The Onset, Evolution, and Growth of Online Education;
A Case Study of National University's School of Education

CASTLE, Sidney R.
National University
NEU, Beverly
University of Southern California

Abstract: This study examines the development of National University's School of Education online system and its dramatic growth and evolution over a period of ten years. Both online student and instructor attrition rates are noted and discussed. The findings of a multi-year research study attempting to assess the effectiveness of the online system are discussed and examination is made of the relationship between student and instructor online course participation rates and student reported end-of-course assessment scores. The implementation of a special National University Presidential Commission on Online Education, the June 2005 final report, and the current implementation of some findings and recommendation are discussed. New directions for the online system were examined as well as emerging issues which need to be considered are also identified and discussed. The paper concludes with a brief discussion of proposed future research items related to the School of Education's online system.
Keywords: Online, Attrition, Assessment, Planning

Introduction

As the United States (U.S.) Department of Education noted in their 2003 report on distance learning, 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, began a distance learning program in September, 1996 with 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, 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. Overall current online average class size is seventeen students but, this varies across the 9 undergraduate degrees, 5 areas of concentration, 2 minors, 8 certificate programs, 18 graduate degrees with 11 areas of specialization and 12 credential programs currently offered online.

The growth of the National University online 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 President, 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. This paper examines some of the recommendations of the President's Commission noted in their June, 2005 Final Report as well as the findings from a multi-year research project examining the dynamics of the School of Education's online program. It should be noted that the School of Education represents approximately 50% of National University's total enrollment and has from the beginning been a leader in the development of the university's online program. In contrast to the initial offering in April 1998 of two online courses with a total enrollment of 39 students, current monthly enrollment in the School of Education's online program averages 6,000 students with 250 instructors teaching multiple sections of online courses.

Online Enrollment Attrition Issues

In spite of the dramatic growth of the online system, National University's School of Education has noted a higher attrition rate for online courses than for traditional on-site/on-campus course offerings. The School of Education currently experiences an attrition rate of 18% which is considerably less than the high of 70-80% reported by Flood (2002) in Dagger & Wade (2004), or the 20-50% reported by Diaz (2002). The School of Education's higher online attrition rate when compared to similar courses taught in on-site/on-campus settings is however consistent with the 10-20% higher attrition rate that Carr (2000) estimated for online vs. traditional on-campus education.

What then explains the relatively higher attrition rate for School of Education online course offerings? A multi-year assessment of the School of Education's online program (Neu & Hoban 2001, and Hoban, Neu & Castle, 2002, 2003, & 2004) found in 2003 that, when queried, students who dropped out of online courses indicated that the self-directed nature of online instruction and a lack of requisite technical skills were primary factors in their decision. Not all students easily adapt to the self-directed nature of online instruction and seek rather the traditional classroom setting where the instructor and peers afford a sense of structure and external motivation. Since National University students tend to be slightly older than traditional public university students, and they normally work full-time and many have family responsibilities, they do tend to be more self-motivated and this may explain the relatively low rate (18%) of School of Education online attrition.

A problem not normally reported in online research literature is the attrition rate for online instructors. Hoban, Neu & Castle (2003) reported that approximately 10-12% of first time School of Education online instructors elect not to teach additional online courses. Regional

accreditation and California state requirements for credential programs require a minimum of 40.5 contact hours for National University's one-month course formats. In contrast to the 40.5 contact hours for on-site/on-campus instruction, scheduled as nine course sessions each four and a half hours in duration, online instructors in the same courses were found to have spent an average of 64.8 hours enrolled and actively working in their courses. An additional burden for online instructors is the School of Education requirement that all student course work and queries be responded to within a 24-hour period; since many working students are active in online courses during evening and week-end hours, online instructors many times find themselves working in their assigned courses seven-days a week. While an initial lack of technical skills necessary to successfully teach online courses was experienced by some first-time online instructors, recently developed pre-course training sessions for both students and online instructors has alleviated this problem. The pre-course training sessions for online instruction were developed as a result of the recommendations contained in the N.U. President's Commission on Online Instruction in its June 2005 Final Report and are semi-annually reviewed and modified to insure that all online participants are adequately prepared for the technological challenges of online instruction.

Assessment of National University's School of Education Online Academic Program

     National University conducts an end-of-course assessment for all on-site/on-campus and online courses in which students are asked to assess the quality of the instruction received, the level of learning achieved, and the role that the instructor played in their learning. The end-of-course assessment instrument primarily utilizes Likert-scale responses (1-5) with some open-ended essay responses.   An early study (Hoban, Neu & Castle, 2002) examined the responses from three groups of students in the School of Education's graduate Educational Administration program: (1) students primarily enrolled in on-site/on-campus courses; (2) students primarily enrolled in online courses; and, (3) a cohort of Alaskan students mostly residing North of the Artic Circle who took all of their courses online. It was found that all three student groups reported equally high gains in knowledge, skills, and acquisition of principles and theoretical concepts with no statistically significant differences noted between groups. However, there was a statistically significant difference ($p<.05$) noted in student ratings of their acquisition of critical thinking, problem-solving, and decision making skills noted between on-site/on-campus students ($x = 4.20$) vs. the ratings of online students ($x = 3.92$). A similar statistically significant difference ($p<.05$) between responses of on-site/on-campus student ratings ($x = 4.22$) and online students ($x = 4.01$) was noted when they were asked to assess their ability to better apply what they learned with diverse populations and situations.

