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ABSTRACT

This proceedings contains papers that address the following topics related to educational technology: (1) alternative course delivery, including planning and implementing a World Wide Web-based education program, describing an interstate collaborative approach to Web-based instruction, moving Web-based courses to the next level, and putting real lectures on the Web; (2) beyond knowledge acquisition, including hypermediated learning environments and multimedia instructional program for youths with chronic illness; (3) pedagogy and technology integration, including electronic conferencing, JavaScript interactivity for the class Web page, and using a word processor to put math symbols on the home page; (4) best practices, including assessing the impact of technology on teaching and learning, classroom assessment techniques designed for technology, copyright in the academic environment, effective use of audio in multimedia presentations, a satellite outreach program for rural K-12 schools, Web site enhancement of traditional pedagogy, and online student performance in subsequent campus-based courses; (5) faculty development and facilities design, including establishing a faculty development center, faculty collaboration on multidisciplinary Web-based education, a survey of instructors of Web courses, and the course development process; and (6) looking ahead, including technology for preservice teachers and implications of the globalization of higher education. A summary of a workshop on getting started with multimedia is also included. (MES)

Proceedings of the Mid-South Instructional Technology Conference (Murfreesboro, Tennessee, March 28-30, 1999)

Proceedings of the 1999 Mid-South Instructional Technology Conference

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Keynote Address
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Banquet Address
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Judith Boettcher, Executive Director, Corporation for Research and Educational Networking(CREN)

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Higher Education: Technology Trends for the New Millennium
Thomas S. Buchsbaum; Vice President, Education; Dell Computer Corporation

Featured Address
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Thomas E. Cyrs, Professor, New Mexico State University

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Getting from there to here:

How to (successfully) go from planning to implementing a web-based education program

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Coordinator, CNU Online

Suzanne Alexander
Systems Engineer, CNU Online

Introduction

Institutions do not lightly make the decision to develop a web-based education program. Whether the underlying rationale rests in expanding an institution's reach, providing new services, or keeping up with students' shifting needs, once a decision *is* made, an array of activities must be undertaken to maximize the program's success. These activities involve the cooperation of all campus populations--faculty, administrators, technical support personnel, and students--and typically take place within a stated time frame.

In this paper, we document the steps taken by Christopher Newport University (CNU) as it planned and implemented a web-based education program in 1998-99. We begin by documenting the context for distance education at CNU, and detail the history of both the institution and distance education. Next, we describe the rationale that prompted CNU to invest time and resources into developing a web-based education program, as well as the evaluation of the different program options we had. We discuss the implementation of the program, including the training we conducted and the support systems we put into place. As all best-laid plans encounter problems, we provide an account of the ones we have come across. Finally, we take a look ahead and describe the program's next steps and future directions.

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Institutional Background:

Named after the sea captain who piloted the Virginia Company's early seventeenth century expeditions, Christopher Newport University was established in 1960 as a two-year branch of the College of William and Mary. In 1971, CNU became a four-year baccalaureate degree granting institution, and six years later, CNU became totally independent of the College of William and Mary. CNU now occupies over 100 acres in Newport News, Virginia. Today, the university enrolls approximately 4,000 undergraduate

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CNU's original mission closely revolved around meeting the needs of an older, commuter population, many of whom had work and family responsibilities that competed with their student lives. Over the past five years, however, CNU has been aggressively pursuing residential students and students of the traditional college-going age. The university built its first dormitory in 1994, and ground was broken in February, 1999 for the second dormitory. Considerable attention and energy within the administration focuses on developing campus-based resources, such as a new gymnasium and fine arts center, to attract and retain a qualified, residential student body.

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CNU Online:

Christopher Newport University's distance education program, CNU Online, began as a faculty-initiated effort in the early 1990s. Initially, one faculty member in the Department of Philosophy and Religious Studies began to use a shareware bulletin board-based system to support his on-campus classes. The bulletin board proved to be welcome by the students. In 1991, one telephone line and an IBM 8088 were enough to support the users. By the fall semester of 1992, however, the number of telephone lines had to be expanded to five to meet the increasing demand, while the bulletin board relied on an IBM 486 that used PCBOARD software. In the fall of 1993, faculty members from the Department of Government and Public Administration became interested in the system. The Government and Philosophy departments jointly operated the online program as an experiment in 1993.

In 1994, the Government and Philosophy departments successfully obtained funds from the Virginia General Assembly to officially establish a two-year online trial program dubbed CNU Online. During this period, CNU Online was required to demonstrate the equivalency of instruction and student learning between online and on-campus courses. A series of qualitative and quantitative analyses confirmed that there were no measurable differences in student learning that related to the format of instruction.

With this information, the General Assembly approved CNU's online program and CNU Online opened up its doors as a distance education program independent of department sponsorship in 1996. At this time, the bulletin board system was replaced by FirstClass, a message based system that required the installation of client software. Over the past three years, enrollments have continued to increase each semester, as have the number of online courses offered. CNU Online now provides more than 50 online courses to 660 students each semester, which is approximately one in seven students at CNU. Two complete degree programs are available online--a bachelor of science degree in Government and Public Administration, and a bachelor of arts degree in Philosophy and Religious Studies. In addition to the online courses, the system is used to support on-campus instruction and hosts a campus-wide electronic town hall.

Like the situation at many other institutions, most CNU Online students (approximately 88%) live within commuting distance of campus. Another nine percent live in-state, but outside of the immediate area, and another three percent of students live out-of-state. For most of our online students, then, it is the convenience that comes from time-shifting school work that serves as a major incentive for participation, and not the distance between home and campus per se.

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Rationale for changing to a web-based system:

By 1998, Christopher Newport University's online education program had established a presence among faculty and students alike. A cadre of faculty members representing core disciplines was comfortable using the FirstClass system, as were the online students. The increase in the number of courses and students each semester indicated that the existing online program was a success. But in early 1998, despite the considerable investment of time and resources, CNU's administration decided to abandon the existing message-based system and adopt a web-based format. What factors contributed to that decision?

Three issues underpinned Christopher Newport University's resolve to introduce a web-based system to campus. First, practically speaking, moving to a web-based system would allow CNU Online support staff to use their time more effectively. With the FirstClass system, a large proportion of CNU Online's energies each semester was directed at mailing out software to students and troubleshooting problems that stemmed from installing and updating the software. By curtailing these two activities, support staff could direct their attention to other key areas that previously had been shortchanged (e.g., helping faculty create course materials). Second, the web permits a more sophisticated use of instructional resources than could be found with a message-based system. Instructors could add sound and video files to their courses, create links to other web resources, and incorporate a graphical interface for the students. Finally, the continued popularity of the web requires that CNU take advantage of it for instruction. A web-based system would be familiar to a large population and allow an easy migration for incoming students. In order for CNU to remain competitive in the increasingly crowded marketplace of online education, it had to respond to the very real expansion in web use.

The decision to move to a web-based system stemmed from the administration from CNU and initially was not well received by faculty. Most online faculty members at CNU are not given release time to prepare for their online courses, and were understandably upset at the prospect of having to spend extra time to learn a new system and create a host of new materials. One of our main concerns, then, as we began to evaluate different web-based packages in April, 1998 was how to garner faculty support for the new system.

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Evaluating and selecting a web-based system:

An ad hoc committee composed of faculty members and CNU Online staff assembled a list of seven criteria that would be used in evaluating the number of web-based systems that were on the market. The first criterion was that the new program must be able to incorporate audio and video technology, to accommodate the interests of faculty members who wished to add new features to their courses. Second, the new program must not involve the installation of specialized software. As mentioned above, responding to software installation problems constituted a considerable drain on CNU Online staff time and prevented us from working on other tasks. The third criterion we employed is that the new system must be suited for both Mac's and PC's. That is, we did not want to dictate a particular platform to our online students and faculty. Fourth, we wanted to select a company with good technical support. CNU Online is dedicated to offering a system that is available 24 hours, 7 days a week, and we expect nothing less from the companies with which we work. A fifth criterion was that the new system should not require students to have high end computers of their own, since we wanted to be sensitive to the financial realities of our students. Sixth, we needed to make sure that the faculty learning curve for mastering the new system would be minimal, to respond to our faculty's tight schedules. Finally, the new system ideally would run off a unix server, which would permit remote administration, and have secure login capability.

Of the various web-based systems we identified, we subjected four of them for in-depth consideration, using our list of criteria. At this point we should say that our evaluation of these products reflects CNU's particular needs and likes, and that other institutions might come to very different conclusions about the systems' suitability. We realize also that more recent versions of the programs listed below might already have addressed the limitations we identified.

In our evaluation, we considered Web Course In a Box, CourseInfo, Top Class, and WebCT. Each system had its own strengths and weaknesses. We found that Web Course In a Box did not include the administrative tools we required. Although CourseInfo did have a suitable array of administrative tools, it did not offer faculty the flexibility in course design they wanted. Top Class received high points for its administrative and course design tools, but lacked search and sort tools, a major flaw for our faculty.

In going through these initial reviews, we realized that our list of criteria had to be expanded to reflect three other, critical needs. First, we needed the system to manage all courses in one course containment area. Second, the new system really had to have superlative administrative tools for maintenance and management. Finally, the new system had to incorporate search and sort tools.

With this reconsideration of the criteria, we found that WebCT met our needs most closely, although it certainly had its own limitations. The greatest advantage offered by WebCT, we felt, was its large user base and active user group, which have provided essential information for our own trouble-shooting. Also, we found that the support we received from WebCT prior to our purchasing a license was far better than the reactions we received from other companies. In July, 1998, approximately three months after we established our initial list of criteria, our ad hoc selection committee assembled and voted to purchase the WebCT program. Our attention next turned to the very practical matter of getting the program up and running by the Spring, 1999 semester.

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Implementation:

Our implementation activities can be divided into two distinct periods: the four months prior to WebCT's January, 1999 debut, and the time after we began using it for our online courses. Prior to WebCT's debut, we focused on training as many of our faculty and support staff as we could, and concentrated on information that was at the core of the online courses: communication tools, course administration, and course content.

We were particularly concerned about our online faculty, many of whom had busy schedules. Our main fear was that faculty members would wait until the end of the semester to learn the system, and would descend full force upon the CNU Online support staff just as our attention was shifting to addressing the needs and questions of our online students. For this reason, once we decided to purchase WebCT we immediately began hosting regular training sessions directed at faculty. At the beginning of the Fall semester, we hired an outside consultant to lead a two-day training session that was attended by approximately 20 faculty members (about one-half of our online faculty). We also put together a special weekend session for adjunct faculty members to respond to the concern of full-time faculty. Apart from the training, we offered weekly, one-hour sessions on different WebCT topics, which were poorly attended. We attended faculty meetings to answer questions, and also communicated information electronically throughout the Fall 1998 semester. To supplement the faculty training, we put together two, 90-minute sessions for support staff in the departments that sponsor the online courses.

One other concern was to alert our current students about the change in the online system that was about to take place. To this end, at the beginning of the Fall 1998 semester we created an open course for students

to explore and posted messages encouraging students to consult it. On this site, students could also create messages discussing the new system.

Toward the close of 1998, we began to focus more on our online students. We sent instructions for using the new system to all students in December, which meant that those students would have one month to get acquainted with WebCT. During the first two weeks of the Spring 1999 semester, CNU Online offered hour-long training sessions twice daily that were well attended. Our telephone help desk, which is staffed from 8 am to 10 pm weekdays and four hours each on Saturday and Sunday, also handled questions from online students. In general, we found that the number of questions to our office dramatically decreased with the introduction of WebCT. The free time meant that we could address other needs, including faculty support.

