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ABSTRACT

This paper describes the University of Montana's efforts in migrating an undergraduate instructional media course from a traditional stand-and-deliver model to a World Wide Web-based electronic classroom. The rationale is presented, including the background for the decision making move and a description of similarities and differences of both delivery methods. The transformative approach, which focuses on user-centered design, placing preservice teachers in the center of their own learning, is described. Instructional technologies are presented within the framework of cognitive learning, and reflective thinking is highlighted. The discussion examines the challenges of creating a student-centered learning environment for a majority of students and faculty embedded in traditional teaching methodology. This model features assignment modifications, physical delivery revisions, electronic communication components, time commitment, and educational materials. A dialogue is provided concerning the obstacles and victories experienced by faculty and preservice teachers while moving a course of this nature to the Web. The paper concludes with summations and recommendations for similar undertakings. (Contains 23 references.) (Author/AEF)

Restructuring Preservice Teacher Instructional Media Courses

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Abstract: This paper describes one university's efforts in migrating an undergraduate Instructional Media course from a traditional stand and deliver model to a web-based electronic classroom. A rationale includes the background for the decision making move and a description of similarities and differences of both delivery methods. A transformative approach focuses on user-centered design placing preservice teachers in the center of their own learning. Instructional technologies are presented within the framework of cognitive learning and reflective thinking is highlighted. Discussions examine the challenges of creating a student-centered learning environment for a majority of students and faculty embedded in traditional teaching methodology. This model features assignment modifications, physical delivery revisions, electronic communication components, time commitment and educational materials. A dialogue concerning the obstacles and victories experienced by faculty and preservice teachers (while moving a course of this nature to the web) is provided. The paper concludes with summations and recommendations for similar undertakings.

Introduction

"New prophets of hyperreality...argue that the computer is the final road to human freedom because it permits each of us to create our own worlds, to escape the straightjacket of linear text, to make thought a collage of insight" (Aronowitz & Giroux, 1991; p. 192; Burke, 1996). Researchers find today's students have shorter attention spans, are less able to reason analytically, to express ideas verbally, and to attend to complex problems. America's increasingly fast-paced lifestyles, paired with a bombastic media offering immediate visual gratification, is generating students who are characteristically nonconformist toward traditional modes of academic learning (Healy, 1996). Furthermore their exposure to computer programs and TV editing techniques tend to compress, extend, and distort normal time-space relationships, becomes a critically important element in learning (Sylwester, 1997). "The result of technology literate students and an antiquated educational system is...a growing educational 'crisis' of malcontent between [students] and their instruction" (Fulton, 1995).

Students of today and tomorrow will arrive in classrooms with new skills and needs (Kennedy, 1996; Fulton, 1998). "Denying a student easy and extensive exploration of electronic technology helps to create an electronically hampered adult in an increasingly electronic culture" (Sylwester, 1997). Students who also learn to effectively assimilate, reflect and question what they experience are better equipped to prevail in our exponentially accelerating cyber lifestyle.

Our post-secondary educational institutions, modeled on an industrial age assembly line approach, facilitated by 19th century educational technologies, where students remain stationary receptors and information comes to them in prefabricated orchestrated units, is no longer pedagogically sufficient. A

creative effort is needed to switch "the educational process from package to discovery..." (McLuhan & Fiore, 1967, p. 101).

Paolo Freire's *Influential Pedagogy of the Oppressed* establishes a theoretical starting point for rethinking "teacher-centered teaching and in favor of student-centered teaching". This transformative approach places students in the center of their own learning while fostering higher-order thinking skills such as synthesizing and integrating information, problem solving and taking responsibility for their own learning (Freire in Gallop, 1995, p.66; Aronowitz & Giroux, 1991, p. 15; Miliken, 1997). What was once considered an appropriate pedagogy for decades, when teachers were ordained reliquaries and dispensers of knowledge and "teaching was telling and learning was memorizing" (Fulton, 1998), is no longer applicable. Our preservice teacher educational system needs to come to terms with the needs of a new generation of students who are entering into a new millennium-ten decades promising access to technologies which were once contemplated as fantasy.