     Statistically significant differences at the .05 level were found in student assessment of course instruction between on-site/on-campus students ($x = 4.35$) and online students ($x = 4.07$); this finding was thought to be the most critical portion of the early study. While, in general, students in on-site/on-campus courses rated their learning and class experiences quite similarly, early online instruction was somewhat limited in pedagogical strategies. It was much harder, but not impossible, to do group work and the use of videos and role-playing simulations presented quite a challenge in the early online environment. Many of these issues were addressed by the N.U. President's Online Commission and resulted in acquisition of advanced synchronous communication technology and the development of the National University Professional E-Learning Project (PEP) initiative which will be discussed in the next section of this paper.

Two notable findings were found in a follow-up study (Hoban, Neu & Castle, 2003) of the dynamics of the National University School of Education's online program. The first finding was that overall online course grade point averages (GPA) were lower (x = 3.47) than average GPAs for comparable on-site/on-campus courses (x =3.63), p<.001. It was suggested that the online version of the courses may be more rigorous than those offered on-site/on-campus. Another possible explanation advanced was that online students, without the direct contact and scrutiny of instructors, perhaps did not either apply themselves to the degree than did their on-site/on-campus counterparts, or that absent the tutoring/mentoring of an instructor, they did not fully grasp the material to the degree they could have done in an on-site/on-campus setting. This last explanation, however, was denied by several online students who were contacted for further clarification of their responses. A third explanation that was advanced was that on-site/on-campus course instructors, perhaps because of their physical proximity to their students, tended to personally identify them resulting in more liberal grading practices.

The second notable finding of the Hoban, Neu & Castle (2003) study centered on an examination of the correlation between student and instructor time spent in online courses and the resulting student responses on the end-of-course assessment instrument for quality of the instruction received, level of learning achieved, and the overall assessment of the course instructor. While online students were found to spend slightly more time enrolled and actively working in online courses (x = 41.6 hours) than did students in similar on-site/on-campus courses (40.5 hours), neither the overall time they spent enrolled and working in the course, nor the time spent working in any of the course component content areas, resulted in a meaningful relationship to their assessment of the quality of the instruction they received or the level of learning they achieved. The time spent by the instructor in the online course, however, was a factor that correlated positively with student assessment of online courses.

A moderate, or marked, positive relationship was found between the students' assessment of the instructor and the time that the instructor spent in those components of the early online courses (Course Home and Course Tools) that afforded the instructor an opportunity to communicate directly with the online students in the form of course announcements, emails, and chat rooms. The chat room section of the course was used by some online instructors for "online office hours", a means by which the instructor and the students could interact in "real-time" to discuss course-related issues. It was interesting to note that online students' overall assessment of the instruction they received, in contrast to their performance of their instructor, was found to have a higher positive relationship with the time spent by the instructor in the Course Home and Course Tools sections of the course. The obvious conclusion was that the personal attention provided by the instructor was more important than who the course instructor actually was. A final reported finding was that the total overall time the course instructor spent in the course was found to have a moderate positive correlation to the students' responses to an assessment question that asked if they "gained significant knowledge and skills" as a result of the course.

New Directions for National University's Online Program

As noted earlier, the N.U. President's Commission on Online Instruction was 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. Three overarching themes emerged from the President's Commission: (1) The importance of comprehensive training programs for all involved in the online educational enterprise; from students who take online courses, the full and part-time faculty who design and teach the courses, to those in student services who support the students and faculty by managing the increasing demands placed upon the incorporation of emerging technology; (2) The need to plan for innovation, perhaps as yet not designed or developed, which will impact the delivery of online courses over the next ten or more years—this includes developing the flexibility within course design and monitoring for a strategy to capitalize on emerging trends; and, (3) The need to identify, engage, and support new market segments since online instruction has the potential to reach virtually every corner of the globe; strategies are needed to reach those potential students that are as innovative and creative as the courses we offer.

There are major recommendations from the President's Commission Final Report which are currently being implemented while others are planned for development and implementation over the next several years. The first major innovation has been the acquisition of iLinc and Elluminate synchronous communication technologies which afford an opportunity for "real-time" audio and visual communications between online instructors and students. Elluminate synchronous technology is currently provided as part of the contractual agreement that National University has with the eCollege system and is used for scheduled online course office hours and class sessions in which all participants in the course, students and instructor alike, can be seen and heard during online courses. This technology also allows for students to schedule sub-group meetings to work together on group projects in a manner similar to that experienced in on-site/on-campus course settings.