At the beginning of the Spring 1999 semester, faculty needs were much different. Instead of questions about different tools, faculty concerns revolved around preparing and uploading course content. We responded by providing assistance in scanning, reformatting, and uploading course files, such as course syllabi and class lectures. In addition, we helped create quizzes from online instructors' test banks of questions.

One other area involved with implementation of WebCT deserves mention. To prepare for WebCT, we needed to establish a stable technical infrastructure. To balance the potential for program expansion with our fiscal reality, we decided to purchase a server that was as high end as we could afford. We opted to use a Sun Ultra II server, which we already had available, upgraded the memory to 256K, and purchased a second internal drive to allow us to mirror the system disk. We attached a Raid 5 SCSI disk array and a 10-tape library backup system, put a Gigabit network card into the server, and placed it on a Gigabit switch. By the time our students were coming on line, the system was up and running.

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Problems encountered so far:

At the point of this paper's writing, we are now two months into the semester. Lest the above description give the impression that all has been smooth and seamless, we would like to describe three main problems we have encountered. One area that has been deficient has been in the communication about WebCT. We discovered that the literature we disseminated to our online students lacked all the information they needed. For example, instructions for how to print online course material was left out of the student manuals we distributed. Another communication problem was that many of our online students were unaware of the change to WebCT, and became confused when, on the first day of the semester, they tried logging onto the old system. Despite our efforts to spread the word, students were still caught unaware.

A second problem area has been keeping up with faculty needs. Although we led training sessions that addresses WebCT basics, we did not cover the more advanced WebCT tools, such as course management and quiz creation. We remedied this by hosting a second round of training in early February and by developing a step-by-step manual for quizzes. As faculty members become more conversant in WebCT, the complexity of their questions increases, and we have had to spend more time than we had anticipated answering questions about advanced features. We also have been sorely taxed by the sheer volume of converting course content for online courses. CNU Online's policy is that our support staff is willing to assume the burden of creating course materials in order to relieve faculty from the more mundane tasks of scanning materials and reformatting and uploading files. Faculty have not been shy about asking us to assist them. We have tried to circumvent problems by requesting that faculty members provide us with the information at least five days before they need it uploaded, but not all faculty have respected this.

A third difficulty we have run across rests with the speed of our server. Online traffic is at a peak between 11 am and 3 pm, and online faculty and students have had to endure very slow speeds during this period. We purchased additional equipment in February and continue to tweak the system, but there are still times when the system's slowness frustrates users.

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Next Steps:

Once this first semester with WebCT is over, we will direct our energies at addressing four goals for the 1999-2000 academic year. Our first goal is to improve training and information dissemination. To this end, we plan to develop online training modules for students and develop a student tip page that describes typical problems and their solutions. The training of CNU Online staff is also a part of this first goal: CNU Online's administrative staff has not received any training beyond the two-day session hosted by the consultant in the Fall 1998 semester.

CNU Online's second goal for the upcoming school year is to expand the number of departments and faculty members participating in the online program, as well as the range of applications available to faculty and students. CNU Online has depended on the same core departments and faculty for the past several years. There is a perception on campus that the online program is the pet project of its most enthusiastic users (the Government and Philosophy departments), which may prevent other departments and faculty members from becoming involved. Although this appears strange, the online program primarily supports online classes. That is, other faculty do not see the benefit of incorporating online components into their campus-based instruction (e.g., to post course syllabi, notes, calendar). One of our aims, then, is to develop other uses for the online program. To date, we have fashioned an electronic town hall for faculty members across the university to use, and are discussing creating an online site for the campus' writing center.

Our third goal is to push the envelope of uses among our online faculty members. Understandably, faculty members have been straightforward with their uses of WebCT, and have relied extensively on text and messaging, the same basic features of the system we abandoned in favor of WebCT. Over the next year, then, we will work to encourage faculty members to incorporate graphics, video, and sound into their courses.

Finally, we will strive to extend our student base. At this time, the majority of our online students live within commuting distance of campus. We would like to attract in-state students (who would appreciate the in-student tuition rates) living outside of commuting distance to the online program. To do this, we have to dedicate resources to develop a marketing plan and determine a way to reach these students.

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Conclusion:

The online program at Christopher Newport University has experienced consistent growth from its inception in the early 1990s. We are not naïve enough to assume that our recent migration to a web-based system will be our last, but hope that our recent experiences will allow us to make future decisions with confidence. The process of making a transition to a new system is a difficult one for all parties involved. Based on the situations, dilemmas, and solutions we encountered, we maintain that establishing clear communication channels and training provides the strongest foundation for an online program's success.

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An Interstate Collaborative Approach to Web-based Instruction

Presented at the Mid-South Instructional Technology Conference

Middle Tennessee State University

Ms. Denise Grant, Department Chair, Allied health and Nursing, Northwestern Technical Institute

Ms. Gay Bryant, Department Chair, Office Technology, Pellissippi State Technical Community College

Dr. Daryl Gilley, Vice President for Instruction, Northwestern Technical Institute

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Abstract:

Faculty from two different institutions in different states develop an online course using a variety of multimedia formats to deliver the instructional package including online lessons and examinations, locally produced CD/ROM supplementary material, text and accompanying disk, and third party course management software. The presentation will present an overview of the development process from conception to delivery and will include an online demonstration of the finished product.
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An Interstate Collaborative Approach to Web-based Instruction

Introduction: In November 1997, with the support of the administration in the form of resources and time, several members of the faculty of Northwestern Technical Institute made a conscious decision and commitment to develop courses of study for delivery over the World Wide Web. However, even with significant preplanning, to paraphrase another group of early explorers, "we were blindly going where no one had gone before." Choosing to create an online course with little or no previous experience posed a daunting challenge for the team investigating what we then called alternative instructional delivery. At the outset the Northwestern team consisted of 10 members. Today, three of the original team members have persisted and have courses currently on the web.

This paper will document the efforts of two faculty members from different states who collaborated to create and deliver an online class in record time. The class, "Medical Terminology," was developed and brought online in less than one year from initial conceptualization to finished product.

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This paper will document the efforts of two faculty members from different states who collaborated to create and deliver an online class in record time. The class, "Medical Terminology," was developed and brought online in less than one year from initial conceptualization to finished product.

The paper will address 6 aspects of the project:

1. The collaborative effort
2. Faculty training
3. The design process
4. Hardware and software issues
5. Auxiliary multimedia interfaces
6. Third-party partnership

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The Collaborative Effort:

The collaborative effort was between faculty members from Pellissippi State Technical Community College in Knoxville, Tennessee, and Northwestern Technical Institute in Rock Spring, Georgia. These two institutions are approximately 150 miles apart; they were drawn together by a series of chance encounters that resulted in this project. The faculty member at Pellissippi State is the Department Chair of the Office Technology Program and had some familiarity with web-based instruction, having created a class using html coding.

The second instructor is the chair of the Nursing and Allied Health Department at Northwestern Technical Institute and, prior to this effort, had never created any document for online use. Essentially both developers were relative novices and so began the process with a relatively steep learning curve facing them.

The event that drew the two faculty members together was a piece of software to manage online courses that was being considered for purchase. The software, a course management software application called "The Learning Manager," was being used at Pellissippi and was being implemented at Northwestern. Through various interactions with the software vendor, Ms. Bryant and Ms. Grant were innocently thrown together and, as fate would have it, discovered common interests and ways in which they could help each other.

Pellissippi wanted to offer a course in medical terminology for their office technology students but, lacking any health programs on campus, did not have the curricular expertise to develop the course. Northwestern wanted to offer an existing medical terminology class on the web to facilitate student scheduling and to support another statewide Internet initiative but did not have the technical expertise in the Allied Health Department to develop the course.

At the first exploratory meeting between the two colleges, faculty and administrators worked to determine the viability of such a joint effort. Once it was determined that there were no accreditation issues, that the faculty agreed upon the competencies and text to be used, and that the course could be developed so that it could be taught as a semester course or a quarter course, the only thing left to do was begin work.

At a second meeting the course development tasks were divided among the two institutions. Northwestern was charged with developing the instructional modules and dealing with content issues. Pellissippi was

charged with integrating the course design into an existing web management software application and integrating the examination files into the course management software.

As the respective developers worked out the details of creating an online course, an added benefit surfaced when it was realized that the course could be managed from either institution. This meant that when Northwestern was offering the course from its campus, students from Pellissippi could also enroll. And similarly, when Pellissippi offered the course from its campus, Northwestern students could enroll. This solved a problem that both institutions had been faced with in the past: having to offer a class to a small number of students at a financial loss to the institution.
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Faculty Training:

Faculty training was an important issue early on since, even though one of the developers had experience using html, the other developer was a complete novice. The problem was how to best use the technical expertise and curricular expertise of these two individuals.

The learning curve included developing a mastery of new software; working through instructional strategy issues, many of which were discovered as a part of the instructional design process; and discovering new ways to demonstrate skills to a remote audience. In hindsight and in the best of all possible worlds, additional time and training in the use of software products would have been very beneficial to all involved. In fact, to ensure success and minimize attrition, early education and training is essential.

As Denise Grant of Northwestern was the content expert, the task of developing the instructional modules fell to her. Grant began with the existing medical terminology class and proceeded to re-package it for delivery on the web. This required learning how to use a piece of software created for the development of web pages. Microsoft FrontPage 98 was chosen because it was available, relatively simple to use, and compatible with other software used at both institutions. As time passed, she was also required to learn to how to program using html. Northwestern provided some instruction in the use of the software and provided released time for the development of the class. Gaye Bryant of Pellissippi was the technical expert and as such worked with Grant to ensure an understanding of the course management software. Bryant also managed the process of installing test files and test data banks in the Learning Manager.

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The Design Process:

The design process was agreed upon over a period of several months and took advantage of the experience and knowledge of several other faculty from both institutions who were also working on web classes.

In the planning phase, Ms. Grant as a member of a design team of faculty and staff at Northwestern and Ms. Bryant set about the task of creating a framework around which their web-based course could be developed. Design team members from both institutions were guided by the following considerations.

Alternative delivery courses should provide for asynchronous instructional delivery.

