Global E-Learning: Both a Necessity and Challenge for U.S. Institutions of Higher Education

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Abstract

E-Learning has become a major factor both with the United States (U.S.) and on a global level. This paper examines the dynamics of the global E-Learning phenomenon, the reasons compelling U.S. higher education institutions to move more heavily into the global E-Learning market, and the factors challenging their efforts. The paper also chronicles the development of the National University E-Learning program, considered to be one of the top-tier programs in the U.S., and examines their efforts to restructure their entire system through their Premier E-Learning Project.

Keywords: global issues, e-learning and web-based education

Introduction

There is a distinct movement towards online education by educational institutions of all grade levels in the 21st century especially institutions of higher education based in the United States. There are several factors, both positive and negative, contributing to this transition, however, the rapid pace of the transition at times has not afforded an opportunity for careful planning and consideration of long-term consequences of decisions rendered. This paper will attempt to identify key factors driving the transition from traditional "on-site" course offerings to the E-Learning environment and then examine several areas of concern as American institutions of higher education attempt to impact upon the global E-Learning market.

E-Learning has considerable potential for enhancing teaching and student learning as well as promoting lifelong learning and reaching non-traditional learners; however, as Paulsen (2003) notes, the quality of current online courses and their delivery systems are often subject to criticism. As the United States (U.S.) Department of Education noted in their 2003 report on distance learning E-Learning, or online education usually defined as consisting of instructional courses utilizing the Internet, has quickly became a dominant factor in U.S. higher education. In 1997-98, an estimated 1.7 million students in the U.S. enrolled in at least one online course (Distance

Education at Postsecondary Education Institutions, n.d.); this number rose to an estimated 2.6 million students in 2004 (Allen & Seaman, 2004). The second annual Sloan Consortium report on the state of online instruction in U.S. higher education (Allen & Seaman, 2004), based upon responses from 1,170 colleges and universities, noted the perception of higher education administrators that online education was critical to long-term higher education enrollment strategies. However, the report also noted that there was varying degrees of optimism and caution concerning the future growth of online education among types of institutions; 81% of leaders of public institutions expected online enrollments to continue at the same rate of growth as past years while only 62% of leaders of private non-profit institutions expressed a similar expectation.

National University, the second largest private university in California, and acknowledged as one of the top tier of E-Learning providers in the U.S., began a distance learning program in September, 1996. This first attempt at distance learning consisted of lectures for a Global Master of Business Administration program recorded on CDs which were mailed, along with textbooks, to 51 U.S. and international students. In April 1998, after signing a contract with eCollege, National University offered their first two internet-based online courses in the School of Education with a total enrollment of 39 students. It should be noted that unlike most other U.S. institutions of higher education which operate on a semester or quarter schedule, National University offers intensely focused one-month courses. By December, 2001, just three short years later, National University was averaging 100 courses every month with 1,500 students but, by the end of the FY 2005 18,602 students were enrolled in 1,095 online courses. Today, National University offers nearly 3,000 online courses each month, and sixty-six percent of the University's active students take at least one of their courses online while forty-two percent of the University's students enroll online for a majority of their courses (National University Office of Institutional Research, August 27, 2007, cited in Hoban and Castle, 2007).

Within a span of less than ten years, National University's entire academic programs and learning delivery systems have evolved from an exclusively on-site learning paradigm to a majority E-Learning paradigm. On-site programs continue but increasingly the shift in enrollment, especially new student enrollments, is in the area of E-Learning. A just released report from the N.U. Provost notes that most of the growth of the university's online system appears to have come at the expense of the on-site programs: current onsite students have moved online for the convenience; low enrollment on-site classes have been canceled and the students migrated online; and new students are overwhelmingly choosing the online environment. The shift in the learning delivery paradigm has seriously impacted upon faculty development and curriculum design efforts both of which will be discussed later in this paper.

