations -- are getting increasingly focused on creating customized integrated e-learning solutions ("value" modules) based on e-content (supplied by developers) and e-services (provided by ASPs). (See simplified architecture of ESP on Fig. 1) Value and supply chain management concept, e-commerce models and techniques can help ESPs to strategize e-learning business.

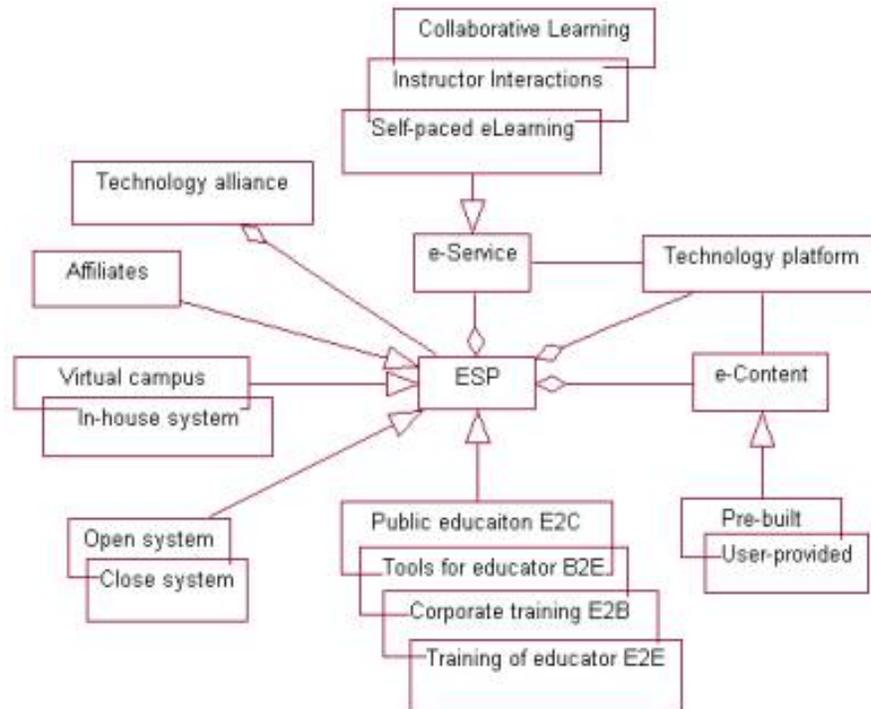


Fig. 1 Education Service Provider (ESP) Architecture

Both, e-learning and e-commerce are facing similar challenges: a consumer (whether a student or customer) is being served not at a central location with traditional face-to-face group communication but at individually at a remote location (often at home). The educational products are becoming a universal commodity - that is a product that is standardized and well known - for which ESPs are striving to create integrated commerce solutions and services.

Currently, the e-learning market is fragmented. It is filled mostly with small suppliers. There is no single company that dominates any one area of services [IBM, 2000]. To be successful, ESPs tend to associate themselves with a technology alliance to support the successful planning and implementation of e-content and e-services for public education and support strategic business processes. [Centra, 2000] (For example, a formal e-content alliance of SkillSoft with Oracle, KnowledgeSoft, and Saba Software. The alliance of Microsoft's eLearn with partners is another example.)

Technology alliance can be established to address specific or common problems. For example, the Internet Security Training Consortium (which SmartForce created in partnership with Check Point, Cisco, IBM, Intel, Sun, Netscape, Lotus, Network Associates, RSA Data Security, Security Dynamics, HP and VeriSign) addresses the

Internet security training needs for enterprises worldwide. The implementation solution of security needs is provided for multiple architectures: Internet-based, Intranet-based, stand-alone systems, and for mobile users.

Job-related training is essential to long-term success of corporations, and they are now embracing training services that were in the past considered for academicians only. E-learning offers new ways to manage learning cycles, to enhance development, logistics and distribution of educational products and services, and to link educational partners together in a seamless learning environment. Traditional universities (including those of "ivy league") are rethinking the way they do business toward greater acceptance of e-learning.

Automation of educational "transactions" on the Internet (for educational products and services) helps to cut educational costs for both the providers and recipients: \$106 cost per e-learner vs. \$760 per traditional instructor-led learner. [Hall, 2000].