- Alternative delivery courses should be available on demand
- Alternative delivery courses should include e-mail in the communication protocol
- Alternative delivery courses should provide for the participation in labs from remote sites.
- Alternative delivery courses should allow for simulation.
- Alternative delivery courses should include all aspects of the course of study or supplements to the

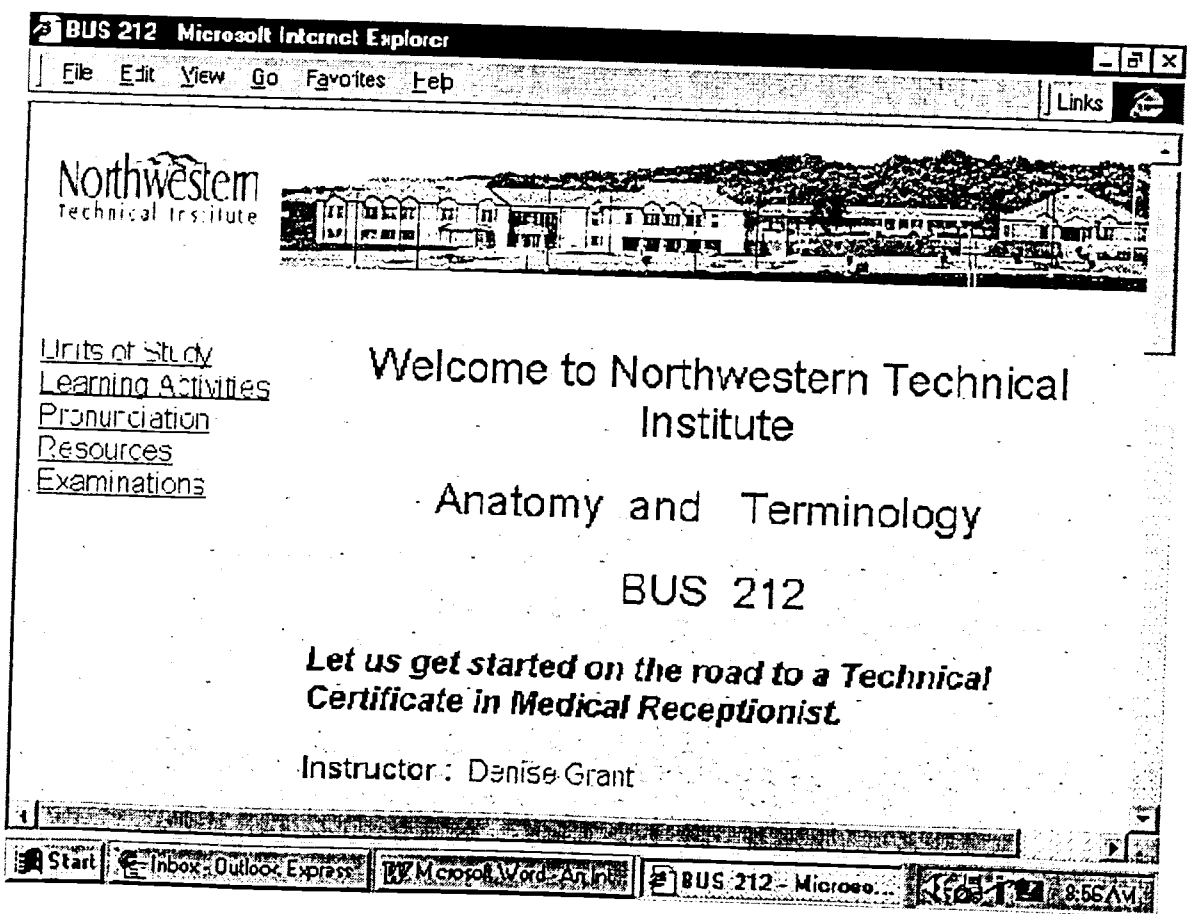
course of study that are made available to the student in a traditional class.

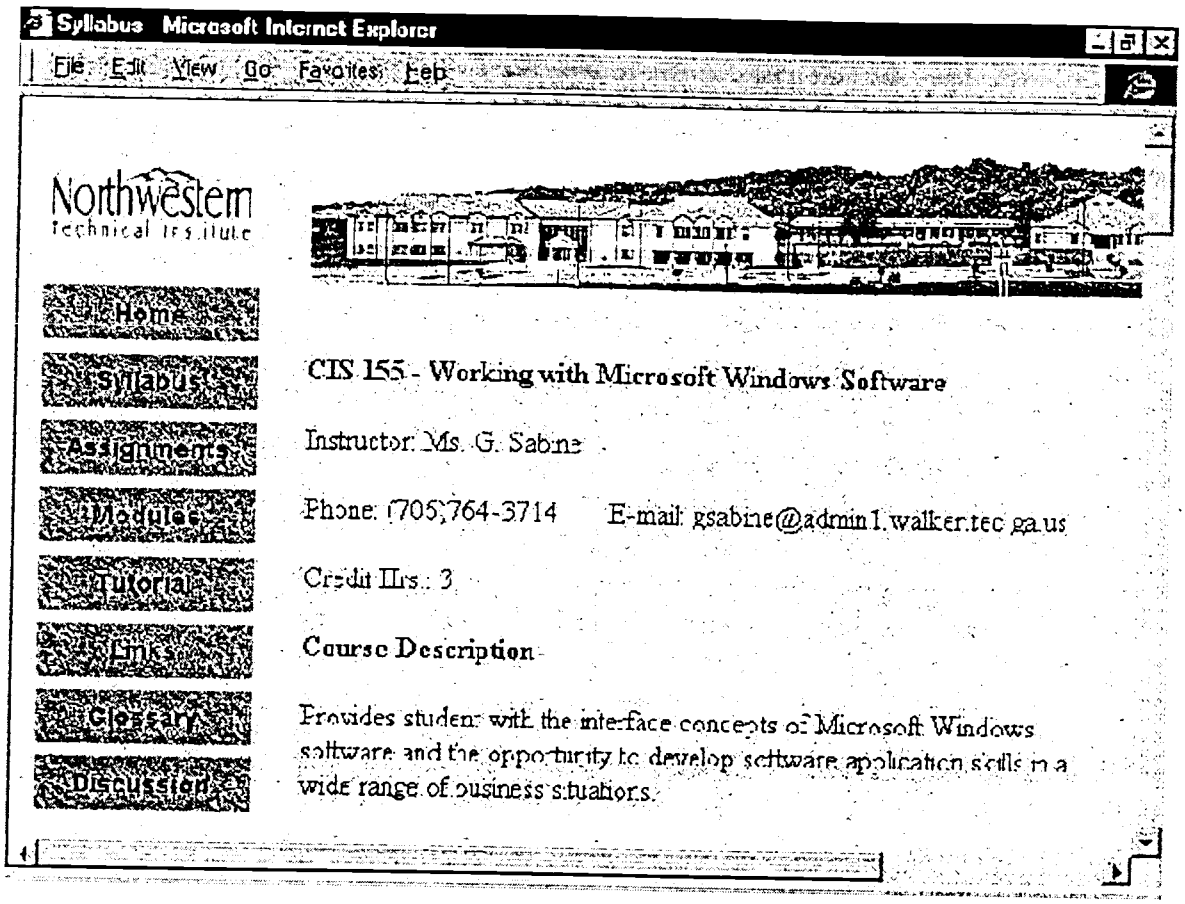
In addition to the considerations listed above, the Northwestern design team agreed upon the following design decisions. This was based upon a review of the available literature on the design of web based classes. These design considerations were also discussed and adopted by the developers at Pellissippi.

1. Each online course would contain the same level of academic rigor as a traditional course.
2. A common format-i.e.,"look and feel" would be used by all developers.
3. A common software application would be chosen and used by all developers.
4. Course development would be modular.
5. Each course would be offered online to an in house class in a pilot phase before publishing the course to the web.
6. Each online course would contain the same or at least very similar learning activities.
7. The syllabus format would be as similar to the traditional course as possible. (See syllabus format for web classes in Appendix A.)

Web-based courses, it was learned, are very much a sum of many parts. Of these many parts there are at least two organizational decisions that a developer must make when creating a course for the web. One decision deals with the treatment of educational outcomes or the organization of competencies that the student will be required to learn or master. One of the early decisions made was that the course design format would be modular. The second decision revolves around the creation of the various course components such as units of study, learning resources, simulations, learning activities, assessment, etc. (See figure A.)

FIGURE A





Grant and Bryant chose to deal with the course competency areas in the form of instructional modules. The competencies were the same as those taught in the traditional class. Modules were arranged to match the academic calendar. For this particular course a minor adjustment was required as Northwestern is on a quarter calendar and Pellissippi is on a semester system. However, because the course was developed in modules, it was a simple problem to resolve. The calendar of learning activities had both a semester option and a quarter option.

Each of the modules consisted of a self-contained instructional package including goals of the module, specific learning objectives, various types of learning resources, and assessments. By design, students were forced to satisfactorily complete a module before moving on to the next.

The components of this course differed somewhat from those of other developers, but each developer did adhere to a mutually agreed upon course template, course design format, and page format. Typically, however, all initial web courses developed consisted of units of study or modules, both online and off-line resources, learning activities, and examinations. The specific components of this course are described below.

- Home - This button brings you back to this page.
- Syllabus - This page contains a copy of the course syllabus.
- Modules - This is the backbone of the course. BUS 212 is broken down into 16 modules each containing a number of objectives. The student must successfully complete one module to progress to the next. At the end of each objective, a button exists that will link the student to the next objective. If at any time the students become lost, they can click the Module button on the side of every page and it will bring them back to the beginning. Upon completion of each module the student will be required to complete a test. Students who do not successfully complete the test may trace back through the module until they are able to successfully complete that module's test.

Resources – This page contains online resources and URL hyperlinks.

- Pronunciation – This page links the students to a CD disk developed by the college and supplied to the students when they register for the course. It is a vocabulary list and aural pronunciation guide corresponding to each module.
- Learning Activities – This page is a set of activities that help reinforce student learning. These activities are referenced to each module and to the text.
- Examinations – This page contains all of the examinations. Examinations are drawn randomly from a test bank. Each exam is generated anew for each student. The examinations are managed and graded automatically by The Learning Manager, a course management software application.

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Hardware/Software Issues

Hardware issues were relatively easy to agree upon. Computer requirements for the class are as follows.

Computer Requirements:

Windows 95, 486dx or faster MacOs 7.5.5 or later, Power

Processor, 8 MB of RAM or PC processor, 16 MB of RAM

more, 14.4 kbps modem or or more, 14.4 kbps modem or faster

faster, sound card, speakers.

Internet An ISP is a company that can provide the software

Service necessary for getting onto the Internet. Contact Provider your local ISP to set up your personal account. Without an ISP, it is impossible to take a class online.

Email Since it is our primary form of communication, you must have

Account an email address prior to applying or registering. Generally, your ISP will give you an email account. Please contact your ISP if you are unsure of your email address.

Java You will need a JAVA compliant browser. For the Java Compliant capable browser we recommend Microsoft Internet Explorer 3.0.2Web Browser (or higher) or Netscape Navigator 3.0.1 (or higher). You can download a current version free.

Software issues presented some interesting options. The design tool chosen for this course was Microsoft FrontPage 98. It was the software being used at Northwestern for all of the web initiatives. It was compatible with the word processing software being used at both colleges, and all development team members agreed that, even though not perfect, it did result in an acceptable product and it had a short learning curve. However, even with FrontPage98, both developers still had to rely heavily on html coding to incorporate other multimedia resources and to ensure a pleasing and consistent format.

The particular course being described in this presentation presented some unique problems as it relied heavily on sound and graphics. These problems were solved by using alternative integrated multimedia formats such as CD/ROM disks for the aural pronunciation guide and interactive graphics programs for point and click anatomical identification programs.

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Third Party Partnerships:

The element that brought these two developers together and the element that binds this particular course together is The Learning Manager. The Learning Manager was developed at Southern Alberta Technical Institute in British Columbia. Version 2.0, the most current version, is compatible with Windows 95.

At the time this project began, the Learning Manager was being used at Pellissippi and so was a known product. It brought two much needed attributes to the project. First, it served as an umbrella management system. It allowed and restricted student access to the various components of the course; it tracked student progress; and it served as a gateway to other resources such as CDs, URLs, and disks. Secondly, it served to generate randomized tests from a test bank, make those tests available to the students at the proper time, score the tests, and record the scores. One major benefit to using a software application like The Learning Manager is that it frees the instructor from scheduling and grading examinations.
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Lessons Learned:

BUS 212 is now in its second quarter of operation. Considering the distance problem, the fact that two separate institutions were collaborating on its development, and the short development calendar, the course has been relatively trouble free. However, we have learned some lessons.