Preparation of preservice teachers to use and integrate technology into their own future classrooms must be pursued. The National Council for Accreditation of Teacher Education (NCATE) reports:

> Classroom teachers hold the key to the effective use of technology to improve learning.... The nation's teacher educational institutions must close the teaching and learning gap between where we are now and where we need to be.... Teacher education institutions must prepare their students to teach in tomorrow's classrooms... (Cooper, 1997).

Northwest Educational Technology Consortium (NETC) concurs:

> Rather than wait to see what tomorrow's classrooms will be like, [preservice educational institutions] must experiment with the effective application of computer technology for teaching and learning in their own campus practice. Today's teacher candidates will teach tomorrow as they are taught today (Queitzsch, 1997).

The Study

Several months ago, The University of Montana School of Education readily embarked on a project to change the content and approach toward teaching the required preservice teachers' one credit instructional media course entitled *C&I 306: Instructional Media and Computer Applications* (Robinson, Brewer, & Erickson, 1998). By placing course content on a web server, we both modeled and encouraged preservice teachers to learn via non-traditional educational technology. "Without appropriate modeling of integration of technology into coursework, future teachers cannot be expected to develop desired skills" (Jinkerson, 1995). Our overall goal in this class was three-fold: 1) to encourage preservice teachers to become educational technology advocates by creatively implementing appropriate educational technology within the walls of their K-12 classrooms; 2) to develop preservice teachers' critical and reflective skills in assessing the power of different media for expression and learning; 3) to nurture and grow as educators (as lifelong learners) with a heightened awareness for the potential of technology as an effective learning tool.

This course was designed to familiarize education majors with a variety of non-print media resources available for supporting K-12 instructional design. Computer technology (including multimedia presentations, educational computer software, telecommunications (including use of the Internet, browsers and the World Wide Web), and other technologies for preparation of curriculum enhancing instructional materials were integrated into the syllabus.

Since engaging the student in the learning process is the keystone to a solid beginning, we placed a primary focus on using educational technologies that most effectively enhance the teaching and learning process. Without the ability to incorporate electronic media into their professional curriculum design and classroom management, preservice teachers will not have the aptitude to make informed choices regarding essential educational tools (Caine & Caine, 1994). To this end, we used the *International Society of Technnology in Education (ISTE) Recommended Foundations in Technology for All Teachers* (1998) and the *U.S. Department of Education Priorities: Major New Initiatives for Fiscal Year 1999* (1998) as guides along with *The Big Six Skills Model of Information Problem-Solving* (Eisenberg & Berkowitz, 1998). C&I 306: Instructional Media and Computer Applications serves as a step toward preparing preservice teachers for the real world-the information age paradigm.

Traditional and Pilot Course Similarities

Course assignments sequentially build on one another in a scaffolding mode. The overall purpose of each project is to explore how to adapt media for classroom instruction which are responsive to each student's area of educational certification. Instructional strategies are based on assisting individuals in overcoming any underlying fear of working outside comfort zones and predetermined technology bias (Cooper, 1995; Kortecamp & Croninger, 1995; Kovalchick, Millman, & Hrabe, 1998). Students, while developing the skills and strategies appropriate to the use of educational technology, will be able to: a) demonstrate the basic operations of educational technology tools including camcorders, VCRs, CD-ROMs, laser discs, copying machines, televisions, projectors, etc. and the ability to explain these operations to others; b) select, evaluate, and use instructional software and other developmentally appropriate materials and resources appropriate to his/her area of specialization; c) become aware of a variety of telecommunications resources and techniques for retrieving, analyzing, interpreting, evaluating, synthesizing and communicating information and ideas; d) become familiar with the various aspects of instructional design and apply them to the production of instructional materials; e) create instructional software and multimedia presentations for use at suitable grade levels and subject areas; and f) communicate electronically with colleagues.