The growth of the National University E-Learning program is daunting, and is a result of careful planning and continual assessment of both online course formats and content as well as technical delivery systems. In 2004, Dr. Jerry C. Lee, Chancellor, National University System and the then President of National University, established The President's Commission on Online Education tasked with examining the state of the art in online education and then providing guidelines for creating a framework that would support the goal of continuing National University's role as a leader in online education. Spectrum Pacific Learning (SPL) was established within the National University System to develop and administer the E-Learning system. Three years after the President's Commission, the university continues to reassess their E-Learning program and has begun a total restructuring of course content, formats, and delivery systems through a collaborative effort of SPL and Academic Program Areas (colleges) with the Premier E-Learning Project (PEP).

National University's PEP approach is based in part on learning theorists, such as Robert Gagné, who established guidelines and best practices for designing effective instruction. Drawing from Gagné's Nine Events of Instruction and other theories, SPL has developed a parallel philosophy, the Effective e-Learning Model dubbed "e2L:, which focuses on online learning and directs that online course content must target all types of learners: visual, auditory and kinesthetic. This means that every concept, theory and application in a course should be demonstrated via a strategic mix of presentation mediums. This ensures that all learners are engaged in active and retainable learning and can better apply what they've learned. Since it is believed that the full integration of e2L is central to creating a premier online course, a Premier or PEP, course should be one that is applicable, memorable, and engaging to the learners who participate in it. While this sounds similar to how one would define a premier on-site) course, there is one distinct difference; in traditional, classroom (on-site) based instruction, the instructor is key. The instructor uses their breadth of applicable knowledge, research, and teaching methods to engage learners in meaningful and memorable learning. In the E-Learning environment, objective-based lessons that appropriately incorporate an array of media elements must substitute for (or support) the instructor. In order to effectively promote the transfer of

knowledge, the online content must help guide learners to effectively process and assimilate new knowledge and skills.

One of the biggest assumptions commonly made in the development of e-learning programs is that the more visually appealing a program, the more learning that will occur; therefore, it is assumed that the way to create a premier E-Learning course is to simply add more media (such as animation, video and illustration). This is not necessarily true since the purpose of media elements should be to deliver the content and instructional methods, not to make a program merely look pretty. Visual appeal therefore is simply a byproduct of good instructional design. A truly premier (PEP) E-Learning course is one that will look attractive, feel vibrant, encourage participation, and incorporate activities that support the learning objectives and various learning styles of its participants. National University believes that a PEP, or premier, E-Learning course should include the following elements: (a) Content that helps the learner achieve the desired learning objectives; (b) Instructional methods that effectively communicate the content; (d) Media elements that effectively deliver the content and instructional methods; and (d) A clear and directed focus on the promotion of new knowledge and skills.

Dynamics of Global E-Learning

As the title to this section notes, Global E-Learning is indeed "dynamic". The global education market is worth $2.3 Trillion USD (Hezel & Mitchell, 2006) with E-Learning comprising the fastest growing sub-sector of the market. San Jose, California-based market researchers Global Industry Analysts (2007) report that the 2007 U.S. E-Learning market is $17.5 Billion USD and that the global E-Learning market is projected to surpass $52.6 Billion USD by 2010. Hezel Associates (2006) estimate that over the next twenty years the global market for E-Learning will exceed $215 Billion USD with the majority of the rapid growth occurring in the area of cross-border (institutions in one country delivering courses to students in other countries) delivery of higher education programs. The United States (U.S.) remains the largest exporter of educational program services (Organization for Economic Cooperation and Development report, cited in Hezel & Mitchell, 2006), however, that role is expected to change within the foreseeable future.

There are two major factors that Hezel & Mitchell (2006) cite as the reason for the expansion of U.S. institutions of higher education into global markets. U.S. population growth has slowed due to decreased birth rates and only immigration is said to provide noted increases in population. According to the U.S. Census and the U.S. Department of Education, enrollments of college age students (18-22) are currently nearing a peak and it is projected that by School Year (SY) 2008-2009 a decline in the number of high school graduates will begin to be observed. It is further projected that some regions of the U.S. will see a ten to 35 percent decline of high school graduates by SY 2017-2018 (Hezel & Mitchell, 2006). It is suggested that U.S. institutions of higher education will have to develop greater cross-border enrollments to maintain current enrollment levels.