1. Any assumption you have about a student's ability to understand hardware and software requirements for an online course are probably overly optimistic.
2. Student motivation is no mean issue. A mature, self-directed student will be much more successful than will one who needs constant or even intermittent attention.
3. Every online student should have a password that is required to get into the course.
4. Software packages that propose to solve all of your web publishing problems probably won't. There is no way to get around learning html.
5. Intuitiveness is in the eye of the beholder. What is perfectly clear to the developer is perfectly opaque to the student.
6. Excitement will sustain the developer early on drudgery will rear its ugly head after about three modules have been developed.
7. Student misunderstandings take on geometric proportions and multiply like rabbits when using threaded discussion groups.
8. The developer's learning curve is marked by mistakes. Trial and error are standard fare.
9. The maximum number of students a teacher can effectively deal with the first time a class is offered is probably about 15.
10. Attrition is going to be high, about 40%, unless stringent admission standards are applied.
11. Assuming an online student is relatively computer literate may be a dubious assumption.
12. Time and effort required to manage an online class of 15 students is about the same as that required to manage a traditional 5 credit-hour-class.
13. Development of an online class will take approximately 6 months if a faculty member is released ½ time.
14. Developing acceptable assessment methods will be one of the major obstacles to be overcome.
15. The course will be ever evolving due to changes the instructor wants to make, changes in technology, and unforeseen problems that must be addressed.
16. Be wary of tying the online course too closely with a particular text. If the text changes or you decide to change texts, then the entire online course has to be revised. On the other hand the online course should be referenced closely with a text and not redundant.

17. At our institution the copyright belongs to the college. Establish this or some other arrangement early.
18. Good Luck!

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APPENDIX A

Syllabus Format for WEB Based Courses

Northwestern Technical Institute

Course Name and Number

Credit Hours:	Instructor Name
Lecture Hours:	Office Location
Lab Hours:	Office Hours
Email:	Telephone:

Catalog course description:

Various disclaimer's if required:

Entry level requirements if needed:

System Requirements to take full advantage of learning materials:

Prerequisites:

Required text and other reference material including non-text based materials, including url of online bookstore.

Recommended supplemental materials including non text-based materials

Content by week, by topic, by unit, etc. ***(called modules)***

Course competencies ***(called goals)***

Instructional Objectives (including knowledge skills) ***(called objectives)***

Learning Activities including online activities, text based activities, and CD-based activities

Course requirements – assignments, term papers, projects, etc. with due dates

Practice examinations – ***(called self-assessment)***

Evaluation procedure *(called assessment)*

Work ethic requirement

Grading scale

Policies and procedures for course operation

Policy on academic dishonesty

Communication with instructor and bulletin board policies and procedures

Module Format

Web-Based Class

Course Name and Number

Credit Hours:

Instructor Name

Lecture Hours:

Office Location

Lab Hours:

Office Hours

Email

Telephone:

Module Name and or Number

Goal:

Objectives:

Learning Activities:

Readings, Text

Readings, Links

Pronunciation Activities

Written Assignments

Self Assessment:

Assessment:

Communication With Instructor:

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BIBLIOGRAPHY

1996 ASTD Multimedia Authoring Software Directory. (1996, May). Training & Development, 50 (5), 43-46.

Armstrong, G. (1996). One Approach to Motivating Faculty to Use Multimedia. T.H.E. Journal, 23 (10), 69-71.

Bisman, J. (1996, April). Occasional Papers in Open and Distance Learning, Number 19.

Bitter, G. G. , & Pryor, B. W. (1996, April). Toward Guidelines for Research & Development of Interactive Multimedia: The Arizona State University TMMUIV Project.

Blumhardt, J. H., & Cross, L. R. (1996, January). Making the Jump(s) into Cyberspace: A Discussion on Distance Learning Paradigm Shifts Required for the 21st Century. ED, Education at a Distance, 10 (1), 13-21.

Burgen, A. (Ed.). (1996). Goals and Purposes of Higher Education in the 21st Century. Higher Education Policy Series 32.

Burke, J. J. (1996). Using E-Mail to Teach: Expanding the Reach of BI. Research Strategies, 14 (1), 36-43.

Caudron, S. (1996, May). Wake Up to New Learning Technologies. Training & Development, 50 (5), 30-35.

Chance, E. W. (1996). Electronic Field Trips: Using Technology to Enhance Classroom Instruction. Rural Educator, 19 (3), 34-35.

Eggers, R. M., & McGonigle, D. (1996). Internet-Distributed College Courses: Instructional Design Issues.

Freud, R. (1996, June). Community Colleges and the Virtual Community.

Furst-Bowe, J. (Ed.). (1996). Competencies Needed to Design and Deliver Training Using Instructional Technology.

Furst-Bowe, J. (Ed.). (1996). Competencies Needed to Design and Deliver Training Using Instructional Technology.

Gant, L. P. (1996, February). Lessons in Developing Distance Learning. Performance and Instruction, 35 (2), 22-25.

Garland, V. E., & Loranger, A. (1996). The Medium and the Message: Interactive Television and Distance Education Programs for Adult Learners. Journal of Educational Technology, 24 (3), 249-57.

Hall, B. (1996, March 11). Lessons in Corporate Training: Multimedia's Big Payoff. NewMedia, 6 (4), 40-45.

Hardin, P. C., & Reis, J. (1997, February). Interactive Multimedia Software Design: Concepts, Process, and Evaluation. Health Education & Behavior, 24 (1), 35-53.

Harlan, M. R. (1996). Corporate Distance Learning Systems for Employee Education. Journal of Instruction Delivery Systems, 10 (1), 14-16.

Hart, R. A., & Parker, R. (1996, February 16). Technological Challenges: Designing Large Compressed Video and Multimedia Classrooms.

Information for Web-Based Training Developers. (1996, May). Training & Development, 50 (5), 54.

Kerka, S. (1996). Distance Learning, the Internet, and the World Wide Web. ERIC Digest.

Krile, T., Juell, P., & Vetter, R. (1996, May). Pioneering on the New Frontiers of Education. Computer, 29 (5), 112-114.

Kruse, K, & Feldstein, M. (1997, March). Exploring Multimedia Internet-Based Training. Training & Development, 51 (3), 55-56.

Lee, S. H. (1996). Criteria for Evaluating and Selecting Multimedia Software for Instruction.

Ljutic, A. (1996, May). Learning to Telecommunicate—Distance Learning Projects in Less-Developed Countries. Learning with Technology, 23 (8), 65-67.

Mende, R. (1996, May 28). Building Global Communities through the Internet.

Misanchuk, E. R., & Schwier, R. A. (1996, February). Benefits and Pitfalls of Using HTML as a CD-ROM Development Tool.

Moller, L., & Draper, D. (1996). Examining the Viability of Distance Education as an Instructional Approach. Journal of Continuing Higher Education, 44 (1), 12-21.

Moore, M. G. (Ed.). (1996). Tips for the Manager Setting Up a Distance Education Program. American Journal of Distance Education, 10 (1), 1-5.

Musial, G. G., & Kampmueller, W. (1996). Two-Way Video Distance Education: Ten Misconceptions about Teaching and Learning via Interactive Television. Action in Teacher Education, 17 (4), 28-36.

Nicholls, P. (1997, April). Becoming a Multimedia Author: Courses and Programs for Multimedia. Emedia Professional, 10 (4), 107-112.

Nicholson, A. Y. W. & Ngai, J. Y. K. (1996). Converting a Traditional Multimedia Kit into an Interactive Video CD-ROM. Journal of Educational Technology Systems, 23 (3), 235—48.

Randall, B. (1996). A Marketing Approach to Distance Learning Technology: A Statewide Survey. Community College Review, 23 (4), 15-32.

Richart, V. M. (1996, April). Considerations for the Development of a Higher Education Agenda for the '90s and Beyond.

Ross, J. A. (1996, April). Computer Communication Skills and Participation in a Computer-Medicated

Conferencing Course.

Schrum, L. (1996, March). Teaching at a Distance: Strategies for Successful Planning and Development. Learning and Leading with Technology, 23 (6), 30-33.

Sener, J. (1996, April). Delivering an A. S. Engineering Degree Program through Home Study Distance Education.

Sherritt, C. (1996, January). A Fundamental Problem with Distance Programs in Higher Education.

Terrell, S. (1996, March). From Teaching to Learning: Transition in Distance Education.

Tulloch, J. (1996, February). Seven Principles for Good Practice in Distance Learning.

Williams, H. M. (1996, January). Curriculum Conceptions of Open Learning: Theory, Intention and Student Experience in the Australian Open Learning Initiative.

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Moving Web-Based Courses to the Next Level

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In their fear of being left behind, most universities have "thrown" curriculum materials out on the web and then announced that they are offering web courses. In reality, most of these materials are glorified syllabi. At Northwest Missouri State University's Center for Information Technology in Education (CITE), an effort is being made to move web courses to the next level. This presentation will provide examples of courses produced under CITE that demonstrate such attributes.

Moving Web-Based Courses to the Next Level

It seems as though nearly every article written and conference presentation given screams out about the urgency with which universities need to begin offering World Wide Web-based courses. The ensuing fear generated has led most colleges and universities to place curriculum materials out on the web and then announce to the world that they are offering web-based courses. In reality, though, most of these materials are glorified syllabi containing course outlines, reading assignments, and links to relevant web sites. Instead of being a paradigm shift, this is simply a reshuffling of the old correspondence courses.

At Northwest Missouri State University's Center for Information Technology in Education (CITE), a concerted effort is being made to move web-based courses to the next level where a true change in the paradigm becomes evident. A critical component to this next level is the incorporation of interactivity into the web-based course materials.

One form of interactivity is student-controlled tutorials produced using PowerPoint or Toolbook II software. Such tutorials should enable students to control the pace of the presentation and interact with examples and linked materials.

Another form of interactivity that can be used is online quizzes. The quizzes can be generated either using the Toolbook II software or the built-in quiz options incorporated with web site management software. The quizzes can be used by the students to evaluate their progress through the course materials and/or provide the instructor with indication of student progress.

One final form of interactivity that can help move a web course to a higher level is the incorporation of threaded discussions. Such discussions can be used to integrate students more fully into the learning process while aiding in the building of a web community.

Through the examples listed above, web-based course materials can be moved well beyond the traditional correspondence course. But these suggestions alone won't create a truly interactive web course unless a concerted effort is made by both the instructor and the students to actively become involved in the whole learning process.

Putting "Real" Lectures on the Web

By

Delbert L. Hall, Ph.D.

East Tennessee State University

In 1997, a faculty member at my university complained to me being asked to teach an online biology course. "I just want to give my lectures that same way I've always done them. I should not have to completely revamp the course and everything about it, just because it is taught via the Internet," he told me. Having spent his entire lifetime taking classes and now teaching in traditional classroom settings, the ideal of teaching an Internet-based course seemed to equate to be asked to teach his classes in a foreign language that he did not know how to speak. When he taught hearing-impaired students he had not had to learn American Sign Language. The university provided signers for this function. But, no one was going take his lectures and help him create the online course materials for his class. He explained that he was a biologist, not a computer programmer, so why should he spend countless hours learning to communicate via the computer so that a few students could take his course from their homes instead of coming to his class?