E-learning deals with new type of products which signifies the next wave in this information revolution -- knowledge convergence that is "& the convergence of communications, collaboration, and learning." [Microsoft, 2000] E-learning has encouraged the development of new models for educational products (for example, wide range of products from Course Technology supported with Web-based students' materials, tests, and a complete WebCT setup for a textbook). E-learning creates opportunities for a new type of online ESPs, new information-sharing educational databases all over the world, and it has already caused a significant cultural shift in public educational institutions. ESP vendors are also employing the e-learning model by creating software and services that allow educational institutions to move their classes entirely to the Web (e.g., virtual campuses, WebCT)

Information technology supports storing, processing, and transmitting e-content using scalable, distributed applications. The main computing devices for e-learning are Web server, Application Server, Database server, the network communications, and client computers. In addition, various external service providers offer the Internet access service (including firewalls for security), Web-hosting service (including browsers), and application software service. The client computers can range from desktop models to Pocket PCs.

Combination of e-content, e-learning technology, and the Internet infrastructure offers solutions to create integrated enterprise learning environments for custom-tailored virtual campuses (for public education or in-house corporate training) independently or in alliance with other providers. Some ESPs (MindLever, Vcampus) take this approach. At the other end, there are companies (like Saba Software, WBT Systems), which provide large-scale online "in-house" learning systems for organization.

E-learning systems can be designed as open systems or be focused on closed e-content and architecture. Some e-learning practices are used for purely e-learning models; others are used to improve efficiency of the traditional "classroom" model of teaching. With global exposure of e-learning, growing demand for its cost reduction, and an increasing need for "student personalization" in e-learning learning environment, small programs of small universities may successfully compete with large programs of large universities. At least in one area -- information knowledge base -- ESPs find it mutually beneficial to form alliances and to share educational resources where each ESP addresses training needs in specific sets of business skills (sales, project management, communications, customer care and first-line management).

There are at least three types of e-learning processes that majority of ESPs have in common: self-paced learning via online materials, learning via live interaction with

instructors in a virtual classroom, or learning by collaborating with others [IBM, 2000].

E-Learning Markets

A view of e-learning simply as supply of knowledge and services over the Web (with or without payment) is incomplete without considering large e-content development efforts and the competitive advantages that result from linking educational institutions, faculty, online publishing house, independent course developers, professional trainers, corporations, etc. into a collaborative system.

Many elements of e-learning technology are being increasingly adopted from e-commerce technology and are becoming standardized. Thus considering all e-learning participants, four categories of e-learning markets have been evolving:

E2C(educator-to-consumer) - public education as we know it. Although E2C includes both individual and group learning, this chapter examines concepts and strategies mostly applied to real-time interactive individual learning. Even in the virtual group setting, the individual learning is the core activity and is the prime object of a personalized e-learning system.

E2E(educator-to-educator) - what is also known as training of educators (trainers, e-learning mentors). This form of e-learning encompasses direct training of trainers and support for the trainers who develop their own e-content.

E2B(educators-to-business) -- educational training for corporate users (job-focused training) from both inside and outside their corporate firewall, transforming a corporation into a "learning organization".

B2E(business-to-educators) - e-learning systems, standards, tools and services for educators building their own e-content.

ESP Merges and Affiliates

Education Service Providers are actively trying to expand their business through acquisitions, merges and affiliates programs.

Smaller ESPs will find it beneficial to merge or become affiliates of larger providers. This tactic pioneered by Amazon.com in e-commerce will have to be altered so an e-learning: affiliate can lease the online e-content (or e-services) from a larger provider in exchange for an access fee. This can be mutually beneficial for both an affiliate and the principle provider: an affiliate can use the e-learning products that it is lacking while the principle provider can expand the user base for its products beyond the limits of its instructional faculty capacity. With affiliate programs, large providers can release pressure of maintaining faculty-student ratio with temporary teaching faculty (to meet the demands of fluctuating students enrollment) by re-routing an overload to the affiliates. This faculty-student ratio depends on the type of students participating in the program and on the category of services provided. An affiliate can specialize in certain services, e-content (e.g., for specific set of skills) and types of students, and consequently has the ability to respond quicker to the users' requests.