The second factor cited for the expansion of U.S. institutions of higher education into global markets is the increased demand for higher education in China and Pacific Rim countries. While China has increased the number of higher education institutions, their enrollment demands far exceeds domestic capacity. Six percent of China's higher education age population sought enrollment in higher education programs in 1999 but that figure doubled to twelve percent by 2002 (Hezel & Mitchell, 2006). Global Industry Analysts (2007) report that E-Learning in Asia is expected to reach a compound annual growth rate of twenty-five to thirty percent through 2010 and that the worldwide rate will be between fifteen and thirty percent for the same period. Currently U.S. higher education institutions account for sixty percent of cross-border enrollments with Australia, Europe and Japan providing most of the remaining cross-border enrollments. While Global Industry Analysts (2007) note that the current rate of cross-border E-Learning enrollments is due to increased program offerings and services, they also warn about the impact of interoperability standards which have the potential to stifle the of growth cross-border E-Learning.

The dominant role of U.S. higher education institutions in global learning is due in part to the perception that an American education remains the standard by which all other education programs are measured. That perception is being challenged notably by emerging programs in India and South Korea. South Korea's Ministry of Commerce, Industry, and Energy (MOCIE) is striving to capitalize on their self-described world famous information technology infrastructure to become a leader in the global E-Learning market in technology (The Korea Times, 2004). As part of India's technology-fueled economic miracle, there has been a virtual explosion of technical schools all across the nation. As a result, in 2005 India produced 200,000 engineering graduates; this is about three times as many as the

U.S. and twice as many as all of Europe for the same year (Washington Post, 2006). Of greater importance is the fact that in 2005 India also enrolled a total of 450,000 students, including many from other countries, in their four-year engineering courses; this means that India will have more than doubled their 2005 output of engineers by 2009.

Coupled with the U.S. decline in the number of high school graduates is a decline in the number of student enrollments from foreign countries (Hezel & Mitchell, 2006). Part of the decline in foreign student enrollments is due to the marked increase in technological capacity and increased higher education opportunities in their own countries or in their region. Another factor impacting on declining foreign student enrollments has been increased immigration regulations enacted post 9/11; it has become increasingly difficult for foreign students to come to the U.S. to study at institutions of higher education. The combination of declining domestic enrollment bases coupled with increased competition from institutions of higher education in other countries presents a formidable challenge to the U.S.'s role as the largest exporter of educational program services.

Factors challenging U.S. global E-Learning efforts

Course Content Relevancy: All institutions of higher education acknowledge and stress the importance of keeping the content of their academic course offerings updated and accurate. The on-site course environment provides up-to-the-minute opportunities for additions/updates to be made to course content materials; faculty can virtually make modifications/updates to their lectures and course handouts right up to the time that a particular class session begins. However, the E-Learning environment presents considerable challenges in this area because of the manner in which course content materials are embedded in master course templates which in turn must be duplicated and loaded into the delivery system used for actual E-Learning academic program offerings. In the National University system, course master templates are duplicated and transmitted to e-College one (1) full month prior to the schedule date that the course is offered to students. Therefore, lead faculty members responsible for each course—known as course content experts (CCEs)—are required to review the course master template at least two months in advance of when the course is scheduled to be taught in the online system and must work with Spectrum Pacific Learning (SPL) staff to insure that all required changes are identified and made prior to one month prior to when the course is scheduled to be taught and when the course master template is duplicated and loaded into the e-College system.