As this faculty member poured-out his frustration about what he had been asked to do, I felt sympathy for him. I knew the man and knew that this was not a lazy individual, but one that saw this task as a waste of his time. Time that he wanted to devote to his research and to the vast majority of the students that he would teach in traditional classes. He wanted to be innovative and he wanted to help his department expand into new areas, but this just seems like an incredible amount of work with very little reward. As much as I wanted to help him I did not have a solution for his problem.

In July 1998, I agreed to teach a course in Introduction to Theatre over the Internet be next semester. Remembering the plea for help that had been put to me about a year earlier by the biologist, I began investigating possibilities for helping me put my lectures on the Internet without spending huge amounts of time on the course. Since I would also be teaching a section of Introduction to Theatre via Instructional Television (ITV) during the same semester I would be teaching the Internet based section of this course, I wondered if there was a way to combine these two sections. I knew that several courses at East Tennessee State University are presented via videotape. Students in these courses go to the library and view videos that are made of their instructor's lectures. One solution to the problem above might have been to create videos of the lectures and place them on the Internet using one of the streaming video technologies. Although this sounds good, the reality of video over the Internet was still a long way from being practical. Products such as Microsoft NetShow, VDO, RealNetworks' RealMedia and others have improved the size and quality of streaming video in recent years. But still, video images broadcast over the Internet are usually small and fuzzy compared to TV images, and are not suitable for displaying detailed drawings or text information needed in teaching.

My investigation lead me discover that there were several software products that would allow me to turn PowerPoint presentations, along with a recorded audio track, into online presentations. Since I had extensive PowerPoint presentations to accompany my lectures for this course, this seemed to be a good option. Also, I had done some successful work streaming audio over the Internet using the RealAudio Server and felt comfortable with this technology. Two of the programs I investigated allowed large, detailed images to be displayed over the Web, and also allowed the user to "pause" the presentation, or start the presentation at any point desired. And one of these programs allowed the users to view these presentations from their Web browser without the need of a special client that had to be purchased. Fortunately, this program, AudioPoint by Competitive Edge Software, was also the most reasonably priced of all of the products I investigated.

AudioPoint gets it name from the two programs that it uses to help create online presentations – RealAudio and PowerPoint. About three weeks before the beginning of Fall semester, I purchased AudioPoint and began creating test presentations. AudioPoint has two parts: an Encoder for keeping

track of the time each slide in the PowerPoint presentation is displayed, and a PostProcessor for creating the actual online presentation files. I experimented with different image sizes for the presentation and different audio qualities. The images in the presentation are created in PowerPoint using the "Save as HTML" feature. After a little experimentation, I settled on making my images 512 x 384 pixels (half size of 1024 x 768) JPG images. This size images filled most of the screen when the monitor resolution was set to 640x480 or 800x600, two common resolution sizes. I also settled on encoding my sound at 8.5 kps. This size was small enough to stream well over the Internet while having a respectable sound quality. With a little practice (I only created three test presentations before the beginning of the semester) I developed my skills for creating online presentations with AudioPoint.

During the semester, I created fourteen lectures that were presented over the Internet. During my class that was broadcast over Instructional Television, I used the AudioPoint encoder to record the time each slide in my PowerPoint presentation that was displayed. This was done as I made my presentation to the students in this class. AudioPoint also recorded my cursor movements on the screen when I used the cursor to point to items on specific slides during the presentation. As I gave the presentation, the lecture was also recorded on videotape. I used this videotape to later encode the audio using RealEncoder 3.0, a free utility from Real Networks. Because the audio was created at the same time the encoder recorded the timings of the PowerPoint presentation, I was able to later synchronize these together. Next, the AudioPoint PostProcessor was used to create the processed audio file (an .RM file that will stream over the Internet using RealServer 5.0) and an array of other files needed to create the online presentation. A typical online lecture for my course lasted about one hour and took about 8 Meg of storage space on my hard drive. Neither AudioPoint nor RealAudio limits the length of your online presentations.

Students in the class clicked on links on the class Web page to select the lecture that they wished to see and hear. This launched a Web page with an embedded player and automatically started the selected presentation. AudioPoint does require the user to have either RealPlayer 5.0 or RealPlayer G2. Both can be downloaded free from RealNetwork's Web site http://www.real.com.

AudioPoint2, the current version, does not work properly with the RealServer G2, only RealServer 3.0 and RealServer 5.0. However, the G2 player, the newest version of RealPlayer, will play files streamed from RealServer 5.0. A new version of AudioPoint that will work with the RealServer G2 is planned for release in the summer of 1999. Free versions of RealNetworks' RealServers are available from their Web site at http://www.real.com.

AudioPoint worked extremely well for my needs. Creating my online lectures was easy and took relatively little time since the big job of creating the PowerPoint presentation was already done, and the audio was recorded when I gave the presentation to my ITV class. The students in this class reported great success in getting the lectures. In fact, many students in my ITV class also reported watching and listening to these lectures over the Internet when they missed the regular lecture. More information on AudioPoint can be found on the company's Web site at http://www.cesoftware.com.

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Hypermediated Learning Environments:

Students Collaborating with Technology

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Abstract:

Pre-service elementary education teachers enrolled in an educational technology course participated in a semester-long collaboration with technology. The course provided them with the opportunity to apply previously learned theory, assess, design, develop, and implement solutions to educational problems. The course culminates in the student identification of an educational problem: the design and development of a piece of hypermedia software to enable a learner to work with the technology to arrive at a potential solution.

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Introduction:

There are three basic ways technology may be used in a classroom: (1) as an instructional resource, (2) as a learning tool, and (3) as a storage device (Perkins, 1992). The proposed course is designed to provide the students with the opportunity design, develop and implement a piece of instructional technology that enables them to see how each interacts with others resulting in a solution to an educational problem incorporating technology.

The philosophical foundation for re-design of Educational Technology in the Elementary School, is constructivism. Constructivists believe learners to be active seekers and constructors of knowledge and they come to the classroom with an innate curiosity and goals (Brooks & Brooks, 1993; Fosnot, 1989). A course having constructivism as its philosophical base is a problem-solving course featuring the use of authentic tasks, complex real-life problems, and the integration of knowledge and skills from a variety of resources in the search for the problem's solution.

The primary feature of the course is the use of authentic learning contexts. This was be accomplished through a combination of anchored instruction and generative learning activities and to accomplish this a form of Grabinger's (1996) *Rich Environments for Active Learning* (REAL) were used. REALs are comprehensive learning systems that are characterized by the following:

The primary feature of the course is the use of authentic learning contexts. This was be accomplished through a combination of anchored instruction and generative learning activities and to accomplish this a form of Grabinger's (1996) *Rich Environments for Active Learning* (REAL) were used. REALs are comprehensive learning systems that are characterized by the following:

- They are based on constructivist learning theory and philosophy;
- They promote study and investigation within authentic, that is, realistic, relevant, complex, and information-rich environments;
- They encourage students to assume responsibility for their learning, develop initiative, foster decision-making, and promote intentional learning;
- They cultivate an atmosphere of cooperative learning;
- They utilize dynamic, generative learning activities that promote high-level thinking processes (i.e. analysis, synthesis, problem-solving, experimentation, creativity, and the examination of a topic from a variety of perspectives);
- They permit the assessment of student progress within context of realistic tasks and performances.

(Grabinger, 1996, p. 668).

The use of REALs in an instructional technology course encourages integration and comprehensiveness. Integration (Hannafin, 1992) is the process of linking new knowledge to old, modifying and enriching existing knowledge, and enhancing depth of knowledge about a topic. Goldman observes

- These environments are designed to invite the kinds of thinking that help students develop *general* skills and attitudes that contribute to effective problem solving, plus acquire *specific* concepts and principles that allow them to think effectively about particular domains

(Goldman, et al, 1992, p. 1).

Comprehensiveness refers to the importance of linking learning to realistic contexts rather than decontextualizing and compartmentalizing it. The use of REALs guides the learner, mediates the individual's learning, and supports the learner's decision-making. The content of the REALs is organized such that the focus is upon projects that promote problem-solving and linking of concepts and knowledge toward a solution within a environment.

Anchored instruction was used to provide the student with an opportunity to develop instruction that is responsive to the identified learning issues. This approach has certain advantages over the decontextualized approach currently in use. First, it develops project management skills such as creating a time-line, interpersonal skills needed to function as a member of a team, and learning how to allocate resources. Second, it facilitates the development of research skills including the ability to determine the nature of a problem, asking questions that elicit pertinent information, searching for new information, developing new information, and analyzing and interpreting information. Third, it assists in the development of organizational and representation skills including the selection of and structure of information, developing representations of information (text, audio, graphic, etc.) in a way that facilitates its understanding, arranging the structure and sequencing of the information, and responding to equipment, time, and budgetary constraints. Fourth, it provides the student with an opportunity to develop and practice presentation skills. Finally, it presents the student with an opportunity to think reflectively about what instruction is being developed, how it does or does not meet the goals and objectives, and how it can be modified to better accomplish the learning outcomes (Carver, Lehere, Connell, Erickson, 1992).

However much a student enrolled in Educational Technology in the Elementary School may learn about

the principles of instructional design or the effects of instructional technology on the learning process in the classroom it is not until that knowledge can be applied in an instructional situation that the student is able to recognize how each contributes to the didactic process. Central to this is the weekly two-hour *reflective practicum*. The reflective practicum is not a directed laboratory session attached to the course ; rather, it is an integrated *studio session* where students "design" developmentally appropriate instruction using various types of instructional technology under the directions of an instructional design professional.

The design curriculum proposed by Schön in his three works on reflective teaching and design (1993, 1987, 1991) suggests first to introduce the student to "...classroom theory, then a practicum in its application (Schön, 1987, p. 158). Students learning to use instructional technology "must practice in order to learn to design" (Schön, 1987, p. 158) and any "designlike practice is learnable but not teachable by classroom methods. And when students are helped to learn to design, the interventions most useful to them are more like coaching than teaching-as in a reflective practicum" (Schön, 1987, p. 157).

Instructional design is a creative activity and the " reflective conversation" a student has with the materials may lead to new insights, meanings, and variant applications of technology. For several reasons it is almost impossible to convey to students what it means to design and implement developmentally appropriate instructional in a classroom setting:

- The gap between a description of designing and the knowing-in-action that corresponds to it must be filled by reflection-in-action.
- Designing must be grasped as a whole, by experiencing it in action.
- Designing depends on the recognition of design qualities, which must be learned by doing
- Description of designing are likely to be perceived initially as confusing, vague, ambiguous, or incomplete; their clarification depends on a dialogue in which understandings and misunderstandings are revealed through action.
- Because designing is a creative process in which a designer comes to see and do things in new ways, no prior description of it can take the place of learning by doing.

(Schön, 1987, p. 162)

This instructional model has been shown to be effective in helping students "become more thoughtful and cognitively flexible so that they can perform better in realistic problem-solving situations" (Grabinger, 1996, p. 679). Stiober (1991) found that this approach was more effective in developing reflective teachers than conventional instruction. Stoiber looked at 67 students in a teacher education program with no experience in classroom management or teaching. She divided the students into three groups organized around an instructional model: technical, reflective, and control. The technical condition was based upon the acquisition of concepts, principles and techniques and is comparable to the instructional model currently being used in Educational Technology in the Elementary School. The reflective condition stressed the construction of concepts and principles based on existing knowledge structures. Using case-based learning the students focused on various aspects of the teaching process and is comparable to the instructional methods proposed for this revised course. In the third condition, control, participants were instructed in educational practices not related to classroom management.