Some of the larger e-content providers either specialize or establish branches for leasing e-content to affiliates (e.g., SmartForce). The focus of the e-content provider is on custom packaging and interactive delivery of the e-content while an affiliate will focus on the elements of service which are customized for its user base: colleges, corporate training centers, professional advancement students, etc.

E-Learning Value Exchange

With each taken course, there is value transfer from the e-learning provider to a student. The end result of this transfer included an added incentive for an e-learning user to return to the e-learning system to acquire another course or for a post-course training [Tomsen, 2000]. In case of e-learning, the product constitutes the knowledge content and e-learning as a service. The transferred value resides both in the e-content (the quality of unit of knowledge) and in e-services (the intelligence of knowledge delivery for easy adaptation by a user). More than for any other e-commerce site, the quality of e-service depends on the quality of the e-content. Among all e-commerce applications, the learning component is unique to e-learning systems. Even among commercial sites focused primarily on information retrieval and assessment (e.g., real estate online brokerage), the learning component is either negligent or absent. As of today, the actual e-content (knowledge) may or may not vary significantly from one e-learning provider to another, and it will differ even less in the future as knowledge base will become more integrated and will support collaborative e-learning. But it is the learning component and e-service that make and will continue to make the core difference among ESPs' Web sites. Even in traditional in-class learning, the same textbooks are available to all schools, but the selection (and the use value) of one or another book depends on the ability of an instructor to "service" this knowledge to his/her students. It is fair to say, that only a minority of e-learning users are coming to an e-learning site simply to obtain e-content as comprehensive as possible or as quickly as possible. The "service", i.e. learning, is the prime consideration for the e-learners. Therefore, each module of an e-content must be evaluated on how well it can be served.

Knowledge itself is a public domain, but the packaging of knowledge (the e-content) and its delivery (the service) is a proprietary product. However, to maintain and extend its user base, an ESP will have to expand the value of its free e-content in addition to the premium (paid) e-content offered on its Web site. The premium e-content ultimately determines ESP's relevance to the needs of a specific user. And ESPs will also continue to diversify both e-content and e-services.

Among other value-added advantages of the e-learning over the traditional school is that a distance is transparent for users of virtual e-learning community. Although, it is more difficult to build the essence of belonging (as it is to a "brick-and-mortar" school), it is also easier to maintain connection with former graduates as they move around the world. Therefore, it is essential for ESPs to retain current students after graduation through existing services offered by the e-learning site.

The value transfer is significant for both large learning organizations and small business [Burke, 2000]. Linking today's knowledge base with tomorrow's technology of packaging and delivery this knowledge creates numerous benefits (and ultimately, value for e-products). First, it helps to cut educational costs for both the providers and recipients from \$760 per traditional instructor-led learner to \$106 cost per e-learner [Hall, 2000]. It is convenient and offers self-paced learning (flexible time and location). It is also consistent, specific, and current: training e-content is delivered in consistent way, customized for a user, and updated with "new knowledge" more frequently. Finally, e-learning can be private so learner's deficiencies or lack of knowledge are not exposed to the classmates. As an added value, e-learning promotes and sharpens computer skills.

Another important aspect of e-learning value is the continuity of knowledge. Lack of relevance (pre-requisites) in user's existing knowledge base may discourage this user from learning a new topic. Therefore, specifying for each e-content component (on any level of details) the required pre-requisites and recommended "next" components will

increase substantially the value of e-learning product.

E-Learning Personalization

The advent of the Internet and the related tools has caused a revolution in e-learning and makes it critical for ESPs to keep innovating with newer leading-edge Web-enabled techniques toward the goal of personalizing, maximizing performance, and simplifying administration of the e-learning process:

Personalized e-learning environment helps a user to select needed subject areas arranged by the following priorities: (1) immediately available (usually the topics that are being used in the current user's training or work), (2) available after a search request is processed (various supplemental material, references, etc.), and (3) available by notification. Personalization can be easily completed with stored search queries and shortcuts.

E-Learning planning for a user is another aspect of personalization. It is based on user's self-assessment and his determination of personal goals and time schedule for learning. To achieve that, a user needs interactive self-assessment tools (for inventory of knowledge/skills testing) and tools for active planning that automatically notifies about important events or milestones.