Both classes used extensive corresponding syllabi. Differences were minor. A chronology of Assignment descriptions, due dates, significant adjunct URLs and project evaluation criteria were outlined. E-mail reflective journals and inquiry communications were an integral part of the curriculum. "In many technology classes, students are reluctant to ask questions during class because they are embarrassed or feel that they are the only ones experiencing problems. E-journals provide a safe way to ask questions, converse with, and offer suggestions to instructors about the class" (Kovalchick, Millman, & Hrabe, 1998). Carefully composed step-by-step guides directed each phase of instruction. Equipment included Windows-based and Macintosh computers connected to the Internet and the following peripheral devices: flatbed scanner, videocassette recorder, camcorder, laser disc player, audio disc player, QuickTake camera. Additionally, over 200 instructional software programs were available via The University of Montana Teacher Resource Center. Available software guided students through an evaluation process used to determine appropriate educational software within the perimeters of instructional design.

> Projects included individual and cooperative group environments keyed into lesson planning. The defining characteristic of technological knowledge, however, is its relationship to activity. Although technological knowledge is considered to have its own abstract concepts, theories, and rules, as well as it's own structure and dynamics of change, these are essentially applications to real situations (Herschbach, 1995, p. 33).

Students have limited access to lab equipment outside of scheduled class activities. Unless they had the software programs on their own personal computer, lab time was a problem. E-mail and Internet access can be accomplished from any campus computer site but current software programs and required hardware are not readily available.

Overall, students' technical knowledge in both the web-based and the traditional paper-based course were comparable. Prerequisites included either a three-credit computer science course (CS 171: Communicating Via Computers) or a three-credit business education course (BITE 183: Integrated Software Applications and Multimedia). A few students in each section somehow bypassed the prerequisite and took the course simultaneously with either CS 171 or BITE 183. Student experience ranged from limited computer proficiency to basic word processing and presentation software skills. Most were somewhat familiar with some application of the Internet and had previously established e-mail accounts.

Traditional and Pilot Course Differences

Traditional Classroom

The traditional course, composed of 22 students, was taught in the spring semester of 1998. Students met in the Educational Technology Lab for two hours once a week for sixteen weeks. Teaching C&I 306 via the traditional classroom model ran into many obstacles. Even though both traditional and pilot courses endorsed the importance and advantages of incorporating educational technology into classrooms, the traditionally taught course lacked modeling especially when it was facilitated with a weekly barrage of paper-based assignment information. Students were inundated with copying machine-generated information

including syllabus, assignment calendar and much needed step-by-step technical information. Students often misplaced "hand outs" or forgot to bring them to class. Absent students relied on others for copying assignment information or arranged to pick up the printed information before class meetings. Extra copies were generated to supply these demands.

In addition, students lacking a technology comfort level and those too shy to ask questions were perpetually in catch-up mode. Note-taking often hindered their attention to hands-on instruction. Misinformation was common. E-mail journals reflected their frustration. Many instructor hours outside of the classroom were spent e-mailing assignment clarification to students. For example, one student e-mail reflected:

> I have concerns about catching on to what is presented in class when there are so many of us and so few of you...I only got to step seven on the *Searching and Saving For Multimedia Presentations* activity this week in class.

Another student e-mailed:

> What should be done with the pink handout titled *Navigator Quick Reference Guide*? It appears to be directions for an assignment. I did run into problems interpreting *The Use of Copyrighted Works: A Crucial Element in Education America* by Brinson and Radcliffe because their article had a different title [than the title given out in class] so I was looking and looking for another article by them but figured out it must have been the first one I had bookmarked.

Pilot Web-Enhanced Classroom

The web-enhanced pilot course, composed of 17 students, was taught in the summer semester of 1998. Students met in the Educational Technology Lab for three hours four times a week for three weeks.