Review and updating of an E-Learning course can be a labor-intensive task especially if the course is taught nationally within the U.S. or globally as part of a cross-border E-Learning program. As an example of the complexity involved, consider N.U.'s EDA 618 Legal Aspects of Education course which is part of a Masters Degree program in Educational Administration which is the largest program of its type within the state of California. In the U.S. public education (K-12) system the individual states, rather than the federal government, have primary responsibility for the funding and administration of schools and academic programs; this can result in different legal requirements and procedures for student suspension and expulsion, teacher licensure, and budgeting requirements for each of the fifty individual states. At one point, N.U. had three Alaskan cohort groups from north of the Arctic Circle enrolled in the Educational Administration E-Learning program; differences between California education code (state law relating to the regulation and governance of K-12 public school programs) and Alaska education code were so great that it was decided to develop two separate versions of the EDA 618 course – one for California students and the other for Alaskan students. Additional problems arose from having to carefully check student records to determine their identified residence prior to assigning their enrollment to the appropriate version of the course. Now that N.U.'s enrollment has expanded nationally, the EDA 618 course has had to be completely redesigned and rewritten to reflect the informational needs of all the students enrolled in the Educational Administration program. Accordingly, the review and updating necessary to insure the accuracy and relevancy of the course material for the twice annual course offering is both time consuming and necessary to maintain N.U.'s high academic standards as well as state certification and regional accreditation reviews.

Cultural and linguistic relevancy: Expansion by U.S. institutions of higher education into the global E-Learning market will present separate and distinct challenges for each academic program discipline offered. It is suggested that course content materials in Teacher Education and Educational Administration programs will need to be carefully reviewed to insure that the material presented has cultural and social relevance for cross-border students. Business programs may need to be modified to reflect the differing political, economic, and governmental systems that exist beyond U.S. borders; real-life environments and situations that these global E-Learning students will be expected to operate within and for which the academic programs must prepare them. Science, Engineering, and

Technology programs may be more easily migrated from primarily U.S. domestic markets to global E-Learning markets; however, there is the issue of metric vs. English measures which will impact course content materials.

We have previously described N.U.'s Premier E-Learning Project (PEP) which incorporates Audio-Visual-Kinesthetic (AVK) elements within the content of each E-Learning course. In recognition of the fact that some students enrolled in domestic U.S. E-Learning courses are hearing-impaired, some of the Visual elements are supplemented by closed captioned English narratives and the Audio elements are replaced by streaming videos of presenters using American Standard Sign Language. Consider the challenges presented by attempting to use such a course in a global E-Learning cross-border environment: (a) Which sign language program is used by hearing impaired students in a particular global region, and how many different streaming video versions of sign language presenters will have to be developed and incorporated within each course?; (b) How many different primary languages and regional dialects are used in the global regions where the course will be offered and which do you use to develop the Audio and closed-captioned Video elements of the course?; and, (c) Where do U.S. higher education institutions find and hire the various linguistic-proficient personnel necessary to develop the Audio and Visual elements?

An interesting cultural relevancy issue recently was noted for a high school chemistry course being taught at a church-based school in the Republic of Liberia where English is a second language and the instruction is primarily in tribal languages. When attempting to teach the students about chemical reaction testing resulting in "pink" and "yellow" solutions, the instructor found that the tribal language being used had no context by which to identify or describe the colors "pink" and "yellow". Another example illustrative of the importance of the cultural relevancy of course content materials is the recent effort by faculty members from N.U.'s School of Education to assist in the establishment of a primary school in a refugee camp in rural Cambodia housing fifteen-hundred Vietnamese families. Dr. Lee, N.U. Chancellor, donated two computers to help establish the school and the director of a small private primary school in Vietnam assisted by developing curriculum and course content materials. As part of this small but multi-national effort, Sr. Loyola from St. Michaels Indian School located on the Navajo Nation in the Southwestern portion of the U.S., donated a complete program that she has developed for early childhood enrichment. This program has been recently adopted by the State of Arizona for use in its public schools. Part of the curriculum includes as teaching tools descriptions of the animals and flora that young students on the Navajo Nation, and throughout the U.S. Southwest, can readily identify within their environment. However, students in Cambodia and Vietnam have no cultural or social reference by which they can identify or understand the concept of a Coyote, Prairie Dog, or Blue Bird let alone the characteristics ascribed to these animals as part of the curriculum. Translation from English into the Vietnamese language became secondary and could only be attempted after the curriculum material was reviewed and rewritten to make it culturally relevant to the targeted student populations. The important point to be made is that any effort by U.S. institutions of higher education to successfully enter the global E-Learning market must include an awareness of the cultural, political, social, and economic environments in which their potential new students live and this awareness must be reflected in the preparation of culturally relevant and appropriate course content materials.