Stoiber examined pedagogical reasoning and problem-solving performance in each of the three conditions. In both areas, students in the reflective condition showed skills more like that of experienced teachers than either the technical or control conditions. Their pedagogical reasoning condition reported significantly more concern about student attitudes. They assumed more responsibility for developing positive learning environments and expressed more concern about student attitudes than either of the two other groups. In

addition, the reflective condition group was more sophisticated in its problem-solving skills. The participants of the reflective condition group exhibited more metacognitive practices and more frequently reported perceptions of themselves as solving problems in a positive and constructive manner than the other two groups.

The instructional design for this course rested upon constructivist principles and was supported by qualitative and quantitative research. Combining anchored instruction with REALs and reflective practicums provided the student with the opportunity to examine instructional situations where technology can be integrated in classroom instruction. It also affords the student the opportunity to assess, analyze, design, evaluate, and implement an instructional design within the context of a realistic instructional problem--a decided improvement over the decontextualized approach currently being used.

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Methodology:

Students enrolled in Educational Technology in the Elementary Schools (N=118) were required to identify an educational problem or situation that could be addressed by using electronic presentation software. The students were required to identify the problem, conduct a needs analysis, and present an informal presentation to the instructor describing the problem and the proposed product. Following the presentation the students were given approximately six weeks to implement their design.

During the six weeks no formal instruction occurred; however the instructor and graduate teaching assistant were available to provide assistance and guidance. The classroom, a teaching lab consisting of 24 networked pentium-class computers, a teacher's workstation, three networked printers, two scanners, and four large-screen monitors took on the semblance of an artist's studio with student's working on projects individually or in groups, wandering in and out, seeking assistance from each other, and the teaching staff providing direction when requested or as needed.

At the end of the six weeks the projects were submitted and evaluated. For the purposes of this study five of the projects were selected and submitted with five comparable projects from a pervious semester to five instructors of educational technology at universities in different regions of the United States. The judges were requested to rank the projects on the basis on instructional design, effective use of technology, and the project's accomplishment of the stated instructional goals and objectives. In addition, the judges were encouraged to make comments about the projects.

Finally, the students were requested to complete a survey indicating their feelings about the course, its design, and implementation as well as any comments they wished to make about the course.

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Results:

The judges ranking of the projects did not reveal any significant difference in design quality or implementation quality between the control and experimental group. There were more positive comments regarding the creativity of the experimental group's projects. It seemed that while the products were not substantially different in content, the subtle differences in design and implementation were noted by at least two of the judges.

The student comments were consistently high in the areas of interaction, both peer and instructor. They recognized that they course was a collaborative learning experience and collaboration was required to

successfully complete the project. They also recognized the reflective components of the course and the contributions they made.

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Discussion:

While the judges' rankings did not result in a significant difference between the control group (projects from a prior semester) and the experimental group (the projects from the reflective practicum semester) the student comments and rankings did provide some positive indicators. First, the students recognized the value of collaborative learning in the development of a multimedia project. Second, the students seemed to gain more from a studio-based class than through formal presentations and instructor-designed activities. Finally, they were able to share amongst themselves a variety of ways electronic presentation software can be used to enhance classroom instruction.

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References:

Brooks, J.G. & Brooks, M.G. (1993). In Search of Understanding: The Case for constructivist Classrooms. Alexandria, VA: Association for Supervision and Curriculum Development.

Carver, S.M., Lehere, R., Connell, T., & Erickson, J. (1992). Learning by hypermedia design: Issues of assessment and implementation. Educational Psychologist, 27, 385-404.

Fosnot, C.T. (1989). Inquiring Teachers, Inquiring Learners: A Constructivist Approach for Teaching, New York Teachers College Press.

Goldman, S.R., Petrosino, A., Sherwood, R.D., Garrison, S., Hickey, D., Bransford,J.D., & Pellegrino, J.W.. Multimedia environments for enhancing science instruction. Paper presented at the NATO Advanced Study Institute on Psychological land Educational Foundations of Technology-Based Learning Environments. Kolymbari, Greece.

Grabinger, R.S. (1996). Rich environments for active learning. In D.H. Jonassen (Ed), Handbook of Research for Educational Communications and Technology (pp. 665-692). New York:Macmillan.

Schön, D.A. (1983). The reflective practitioner: How professional think in action. New York: Basic Books.

Schön, D.A. (1987). Educating the reflective practitioner: Toward a new design for teaching and learning in theprofessions. San Francisco: Jossey-Bass.

Schön, D.A. ed. (1991) The reflective turn: Case studies in and on educational practice. New York: Teachers College Press.

Stiober, K.C. (1991). The effect of technical and reflective pre-service instruction on pedagogical reasoning and problem solving. Journal of Teacher Education, 42, 131-139.

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MAPP: A Multimedia Instructional Program for Youths with Chronic Illness

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Abstract:

The Multimedia Approach to Pregnancy Prevention (MAPP) is an expert intelligence multimedia program administered in outpatient and inpatient clinics in the University of Miami/Jackson Children's Hospital in Miami, Florida. The target population for the MAPP program is youths aged 9-14 years, diagnosed with chronic illnesses (asthma, diabetes, and sickle cell disease). Program sessions take place in a clinic setting, using a portable computer. Three sessions are developed on chronic illness and it's affects on sexual development. The major aim of MAPP is to strengthen intentions to postpone sexual initiation and prevent pregnancy. Evaluation takes place by examining differences between a treatment and control group on pre-post tests at baseline, 1, 3 and 6 months.

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Introduction:

Studies of adolescents show that chronically ill/disabled teens are at least as sexually active as their peers, tend to have an earlier age of sexual debut, are more likely to have been sexually abused, have poor knowledge of sexuality, low self-esteem, low social integration, and have over protective families (Carrera, 1992). There is very little data on pregnancy complications and prevention programs targeted at chronically ill youth. The poor health outcomes associated with "normal" teen pregnancies such as

Studies of adolescents show that chronically ill/disabled teens are at least as sexually active as their peers, tend to have an earlier age of sexual debut, are more likely to have been sexually abused, have poor knowledge of sexuality, low self-esteem, low social integration, and have over protective families (Carrera, 1992). There is very little data on pregnancy complications and prevention programs targeted at chronically ill youth. The poor health outcomes associated with "normal" teen pregnancies such as inadequate weight gain during pregnancy, labor and delivery complications, low birth weight infants, and inadequate prenatal care are well known. These risks are compounded for both the mother and the infant when pregnant adolescents have a chronic illness (LaGreca, 1990).

Parent participation in programs for education about healthy sexuality and pregnancy prevention is an important component for inclusion in pregnancy prevention for this population. When girls aged 12-14 years were involved in pregnancy prevention programs with a parent-daughter workshop component, it has been shown that they were less likely to initiate sexual intercourse than girls involved in assertiveness training/resisting peer influence program components (Postrado & Nicholson, 1992). By conducting education during regularly scheduled clinic visits, the likelihood that parents will be in attendance is increased. There is also a need to include males in health programs to promote sexual abstinence, and the multimedia, computerized approach may be a way to engage young males in pregnancy prevention education.

For younger aged youths (9-14) years, issues of confidentiality and disclosure of feelings about sensitive health issues are difficult and often guarded. Youths in the US tend to be shy and self-conscious in talking to their peers or partners about sexual issues. Physicians and teachers are not always available to take the time that is necessary to conduct discussions about health behaviors, medications, and illness effects that may impact sexual development and pregnancy outcomes. Thus, interventions are needed that protect privacy and confidentiality, and provide opportunities for learning and follow-up discussions with professionals and parents for youths with chronic illness.

Personal computers are being used more frequently to deliver health information, to develop positive health behaviors, and to conduct health risk inventories and surveys (Skinner, 1993; Noell, 1997). Multimedia programs now have the capability to use graphics, animation, sound and video clips to enhance their appeal and to provide feedback to young users.

In the Adolescent Medicine inpatient unit at University of Miami/Jackson Children's Hospital, computers are already a popular choice for games and entertainment. In the Special Adolescent Clinic for HIV+ teens, the computers provide information to HIV+ youths about their illness and are a way of collecting sensitive interview information in a confidential manner.

There are unique characteristics of multimedia-based expert intelligent computerized programs that are important for pregnancy prevention among chronically ill youth. It has been demonstrated that youths prefer computers to human interviewing or advice for sensitive topics (Slack, 1971; Paperny, 1986). Using a Teen Health Advisor software program (Paperny, 1997), over 4200 adolescents reported that they preferred the computer to personal interviews about health and sexual practices (88% vs. 6%). Sixty five percent of the youths described the computer in positive terms, such as, educational, truthful and fun. Eighty-seven percent responded that they would use the computer again. In an evaluation of four software modules developed for British youth on sexual topics, the youths, particularly males, found that using computers in a game format was an enjoyable and informative way to convey information about sensitive sexual issues (Turner, 1997).

Computer games concerning asthma have been shown to affect health behaviors positively among children (Rubin, 1986), and computer assisted instruction has been shown to enhance interactive skills with regard

to sexuality without sensitive personal exposure present in class or group sessions (Kann, 1987). Paperny (1989) developed two computer games, "The Baby Game", and "Romance", for pregnancy prevention and placed them in six pediatric clinics for use by teenage patients. The clinics showed a 15% decrease in positive pregnancy tests for adolescents during the first year of use of the computer-assisted instruction, which was attributed to the computer games. Feedback from parents and male patients was positive.

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Goals & Objectives

The primary goal of MAPP is to strengthen the intention to postpone sexual initiation (and prevent pregnancy) using a multimedia based expert intelligence approach for youths 9-14 years with chronic disease.

The general objectives of the program are:

1. To deliver an abstinence based curriculum approach to pregnancy prevention for youths who attend an adolescent medicine clinic that is specific to their disease diagnosis;
2. To compare knowledge, attitudes and intentions about sexual abstinence in a group of youth who receive the MAPP approach versus those who receive standard care (SC) of print materials and physician advice only in clinic visits;
3. To develop and deliver three modules using a multimedia expert based intelligence approach with strategies that are fun, educational and targeted to youths with a specific chronic disease diagnosis; and
4. To evaluate the results of the MAPP program in order to determine its effectiveness in changing knowledge, attitudes and behavioral intentions, and the training and demands on personnel time that are needed to install MAPP into the clinic setting.

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Program Design

Approximately 150 youths diagnosed with asthma, diabetes, and sickle cell disease who attend inpatient and outpatient adolescent clinics at University of Miami/Jackson Children's Hospital in Miami, Florida are being recruited into the MAPP program. Youths who are determined to meet the eligibility criteria and who have parental consent are randomly assigned to either a MAPP program group (N=100) or the Standard Care control group (N=50). Changes that occur pre-post in knowledge, attitudes about abstinence, and changes in behavioral intention are measured between the two groups.

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Methods & Materials

Subjects. Eligibility criteria for enrollment into the program include age (9-14 years); diagnosis with a chronic illness of asthma, diabetes, or sickle cell for at least 6 months; the ability to read and understand English; and, a willingness to attend at least two (or more) consecutive monthly scheduled appointments.

Informed Consent. Consent for entering this program takes place through written consent forms for both youths and their parents. The program has been submitted and approved by the Institutional Review Board

for the University and the Hospital.

