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ABSTRACT

Nova Southeastern University (NSU) in Florida is among those progressive institutions that are attempting to improve their distance education programs by creating a more student-centered environment. NSU offers master's- and doctoral-level distance education programs in computer science, information systems, information science, and computing technology in education. The computer-based learning software used by NSU is designed to work on a technological platform that represents the least common denominator between NSU and students' homes and/or workplaces. The software used by NSU runs the gamut from completely asynchronous to totally interactive. The most widely used interactive software, the Electronic Classroom, was developed and copyrighted by NSU in 1986 and is designed to emulate a blackboard session conducted by a professor with students having the ability to ask questions. NSU has also developed an electronic library that interacts with NSU's Einstein Library and other libraries/databases throughout the world. Among the other tools developed by NSU's distance educators are the following: World Wide Web home pages to provide asynchronous learning environments, programming language compilers, and an electronic mail system. NSU is hoping that lower costs and increasing capabilities of hardware and communications technology will lead directly to the development and use of audio, graphics, and full-motion video programs for distance learners. (MN)

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From Teaching to Learning: Transition in Distance Education

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Abstract

This presentation describes the evolution of the need for distance education as well as the call for reform of the predominant educational model in America. It is argued that, since many critics think that a complete revamping of the manner in which we teach would necessitate a radically new paradigm, the evolution to distance education provides the perfect platform for such change.

In an effort to address the need for distance education, as well as attempt to move from a totally teacher-centered instructional paradigm to a student-centered learning paradigm, Nova Southeastern University's School of Computer and Information Science is investigating new tools and techniques for the delivery of graduate level education. These tools are developed in an effort to not only foster efficient learning but to address constructs such as personality, academic motivation and learning style as well. These tools are delivered in both an interactive as well as an asynchronous mode.

The presentation concludes with a demonstration of such tools as the Electronic Classroom, the Electronic Library and instructor developed Internet home-pages.

Introduction

Employment in today's information-processing society often requires high entry-level educational credentials as well as a need for ongoing personal and professional education. Unfortunately, the same responsibilities that cause the need for additional education often limit the amount of time a person can spend in an educational environment. For this, and a variety of other

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reasons, distance education, in an assortment of forms, has become a viable alternative to traditional classroom instruction in meeting the educational needs of students. Alternative instructional methods, including telecourses, classes offered off-campus and computer-based and computer-mediated instruction, present many opportunities for educational institutions willing to make the economic, logistic and pedagogical commitments necessary to initiate and maintain such a program.

For many institutions, the ability to react to these growing economic and logistic commitments presents few problems, as growth in higher education has led to dramatic change in these areas throughout the 20th century. Many diverse events, including the transition of our workforce from an industrial to an information base, the GI Bill of Rights and the Civil Rights Act of 1964, have forced institutions of higher education to dramatically expand and redefine themselves in the past fifty years.

The manner in which we teach our students, however, has changed very little during this same time period. Seymour Papert (1992) notes that it is highly likely that a teaching professional from 100 years ago would feel comfortable in the typical classroom of today, by relying on the traditional didactic teaching methodology. In light of the advancements in educational theory, this reluctance to change our pedagogy has been the focus of much criticism throughout the years, with recent literature calling for a transition from the teacher-centered environment to a more student-oriented "learning paradigm" (Barr and Tagg, 1995, p. 13). This learning paradigm not only calls for changes in the roles of both students and teachers but radically redefines learning theory as it accepted today.

It becomes obvious, then, that the educational institutions of today are faced with reacting to two, seemingly complementary, issues; the provision of much desired distance education

programs and the call for a more student-centered environment. It seems logical that learning at a distance would be the perfect scenario for changing to a more student-centered modality. Where better than to shift the responsibility for learning onto the shoulders of the persons needing and desiring to learn?

Despite the calls for and the obvious need for change, there is resistance at many levels. Well-meaning accreditation agencies, highly placed educational administrators and altruistic benefactors all want to see the business of education carried out in a manner that they find suitable, generally speaking, the manner in which they themselves were educated. Many institutions have somewhat addressed this issue by creating distance education models that try to emulate the "seat-time paradigm" seen in most institutions of higher learning. Other, more progressive institutions, are attempting to abet the automation of the traditional model by providing resources that not only meet the needs of the distance education student but reinforce the shift to a more learner-oriented paradigm.

Background and Setting

Nova Southeastern University, located in Ft. Lauderdale, Florida, offers masters and doctoral level programs in computer science, information systems, information science and computing technology in education. In these programs, which range from eighteen to thirty-six months in duration, students are offered a variety of settings in which to take their course work. Options at the doctoral level include an institute-based format where students sit for one week of instruction at the start of the semester or a cluster-based format where students meet for two extended weekends during the semester. Both of these formats are part of a six-month term, the remainder of which is devoted to computer-mediated instruction. Another option, open to masters level students, is a three-month period of independent study during which the student sits for no formal instruction but is required to participate in computer-mediated instruction.