Pedagogical Focus: A recent study examining the growth of online education programs in the U.S. noted that there was evidence that students who enrolled in online courses for the majority of their education programs differed from those students primarily enrolled in on-site, or face-to-face, courses (Castle, Dang, McGuire, & Tyler, 2007). The students enrolled in E-Learning programs tended to be older and often had additional employment and family responsibilities when compared to more traditional younger students enrolled in on-site courses. Because of the demographics of online students, it was suggested that elements of Andragogy (adult-learning), rather than traditional pedagogical concepts, be taken into consideration as U.S. higher education institutions undertake to develop the next phase of E-Learning programs. N.U.'s Premier E-Learning Project (PEP) incorporates elements of andragogy in recognition of the fact that their E-Learning students are on average older (mid-30s) than traditional college-age students and closely match the profile of an adult learner. As N.U. begins to consider entering the global E-Learning market, especially China and Pacific Rim countries, they will need to re-think development of proposed cross-border course offerings to reflect the fact that enrollments from this global region will almost exclusively be traditional college-age students aged 18-22 years (Hezel & Mitchell, 2006).

Delivery systems and Technological capacity: As noted earlier in this paper, Global Industry Analysts (2007) warned that the impact of interoperability standards have the potential to stifle the of growth cross-border E-Learning programs. For many of the countries in the Pacific Rim access to the internet is primarily through a dial-

up modality and available computer hardware and software lags about two years behind comparable equipment and software available to U.S. students. Many of the current elements of N.U.'s PEP courses may not be fully accessible to global E-Learning students in this region because of the conflict with "interoperability" standards noted in the Global Industry Analysts (2007) report. A technical problem was recently experienced that was caused by governmental restrictions; an E-Learning student from an Asian country enrolled in a N.U. PEP-compliant course was unable to access any of the Video elements containing information and material necessary to complete the course requirements. After review, it was discovered that the government of the country in which the students resides restricts access to the internet and does not allow video components. While N.U. was able to download the video components of the course onto a DVD disk and mail it to the student, it totally negated the learning experience and the student's ability to fully interact with other students in the course, especially since N.U. operates on a course-a-month schedule. AVK elements of a N.U. PEP compliant course are intended to provide an "in-the-moment" learning experience but when developing the advanced technology of the course it was not considered that students in other global regions may not have the same full access to the internet as that experienced by U.S. domestic students.

Listed below are the "minimum system requirements" noted by N.U.'s Spectrum Pacific Learning for access to, and fully utilization of, courses offered in the N.U.'s current E-Learning programs. Please note the highlighted areas that represent potentially serious connectivity issues for global E-Learning students.

System Specifications

Operating Systems	Windows 2000 or XP / MacOS 9.1 and OS X
Memory	256 ram MB although **512 MB or higher may be needed when working with multiple applications and streaming video elements**
Connectivity	56 kbps modem, however, **CABLE or DSL equivalent is recommended for streaming video, audio, or interactive activities**
Additional Equipment	Sound card and speakers
Screen resolution	800 x 600 pixels or higher (**recommended 1024 x 768 pixels**)

Web Browsers (it is suggested that pop-up blocker be disabled)

- Internet Explorer 6.0 (recommended)
- Internet Explorer 7.0 (supported)
- Netscape Communicator 7.1 (supported)
- Netscape Communicator 6.2 (supported)
- Safari 2.0 (supported for OS X)
- Safari 1.2 (recommended for OS X)
- Firefox 1.x (supported)
- Firefox 2.0 (supported)

An indispensable element of any E-Learning system is the availability of a professionally staffed "Help Desk" to assist both E-Learning students and instructors. N.U.'s use of the e-College system for E-Learning course delivery insures that their students have access to e-College's help desk that is available 24 hours a day / 7 days a week / 365 days a year. A potential problem arises, related to the linguistic issue noted earlier, once N.U. enters the global E-Learning market: will the help desk have sufficient linguistic capacity to adequately communicate with students for whom English is a weak second language?