The iLinc synchronous technology is being used to fill an existing need for an instructional delivery system in those instances where insufficient enrollments exist to justify the scheduling of an on-site/on-campus course offering and students, for whatever reason, elect not to take the same course in the online environment. Rather than self-directed learning noted in an online course, students can enroll in a "web-based course" that is scheduled to meet at regular dates and times, similar to that experienced in the on-site/on-campus environment, but they can do so either from their own home, work setting, or from a computer lab in one of National University's many academic instructional centers. The instructional delivery system is provided through the internet and, by the use of web-cams, microphones and headsets, and the "whiteboard" function in iLinc, students and instructors can participate in a setting similar to that of an on-site/on-campus setting except that the actual physical setting of the course can potentially be world-wide. Students can "raise their hands" to be recognized by the course instructor, by clicking on a hand symbol located in the upper left-hand corner of their computer screen, and the instructor can then grant them the course floor so that they can be seen and heard by all other participants in the course; again, this closely approximates the educational learning experience in on-site/on-campus course setting.

Another major initiative from the President's Online Commission is the development and implementation of the earlier mentioned Professional E-Learning Project (PEP) which is intended to redesign and reformat all National University online courses by including three major elements throughout all course components: (a) enhanced audio-visual materials including brief streaming video segments; (b) written text—lectures and discussion topics—with a

corresponding set of audio files (mp3) for each of the written material items which can be downloaded and replayed by students; and (c) kinesthetic elements which enhance the learning experience by providing student with interactive activities in which they can apply and master the concepts being taught in the course. This is a major current undertaking with a target completion date of November, 2007 for conversion of all National University online course templates to full PEP compliance guidelines.

Emerging Problems to Consider

    A major consideration of any online instructional system is the hardware, type of internet connection, and technological background that a student has to rely upon to fully access the online course offerings. In the midst of planning for the development and implementation of new and exciting technologies that we believe will afford further enhancement of our online systems, we all too often overlook the weakest-link in the entire process; the student's ability to fully interface with our online system. Some internet provider systems, student personal computers, and the outdated computer operating systems resident in many student owned computers, cannot fully accommodate the enhancements, such as streaming videos and synchronous technology, which we are attempting to implement into our online systems. The earlier mentioned cohort of Alaskan Educational Administration students who resided North of the Artic Circle most probably could not fully avail themselves of National University's current online system course offerings. Do we attempt to create and maintain a two-tier system which includes both fully enhanced courses as well as basic-level courses so that possibly technology-deprived students can still participate in the educational enterprise? As an alternative, do we, like some other higher education institutions consider raising tuition rates in order to provide all newly enrolled students with a laptop computer that has the capacity and software to fully access our online course offerings? If we were to consider this last item, at what point do we begin to close out older, less technology-sophisticated courses which existing students may still need to access to complete their academic programs of study?

    National University's School of Education online system already has a significant number of national and international students and their number are steadily increasing. If we use iLinc synchronous technology to implement and schedule "web-based courses", how do we accommodate the diverse time-zones that exist between California-based instructors and our national and international students? For example, Hong Kong is in a time-zone that is eight (8) hours ahead of California; consequently, the normal start-time of 5:30 pm for a California on-site/on-campus course, which web-based courses attempt to emulate, would result in a 1:30 am start-time for a student residing in Hong Kong. Finally, as noted from the problem posed by diverse international time-zones, we are also faced with the issue of accommodating international students in their native languages in order to best maximize their learning experience.

    The third identified theme of the N.U. President's Commission on Online Instruction was *"The need to identify, engage, and support new market segments since online instruction has the potential to reach virtually every corner of the globe"*; it is unacceptable to think that all future students we seek to enroll must accommodate to our language and cultural norms in order to participate in our course offerings. However, this in turns creates the need for professional online faculty members and technical support staff who can accurately translate course materials

into several diverse languages and then interact with the students in both the course academic and advising environments to meet the student's academic program needs.

Another pragmatic issue then follows; how many different master course templates will we have to create and maintain as we attempt to "support new market segments"? Again returning to the example of the cohort of Alaskan Educational Administration students who resided North of the Artic Circle, a special master course template was established for the EDA 618A – School Law course in order to cover both Alaska and California state educational codes. Later, as more students residing outside of the State of California began to enroll in the School of Education's Educational Administration online program, we had to expand the School Law course master while maintaining a separate California-only school law master course template for those students who resided in California. The technical support group which staffed enrolled students into online course sections had to carefully first identify where each School Law course student resided before they could be enrolled in the appropriate online School Law course section. We also soon found that we had to maintain and update the special School Law master course template on a more frequent basis in order to insure that content material reflected any changes in legislation which a particular state passed that significantly changed their educational code. The implementation and integration of emerging technology into online educational systems and expanded new market segments are commendable goals, but each in turn creates new technological and procedurals issues that must be quickly addressed in order to maintain a continuing leadership role in online education.

Proposed Future Research

As the School of Education's online system moves to full PEP compliance, concurrent efforts need to be made to identify the hardware, software, and technological capacity of new and existing students and to develop strategies for them to be able to fully access and benefit from the enhanced course offerings. An intriguing area of research already begun is a longitudinal study of the possible impact of iLinc and Elluminate synchronous technology in reducing National University's online student attrition rates. Further, what impact will the new synchronous technology have on student achievement and learning, and can we devise better means of measuring true student learning and long-term retention of principles and concepts?

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