Computer Mediated Tools Used in NSU's Distance Learning Environment

The aim of these programs offered by NSU is to afford students the opportunity to take graduate level course work without a sense of being time or place bound. With this in mind, the computer-based learning software used by Nova Southeastern University is designed to work on a technological platform that represents the least common denominator between NSU and the student's home or workplace, that being interaction between NSU's computing system and a student's personal computer over traditional telephone lines. The constraints of these platforms limit the development of tools to be primarily text-based in nature. Future availability of faster, more affordable telecommunications equipment and transmission technology that supports a larger communications bandwidth will allow for the development of a more graphical user interface.

The computer-mediated software used by the SCIS runs the range from completely asynchronous to totally interactive. It should be noted that there is no one prescribed methodology that all professors in NSU's School of Computer and Information Sciences adhere to. Many instructors choose the teaching tools that they are the most comfortable with and those which best meet the needs of the students in the particular class they are teaching.

The Electronic Classroom

The most widely used interactive software, *The Electronic Classroom (ECR)*, was developed and copyrighted by NSU in 1986. The software is designed to emulate a blackboard session being conducted by a professor with students having the ability to ask questions about what is being presented on the blackboard.

In order to use the ECR, sessions are initiated and hosted by professors signed into the main

computer at Nova Southeastern University. Students wishing to participate in the session sign into the same system and, via a series of commands, enter into the session. At that point in time, the professor has control over the computer screen, which is divided into two sections. The top two-thirds of the screen is used for input by the teacher and can be used for freeform text, the display of ASCII-based graphics or the demonstration of other software or commands that are available for use in the UNIX system. The names of students participating in the session are displayed on the bottom third of the screen. If the student desires to ask a question, they, again via a set of commands, electronically "raise their hand" and are recognized by the instructor. When the instructor acknowledges the student, the bottom third of the screen is then used by the student to type in the question or comment they have.

Many students and the faculty find the non-graphical format of *The Electronic Classroom* to be too limiting for instruction in some courses of study, but appreciate the interactive nature whereby students are actually able to work, in real-time, with the instructor. Many instructors have recognized this interaction to be the predominant feature of *The Electronic Classroom* and, in lieu of trying to conduct a lecture, use it for question and answer sessions as well as counseling and advisement sessions.

The Electronic Library

A major consideration for any institution offering distance education courses is the provision of library services for their students. Not only is this important from a pedagogical perspective, accreditation agencies clearly state this as one of their "musts" for programs of this type. In order to address this issue, Nova Southeastern University has developed *The Electronic Library (EL)*, a software system, based on the main computer, which interacts with NSU's Einstein Library as well as other libraries and database systems throughout the world.

Using *The Electronic Library*, students are able to do literature searches, interact with librarians, order articles and reprints, as well as request books to be checked out of the library and mailed to their home. Nova Southeastern University librarians constantly upgrade the system to afford the distance education student the ultimate ease in locating and obtaining the resources that they need.

Instructor Developed Internet Home-Pages

The advent of the Internet and the World Wide Web, have seen many persons and organizations scrambling to advertise their good or service via a personal home-page. Professors at NSU have seized the opportunity to take this same technology and provide high quality, asynchronous learning environments for their students. Professors use their personal home-pages to store information such as tutorials, syllabi, examples of student work and class notes and updates in an easily obtained format. Other professors embed links within their personal home-page that enable the student viewing the page to transfer to other computer sites around the world that might be of some interest or importance to the class. Due to the dramatic increase in the numbers of sites of this type, both instructors and students alike have found that, in many instances, a direct connection may be made to a critical source of information.

Other Tools and Software Available to the Distance Education Student

Other tools, such as programming language compilers, spelling and style checkers, statistical software packages and database systems are also available to the distance education student at NSU. Probably the most important and widely used tool, however, is electronic mail. Students and faculty alike have found that the extensive use of e-mail cuts down on the amount of time spent wasted trying to contact one another by telephone, as well as providing permanent documentation

of any conversations that are held. Students are also highly encouraged to use the electronic mail system to interact with others students in the program. The faculty and administrators, who highly encourage this interaction between students, feel that this can possibly address issues dealing with student solitude and attrition from the program.

The Future of NSU's School of Computer and Information Science

As indicated earlier, changes in hardware and communications technology will greatly improve the quality of services that NSU is able to deliver directly into a student's home. Lower costs and increasing band-widths will lead directly to the development and deployment of audio, graphics and full-motion video. Combining this with the ultimate goal of being able to "deliver any class, at any given time, to any location" promises many exciting things in Nova Southeastern University's future.

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