Procedures. Youths are recruited into the MAPP Project based on patient appointment schedules for each of the clinics. While waiting for their appointment with the clinician, youths are actively recruited to participate in the project. Once eligibility criteria are established, youths are given a randomization packet to complete, which includes the baseline questionnaire and study consent forms. The participant opens an envelope which contains a randomization card, a user ID and password number (if appropriate to their group assignment). Only the user ID numbers are used on the information forms for tracking and follow-up purposes. Using the ID number and password allows the youth to log onto the computer and log files are kept of each participant and record the date and length of time they were logged onto the computer, and responses to queries that take place throughout the program modules. There are 3 program modules each about 20 minutes in length. At the end of Module 1 (visit 1) and Module 3 (visit 2), youths are instructed to take a form to their clinician (doctor or nurse). Clinic staff will complete the forms and give them to the interventionist at the end of the clinic.

The project personnel are in the clinic to facilitate utilization of the portable laptop computers by the intervention group youth, set up racks with health information, and to complete the randomization packets.

Materials. The 3 MAPP modules were developed by the study investigators and staff, which include pediatric adolescent medicine specialists, health educators, computer scientists, and adolescent psychologists. The message concepts of the 3 modules are based on the Managing Pressures Before Marriage - Postponing Sexual Involvement (PSI) program (Howard, 1996) and the March of Dimes-funded, "My Health is Worth It" project. Scripts for the modules were reviewed by a Youth Advisory Group, MAPP Study Investigators, and the consultants from the Office of Adolescent Pregnancy Prevention, OPA, DHHS.

The three software modules developed for the MAPP program are graphic, animated, and include use of audio and video clips. Module 1 consists of one module with three separate sub-modules, each one being disease specific. Module 2 is concerned with making decisions and dealing with peer pressure about initiating sex. In Module 3, youths learn to understand relationships and learn to handle peer pressure and sex in those relationships. At the end of Module 3, the project staff asks youths if they wish to participate in ongoing group programs at the clinic.

Multimedia Based Expert Intelligence Development. The steps to the development of the multimedia program include:

1. Documentation and Development of Ideas (DADI):

   Development of lesson content outlines; review of message concepts; incorporation of instructional & behavioral objectives; scientific group review (accuracy & age appropriateness); youth advisory group review; and, outline role plays, games & and quizzes.
2. Evaluation of DADI:

   Two focus groups of youth review scripts; determination of information and decision points; project staff determine scientific accuracy; and, computer specialist advises on technical aspects and feasibility.
3. Development of Story Lines:

   Development of logic flow charts including the list of situations, activities and decision points
4. Development of Handout Materials (DHMs):

Design, flowcharts and outlines of handout materials reviewed by key program and clinical staff for content knowledge, accuracy and modification.

5. Program Specifications and Design (PSD):

   Program development then takes place by the computer specialists and includes instructional design using computer-aided instructional methods and word processing.
6. Development of Multimedia Components (DMCs):

   Designs, scripts and handout outlines delivered to the computer specialists who work with the animator/artist to develop the graphic art, animations, photo retouches and computer designs.
7. Revision of DHM and PSD:

   Editing occurs of both the print handouts and computer modules to check reading levels, text simplification and to complete a grammar and punctuation check. Print handouts to parents are translated to Spanish.
8. Integration of DMCs:

   Artist and programmers collaborate to create animations, artistic drawings and integrate sound.
9. Review of Integrated DMCs:

   Audio and video text are modified after a review by the Youth Advisory Group members and Program staff, eligible youths who attend the clinic pilot test materials, which are not age or disease-specific at this point.
10. Final Clinical Setups:

    Installation of hardware and software. Set up a rack for handout print materials and developing procedures for maintenance and quality assurance checks of programs and equipment.

Measurement Instruments.

Pre-Post Questionnaire: A pencil-paper survey with 17 questions has been developed for the MAPP project from the Medical Knowledge Questionnaire, the Self-Efficacy for Abstinence/Contraception Questionnaire, and the Youth Risk Behavior Survey (for middle school youth). The questions were modified by study investigators to be age and language appropriate.

Computer Log: Each youth in the intervention group will have a computer record on which data is entered each time they login. Data collected will determine the number and length of sessions they complete; the choices and responses made to computer program queries; scores on quizzes in information activities; changes in attitudes and communications that take place between sessions with clinical support staff and parents; and, a rating on the evaluation of the computer program for its ease, enjoyment and suggestions for future modules.

Module Development Logs: Evaluation of the elements of module development are tracked during this process, by collecting variables, such as, amount of video, audio and animation, module themes, software programming, and importing multimedia segments.

Clinic Checklist. A checklist with 5 questions is handed to the clinician who sees the patient for the medical visit. The clinician takes the checklist and asks general questions regarding the material in the modules, how this material makes them feel and if they wish to speak with anyone.

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Evaluation

Process evaluation includes collecting measures on variables related to program timelines, technology development schedules, materials review, and feedback from committee members, project staff and consultants. All phases of the program are monitored to determine that the project meets timelines and completes the program's goals and objectives and workplan. Process measures include:

1. Advisory and focus group assessments
2. Technology development and implementation monitoring forms
3. Handout materials (brochures, flyers) counts
4. Computer based feedback
5. Clinician feedback forms

Outcome evaluation includes comparison of knowledge and attitude change toward sexual abstinence and changes in behavioral intention to choose abstinence in both the intervention and the control group (as measured by the Pre-post questionnaire).

The data analysis plan includes analysis of pre-post differences by chi-square and t-tests to test for differences between the intervention and control group on outcome variables selected (knowledge, attitude, and intentions). Descriptive statistics are used to summarize process variables and to determine if differences in participation and results occur due to age, ethnicity or chronic illness diagnosis.

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Results

Preliminary results of the MAPP program show that 45 adolescents have been recruited and determined to be eligible to participate in the program. Training has taken place in the clinics for 34 physicians, nurses and child life specialists to date. At this time, 30 subjects with a diagnosis of Type-1 Diabetes have completed Module 1. It is anticipated that the additional subjects will begin Module 1 during their next scheduled appointments in the clinic, and that additional subjects will begin the Module 1 for sickle cell disease and asthma in the near future. Due to the preliminary nature of the study, program effectiveness with regards to the outcome variables can not be presented at this time.

From preliminary reports of subject and parent satisfaction with the program, the reports indicate great acceptance. Clinic personnel have also enthusiastically accepted the project, noting that it is readily implemented within the framework of the clinics and inpatient units.

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Summary and Conclusions

Currently, MAPP is the only multimedia program available to youths with chronic illnesses in the 9-14 age group that focuses on pregnancy prevention through an abstinence based approach. Another unique feature of the program is the focus on communication with parents and healthcare providers regarding questions and concerns about subject's illness, its effects on their sexual development and future pregnancy and pregnancy prevention issues. MAPP is unique in its use of an interactive approach to promoting knowledge, attitude and intention change around sexual abstinence.

The experiences and preliminary results from development and the early implementation of the MAPP program demonstrate:

1. Importance of involving youth in the planning and advisory process. Youths (aged 9-17) diagnosed with chronic illness provided valuable information to the scripts, graphics and animations used to convey the messages for the 3 modules. In order to ensure that language was appropriate to the ages of the youths, and that messages were conveyed clearly, it was necessary to hold focus groups and to pilot test the modules with the youths input.
2. Using equipment that is portable and secure in the clinic setting. The laptop computers needed to be transported from clinic to clinic in order to serve both inpatients and outpatients. Installing computers in busy clinics, with interruptions to the subjects and the project staff requires that locks and security devices be placed on the equipment.
3. Designing ways of ensuring confidentiality in data collection and in use of the program within the clinic setting. Placing only subject ID codes on the computerized program and on all forms helps to assure the youths that their responses are confidential.
4. Training clinic staff and physicians in the use of the program and how it can benefit provider/patient relationships. It is anticipated that the communication and questioning about illness, sexual development and pregnancy from youths will increase as a result of being in this program. Training clinic personnel in the information and the messages that are transmitted in each of the modules can help to facilitate communication for both the youths and their health providers.

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References

Carrera MA. Involving adolescent males in pregnancy and STD prevention programs. In SM Coupey & LV Klerman (Eds), Adolescent Medicine: Adolescent Sexuality, Preventing Unhealthy Consequences. Philadelphia, PA: Hanley and Belfus, Inc., 269-281.

Howard M & Mitchell ME. Postponing Sexual Involvement: An Educational Series for Preteens. Adolescent Reproductive Health Center, Grady Health System. Atlanta: 1996.

Kann L, Warren CA, Harris WA, Collins JL, Williams BI, Ross JG, Kolbe LJ. Youth Risk Behavior Surveillance-United States, 1995. In: CDC Surveillance Summaries, September 27, 1996;45 (No. SS-4) 1-81.

LaGreca AM, Follansbee D, Skyler JS. Developmental and behavioral aspects of diabetes management in youngsters. Children's Health Care, 1990;19:132-139.

Noell J, Ary D, Duncan T. Development and evaluation of a sexual decision-making and social skills program: "The Choice is Yours-Preventing HIV/STDs",1997;24:87-101.

Paperny D, Lehman R, Hammar S. Computer assisted detection and intervention in adolescent high-risk health behaviors, abstracted. Amer J Dis Child, 1986;140:293.

Paperny DM, Starn JR. Adolescent pregnancy prevention by health education computer games: Computer assisted instruction of knowledge and attitudes. Pediatrics,1989; 83(5):742-752.

Paperny DMN, Computerized Health Assessment and Education for Adolescent HIV and STD Prevention in Health Care Settings and Schools. Health Educ & Behav, 1997;24(1):54-70.

Postrado LT, Nicholson HJ. Effectiveness in delaying the initiation of sexual intercourse of girls aged 12-14: Two components of the Girls Incorporated Preventing Adolescent Pregnancy Program. Youth and Society, 1992:23:356-379.

Rubin DH, Leventhal JM, Sadock RT. Educational intervention by computer in childhood asthma: A randomized clinical trial testing the use of a new teaching intervention in childhood asthma. Pediatrics 1986;77:1-10.

Skinner CS, Siegfried JC, Kegler MC, Strecher VJ: the potential of computers in patient education. Patient Educ & Counsel, 1993;22:22-34.

Slack WV. Computer-based interviewing system dealing with nonverbal behavior as well as keyboard responses. Science, 1971;171:84-87.

Turner A, Singleton N, Easterbrook S. Developing sexual health software incorporating user feedback: A British experience. Health Educ Behav 27:102-120, 1997.

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Electronic Conferencing in Education: An Example from Social Work

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Abstract:

The use of electronic conferencing in undergraduate social work courses is discussed. Conferencing increases student participation, encourages more effective relationships among participants, and provides additional feedback experiences. Faculty determined that selection of any computer application for courses be guided by specific teaching and learning goals and not by the sense of wonder created by the technology. When selecting computer technology for the classroom time saving and efficiency are less significant considerations than the quality of the education experience for the student.

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Introduction

This paper describes the electronic conferencing experiences in undergraduate social work programs at Southeast Missouri State University and Middle Tennessee State University. The authors do not argue that our experiences with electronic conferencing would be the same in other settings or academic disciplines. The effectiveness of any computer application in an educational setting is dependent on a supportive infrastructure. Student access to computer labs, the time faculty can devote to learning software, faculty skill in the use of applications, and the level of financial support from the university or college are several factors that can determine the contribution of any information technology to the desired learning environment.

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Computer Technology and Social Work Education

The development and use of computer applications in college and university classrooms has expanded at a rapid rate over the last decade (Trow, 1997). Social work education has been part of this growth of technological innovation in the classroom (Caputo, 1990). Clearly there must be ongoing discussion about how the adoption of these new teaching and learning devices will impact student development and faculty-student relationships. The spread of information technology in higher education is problematic if its adoption is not linked to specific outcome goals. Technology decisions must not be driven solely by wonderment over the "bells and whistles" that it offers. The technology based activities developed for the classroom must clearly support the learning environments we wish to create.