Faculty Development: E-Learning programs and the technology driving and supporting them increase at an almost exponential rate. Consider N.U.'s experience with E-Learning having begun in April 1998 with two internet-based online courses in the School of Education and a total enrollment of 39 students to currently offering nearly 3,000 online courses each month, with sixty-six percent of the University's active students taking at least one of their courses online while forty-two percent of the University's students are enroll online for a majority of their courses. In the space of less than ten years, the university's entire academic programs and learning delivery systems have evolved from an exclusively on-site learning paradigm to a majority E-Learning paradigm. This is a major paradigm shift that has major impact upon faculty who remain the academic content area experts and the critical central element of the learning delivery system.

Unfortunately, faculty at most U.S. higher education institutions have not had the opportunity to grow up in the technology-rich electronic environment experienced by the majority of their students. This is a kind way of stating the obvious; most faculty members at U.S. higher education institutions lack the level of computer skills of the students that they endeavor to teach in the E-Learning environment. The N.U. Provost's Office created a Center for Teaching Excellence which provides best-practices seminars for faculty and, in conjunction with SPL provides specially-focused instruction for faculty teaching in the E-Learning environment. The challenge in both on-site and E-Learning environments is same—reaching and drawing students into the learning experience—however the E-Learning environments necessitates new skills to be able to meaningfully connect with students.

While learning basic computer skills necessary for teaching in the E-Learning environment can be daunting, but surmountable, for most faculty members, the new requirement to develop AVK course content elements for PEP compliant courses presents a new and higher level of challenge for the overwhelming majority of faculty members; "overwhelming" can be used as a descriptor in this context! In order to address this problem, a key faculty member within each academic school at N.U. has been identified as the "PEP Coordinator"; their function is to assist and instruct faculty members on a colleague-to-colleague basis to develop AVK elements for their E-Learning course master templates. This peer relationship approach has worked well since the PEP Coordinator is perceived by the other faculty members as someone who understands their concerns regarding curriculum and pedagogy/andragogy issues but who can also provide them with the technical expertise they need in a language that they can understand.

Conclusions and Recommendations

Clearly, U.S. higher education institutions must successfully continue to move into the global E-Learning market, and do so at a increased rate, if they wish to maintain their current enrollment levels. The demographics of U.S. student age populations show that they are diminishing and will continue to do so in the foreseeable future and the challenge presented by emerging institutions of higher education in other countries has already made inroads in the flow of foreign students to the U.S. Several factors have been identified challenging U.S. global E-Learning efforts and they serve as a guidepost for how U.S. academic program offerings must be sensitive to the cultural, political, social, economic, and technological environments of other countries if they are to be successful providers of high quality cross-border education.

The potential technological problems identified—characterized by Global Industry Analysts (2007) as interoperability standards—gives rise to the possible need for a two-tiered, or even a multi-tiered, approach by U.S. higher education institutions for the delivery of E-Learning programs. One higher technological course structured system for domestic use and in those other countries meeting current U.S. student internet connection, hardware, and software capabilities and one or more other delivery systems with lesser technological enhancements reflecting regional global internet access restrictions and lesser hardware and software capabilities.

The factors identified and discussed as challenging the efforts of U.S. global E-Learning efforts for the most part point to the need to develop articulation agreements and working partnerships with institutions of higher education in other countries. Instead of adopting a competitive stance, open and honest dialogue must begin to identify academic program areas in which both institutions can benefit and share expanded enrollment bases. Cooperative programs with revenue-sharing may offer a way to address the vast disparity between U.S. E-Learning tuition costs and local per capita incomes levels; for most countries located on the Pacific Rim, the average cost of completing a U.S. based academic program of study far exceeds, by double-digit multiples, what students or their families can annually earn. However, cooperative or shared programs create their own unique sets of issues ranging proprietary course materials to questions of curriculum control and supervision of faculty.

In closing, the need for U.S. higher education institutions to more forcefully compete for global E-Learning is both immediate and great but any efforts must be coupled with careful analysis, planning, and an understanding of the dynamics and academic needs of the students that they hope to attract. The dilemma is that in order to be successful, U.S. higher education institutions need to move with all haste but also with careful deliberation and planning.

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