Perpetual e-learning for knowledge workers fits the concept of integrating work and e-learning that extends training beyond the structured framework of formal courses to the unstructured, on-request, job-related educational support. This area of e-learning will shape further the **identity of the e-learning process**: new medium and new e-content (vs. often used "new medium -- old content" approach). It is also one of the most promising areas to apply software intelligent agents to search comprehensive online knowledge resources that are always on hand (online white papers, discussions, books, periodicals, etc.) to find the current key ideas and facts on a topic of interest, and then to identify the needed modules of e-learning.

Open architecture and modular design of learning resources is the foundation for course customization. A course can be assembled using existing modules or modules from other third-party courseware providers. At the detailed level, modules (about 3-minutes e-learning units) offer capability to customize courses built with the existing content or with modules from other third-party courseware providers.

Finally, administration of e-learning process is focused on simplified deployment and usage of e-learning resources (curriculum, courses, users and learning plans).

Customer Loyalty

Like for any e-commerce, as the number of e-learning ESPs continues to grow and various virtual campuses expand mutual recognition and substitution of offered course, e-learning ESPs will experience growing problem of the "dilution of loyalty." [Tomsen, 2000] Retaining e-learning students may be increasingly difficult: they are not deterred from switching of ESPs by the distance, personal commitments, peer associations, fraternities, etc.. ESPs need to find new ways for personalization of products and services and create new forms of life-long virtual fraternities. Among all factors that will distinguish ESPs on the Web, **credibility** and **recognition** will remain high in priorities. ESPs will need to create its identity either through association with a well-recognized "brick-and-mortar" school or through its own (again, credible and well recognized) **brand of products and services**. Similar to what is typical for large e-commerce sites, ESPs will need to analyze the behavior (learning) patterns,

preferences, expectations, and evaluations of their customer base (students). The threshold of students' dissatisfaction with e-content or e-services will be much thinner than it is in traditional universities and will have much greater effect on the enrollment. ESPs must be prepared to collect and publish online course usage and rating information for its e-content and e-services. That can also be done by an independent agency. For example, SkillSoft promotes technical specifications for tracking course usage and scoring information [SkillSoft, 2000].

E-Learning Obstacles

Accreditation, money, people, educational products, security of educational transactions (exams, homework assignments), and, to a lesser extent, technology are all the main obstacles to the successful implementation of e-learning:

- Accreditation and related legal issues still remain unclear for many educational institutions. Legal issues regarding intellectual property rights is often a barrier for educators who want to market their proprietary educational online products (e.g., online lectures) independently, not through such powerhouses as Course Technology.
- New educational products for e-learning are rapidly become available, although they are much more complex and costlier than similar products for traditional, classroom learning. They must be designed not as online supplement for traditionally taught courses but as a complete course itself for a virtual class on the Internet cyberspace. As a result, such e-learning product is in fact a database that aggregates a primary text, online exercises, online exams, etc. to be used with a standard Web-based Educational Application system. For example, Course Technology offers some of its educational products together with software to generate a course-specific WebCT course.
- Security of educational transactions (i.e., validity of uncontrolled, online examinations) is probably the biggest worry for universities considering implementation of e-learning.
- Students' concern with technology aspects of e-learning may negatively impact the delivery of training in a timely, convenient, effective, and economical manner. It is important that this concern is dealt with and is reduced through a user-friendly e-learning system design.

Human factor mostly determines the acceptance of new education technology for teaching. As many university administrators can notice, recognition of faculty that participates in e-learning often means more than money.

The majority of ESPs are targeting local or regional markets.

Going global -- only a few large ESPs have been able to do so - means to deal with cultural and languages barriers; so the educational products (and procedures) need to be adjusted to the local conditions.

Interoperability of Web-based e-learning products is at the core of user customization.

In addition to open architecture and module design, the developers of these products will have to define and meet other requirements, such as:

- Minimum hardware requirements for client stations (CPU, operating system, clock speed, operating system, multimedia hardware and software components, and network configuration)
- Interchange of courseware modules including text, graphics, motion (frame-based), audio, and logic.

- Requirements for the creation, distribution, and use of digital video in Computer-Based Training (CBT) courseware.

Interoperability of audio and video courseware from different providers on different audio and video cards

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