C&I 306.08 was designed as a paperless course. All syllabus, assignment descriptions, due dates, significant URLs, tutorials and project evaluation criteria were available online. Students were literally a mouse click away from accessing information any time of day or night from any on or off campus computer terminal with Internet access. Course designers, taking a cue from Robert Sylwester's work, anticipated that the physical interaction in a technology-produced environment would establish an understanding of its limitations and potential (1995, p. 65).

Using educational technology to teach an educational technology course serves as a strong model to preservice teachers. Students experienced first hand, the convenience, consistency and challenges of implementing electronic technology as a primary information source. As Postman and Weingartner (1969) state, "When you plug something into the wall, someone is getting plugged into you. Which means you need new patterns of defense, perception, understanding, and evaluation. You need a new kind of education" (p. 7).

The original intent of C&I 306 was a "hands-on" curricula blossomed-product taking a back seat to understanding process. In this project-oriented, cooperative learning paradigm, students took responsibility for their own instruction.

Lab time was much more productive than the previous semester. In this nonlinear approach, many tasks were going on at any given time. Little confusion about assignments surfaced. Hyperlinks embedded into the course became an important characteristic toward student empowerment. Those students who could work ahead did so with the web-based information readily available online. Those students who needed additional tutoring could do so with links to Internet sites designed for that very purpose. Required readings were linked into the web pages so that even a "browsing" novice could easily access (without undue frustration) significant URLs. One C&I 306.80 student reflected:

> I can understand why technology has not spread in the schools like it has in our world. Teachers are just beginning to receive the information that is needed to understand computers and all of the work that they can do. Veteran teachers that are out in the field now definitely have not received the training that I am gaining from this class. Unless these veteran teachers have gone out and gained training on their own they are creating a disadvantage for their students. When ignorance towards technology is leading the students of our country then problems occur... Children are going to pick up computer knowledge so much faster than adults do and we need to constantly catch up with them. The only disadvantages that I can see with computers is the fact that they are supposed to save time but with the initial shock I see the reverse... I have just begun to realize that computers can *REALLY* save me time. I never believed anyone when they told me before.

Conclusion and Recommendations

Conclusions

This model appears to have great possibility as a means of delivering the Instructional Media Course. It accommodates classes in which students enter with a variety of technology skills. Students can work at their own pace any time of the day or night. Students can use the platform of their choice for most of their projects. Students who live far away from main campus can take this course provided that they have access to the appropriate equipment and software. This same flexibility allows faculty to communicate with their students from almost any place in the world. It also lends to greater interaction between faculty and students, as faculty virtually is accessible as many hours a day as they have their computers on. Continuous monitoring student feedback and increased student technology literacy offers an invaluable catalyst for developing this type of course.

Recommendations

1. Faculty members who teach web-enhanced courses should plan to spend many hours online. Contrary to popular belief, moving to web-based courses increases preparation time and student contact time.
2. Lab monitors should be well versed in using both hardware and software required for the course. Nothing frustrates students more than encountering a lab monitor who can not answer their questions in a straight forward timely manner.
3. Plan to schedule as many open lab hours as possible. Many students still do not have computer access in their place of residence. Even if a student has a computer at home, they may not have the appropriate software or peripheral devices.
4. Doggedly monitor the working status of technology used in the course. Keeping the equipment in top working order is a priority. Nonproductive time spent on equipment that does not work turns off even the most seasoned students.
5. Anticipate student frustration in the beginning of a mediated learning environment. Many students are more accustomed to graded "correct" learning outcomes (Caine & Caine, 1994, p. 85).
6. Design a logically navigated website. Not being able to access information in a direct manner via mapping and hyperlinks quickly frustrates students and, in turn, the instructor.
7. Transition your instructing role to more of a facilitator than a lecturer and enjoy the changes this will produce in your course.

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