For the social work faculty authoring this paper our choice of computer software applications has been shaped by the goals of enhancing the learning environment for prospective entry level social workers. In addition, a practical consideration is that the demand for computer literate, and perhaps fluent, agency personnel is increasing (Gifford, 1998). Social work education must be especially sensitive to this latter demand.

The evaluation of student readiness for sensitive social work practice calls for a high degree of teacher-student interaction. We need to be sure that our students are both emotionally prepared and practically skilled for the demands of professional practice. The need to enhance student participation in class activities, build stronger relationships among students and faculty, and create more avenues of feedback for students should shape the technology that is used in the classroom.

Stimulated and encouraged by the use of e-mail and course web pages, the authors found that electronic conferencing could further enhance the type of learning environment that we felt was appropriate for undergraduate social work education. This application is described below, followed by a discussion of its use in several social work courses.

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What is Electronic Conferencing?

Electronic conferencing is a computer-based method for communicating and discussing course-related issues outside the classroom. Conferencing provides an asynchronous learning experience that will enhance more traditional activities. Posting to an interactive, computer based "bulletin board" gives students and faculty opportunities to interact after class has ended.

A variety of activities take place through conferencing. Assignments are posted to the conference board, questions raised by both instructor and student, and personal communication takes place between participants. As discussed in more detail below, conferencing encourages greater student participation in class discussions, expands student-faculty interaction, and provides a mechanism for expanding feedback for both faculty and student. By encouraging a wider range of dialogue among all the participants in the learning process, conferencing outside the classroom can construct and enhance what Petraglia (1998) refers to as an authentic learning environment of ongoing exchange and knowledge building. Just learning how to use the conferencing board, for example, becomes a collaborative experience that encourages and enhances other group activities.

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Applications

An electronic conference has a variety of applications:

- The instructor may use a board to disseminate information about assignments and class.
- Lecture is enhanced by an asynchronous board as students post answers to discussion questions.
- As an alternative, discussions on a board or chat session may be used as a substitute for some traditional class sessions.
- A board and/or chat may be set up for students to collaborate with each other on class projects.
- A board and/or chat may be used for a distance learning course.
- A board provides the opportunity for instructors to more accurately monitor the progress of students.
- A board creates additional opportunities for increased interaction between students and between students and instructors.

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Requirements for Electronic Conferencing

Several important conditions contribute to the effectiveness of electronic conferencing. Conferencing is not a time saver but a means for enhancing education. It is more easily managed with smaller classes but it is productive with larger classes. Administrative expectations often dictate larger enrollments for classes. Conferencing technology can help to overcome some of the issues of quality that emerge such as limited student-faculty interaction and the sense of alienation that emerges when students become just faces and numbers in classes.

Another foundation for effectiveness in conferencing is the commitment of the instructor to being actively involved in the process. Instructors must participate actively but not to the point that they dominate the discussion. Faculty must be comfortable with the idea of allowing students greater autonomy in the educational process. This may mean that faculty will be required to depart from traditional teaching methods of lecture and test and investigate other strategies that foster learning and growth.

Faculty must also be sensitive to the fact that student skill in computer technology is highly individualized and varied. Instructors need to be sensitive to the reluctance of some students to use the technology while recognizing the advanced capability of others. There will be some students who have knowledge and capability that exceed that of the instructor. Faculty must learn to take advantage of this and not be defensive. The more knowledgeable students will be able to help those students who are less prepared or somewhat phobic about the use of any computer technology. Some class time is needed introducing the conferencing technology. It is common for students to encounter some problems initially, but since conferencing applications are user friendly, they rather quickly become proficient in its use.

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Using Electronic Conferencing for Social Work Education

The authors of this paper found that electronic conferencing, supported by other educational technologies such as e-mail, course web pages, and presentation software, can improve student participation, enhance the quality of relational experiences, and provide effective mechanisms for feedback. Conferencing can be accessed through a course home page that contains the syllabus and other key links. By placing a link to conferencing in the course home page, assignments for the board are more fully integrated into the course content.

The impact of conferencing on participation, relationship, and feedback is discussed below. These areas are not, however, separate and distinct processes. They are interrelated and circular experiences that support one another in a complex way. Student participation, for example, is influenced by positive, timely feedback to the student's postings to the board. By the same token, effective feedback enhances faculty-student relationships that will, in turn, lead to more productive student participation. The interrelated nature of the three activities is illustrated and described below.

Students are excited when their postings on the conference are treated with dignity and seriousness. They begin to see themselves as participants in a larger teaching and learning process rather than simply passive recipients of "just the facts". The wide range of interaction offered by conferencing allows a complex interrelated process of participation, relationship, and feedback to emerge.

Student Participation: An electronic conference provides an additional "voice" for students who find it difficult to contribute to classroom discussions. Large enrollments often limit participation and dialogue and many students fear personal humiliation by giving a "wrong answer." In addition, students may feel intimidated by other students and faculty who dominate discussions. Students are further discouraged in a traditional setting where communication ends by the clock. The electronic conference is less threatening as a means for students to share their opinions and ideas more freely. Another important benefit is conferencing removes the pressure of being "put on the spot" which students often feel in the classroom setting. They have the opportunity to contemplate and generate questions and responses at a time, and in an environment, that may be more conducive to creative thinking.

The social work faculty noted that, when using the conference, students who were non-verbal in the classroom begin to interact more. They were more active in originating questions and posting responses and their participation in class increased. The following examples illustrate what has been observed as rather common student experiences in the use of conferencing.

Sakina was struggling to grasp and integrate course information. She seemed closed and afraid to express her ideas. Her test scores were marginal and her writing lacked depth and substance. She did not participate in class discussions and seldom interacted with other class members. When asked a question directly, she became flippant and it was clear that she was self conscious, confused, and embarrassed. During an office visit with the instructor she said that she had always been afraid of asking a "stupid" question or giving a "stupid" answer. In addition, she felt intimidated and inferior to her student colleagues who seemed to her so knowledgeable and capable. Encouraging her to talk more in class failed to change her behavior. In a subsequent class Sakina was introduced to electronic conferencing. Initially, her postings to the board were guarded. Her postings lacked confidence and substance. However, after the first week Sakina became one of the most active participants on the board. The substance of her comments improved considerably, she posted questions, responded thoughtfully to the postings of others, and most interestingly, began to post thoughtful daily messages of encouragement. Her classmates responded with complimentary comments and many also communicated directly with her through personal e-mail messages. Students began to comment on Sakina's daily messages in class. She began to participate more readily in class discussions and her personal interaction with her classmates increased significantly. She gained confidence and the quality and quantity of her overall work improved.

Sarah was a very capable student who tested and wrote well. Sarah, however, would not enter into class discussion unless questions were put to her directly. It was clear from her written work that she had much to offer the class through discussion. Although she was encouraged by the instructor to share her ideas with the class, Sarah just did not seem comfortable enough to spontaneously become involved in the discussion of issues. The class was a practice course and the first in the department to utilize interactive electronic conferencing to enhance teaching and learning goals. After she began posting to the conference board it

became evident to her classmates and the instructor that her grasp of practice principles and social work values and ethics were very well thought out and integrated. She also articulated them well and connected them to real life scenarios. Students were able to gain much from Sarah's postings and would often spontaneously post a request for her perspective on issues related to practice.

Tina was a very articulate and interactive student with a genuine desire for learning. She regularly asked questions in class and was always ready with an answer but was careful not to dominate the discussion. Tina was rather skilled in computer technology but had not experienced interactive electronic conferencing. She was eager to have this new and different opportunity initiated into the teaching and learning activities of the class. From the first day, Tina became an avid user of the conference. Through her involvement, she was able to expand her own learning and professional development while inciting the class and the instructor to greater involvement and integration. She read every student's comments and posted responses to every question. She raised the overall quality of responses by posting ideas that were substantive, carefully thought out, and tied to theory and practice. Her posts gave the instructor the opportunity to respond and pose questions that genuinely enhanced the learning experience for the entire class. Reflecting on the conference discussion in subsequent class sessions was very productive. In all likelihood, many of the questions that were generated through conferencing could not have been asked in class because of time constraints. However, because of the conference and the stimulation of a very capable and teachable student, learning reached a higher level in this course.

The use of interactive electronic conferencing provided a valuable avenue for expression and participation for these students. They were empowered by the process. Their confidence and grasp of the social work knowledge, skills, and value base expanded as their participation increased. All participants found through this extended interaction, that they could learn much from each other. In addition, reading the postings of other students promotes creative thinking. Interacting with one another in this manner gives students the opportunity to evaluate their professional progress in relation to each other. In addition to facilitating learning, students also have an avenue for increased mutual support and constructive criticism. These opportunities support the development of meaningful collegial relationships. These interactions occur on a regular basis simply because the opportunity to communicate with each other is always available.

Improving Relationships: Social work education regards two major outcomes as essential in the educational process: the student's acquisition and demonstration of the knowledge, skills, and values base of social work and the student's individual and professional growth and development. A key element in professional growth is the development of positive and productive emotional and intellectual relationships with other students and, perhaps as significant, with the instructor. Unquestionably, these relationships can be developed without the use of educational technology, however, interactive conferencing can facilitate and enhance the development of appropriate collegial relationships and a mentoring quality in relationships between faculty and students. Electronic conferencing increases the possibilities of realizing these desired outcomes because it provides a remarkably productive opportunity for interaction. Using this medium the instructor can post comments or questions to enhance a variety of teaching and learning objectives. The e-mail function offers another effective tool for increasing the frequency and the quality of communication. Instructors can respond quickly and frequently to messages students post to the board. The capability to generate a timely response makes it possible to seize a teaching moment that may otherwise be lost.

This technology strongly supports individualization of the learning experience. It provides opportunities for the instructor to directly participate in the socialization and professional growth of the student and it fosters the development and maintenance of a genuine mentoring relationship. Instructors are able to transcend the regularly scheduled class time and the somewhat limited office hour. It is a way for faculty to actively relate our professional and personal concerns for students rather effectively and efficiently. It is the experience of the authors that most students benefit from this type of faculty-student interaction. Student comments indicate that the interchange with the instructor and other students makes them feel more

connected to the class, the instructor, and the learning goals of the course. The following example is offered:

Pam was a "non-traditional" student--not unlike many others enrolled in the university. She was a single mother with three children and a full-time job. From the time she awakened in the morning she was running to meet her demanding schedule. Dropping her children at day care, she drove half an hour to class, arriving minutes before it began. She tried to be attentive but was often preoccupied and always appeared tired to the point of exhaustion. When class ended she left immediately to travel thirty minutes to her job. There was little, if any, interaction with her student colleagues. During the semester it was clear that Pam was not grasping the course content and her professional growth and development was nil. She was barely making it through each day. On rare occasions she came to the instructor's office to clarify assignments and discuss papers and upcoming exams. Questions about her overall well being would trigger a rush of tears. Words of encouragement and support and occasional phone calls from the instructor seemed to become lost in the frustration of her life. Pam was overwhelmed and feeling alienated and incapable. The demands on her time were creating incapacitating stresses and she found it difficult to feel successful in any area of her life. The semester was nearly an academic disaster for her.

The following semester Pam enrolled in the practice course where interactive electronic conferencing was being used. In the past Pam had not had time to learn to use a computer. A useful computer was setting at home and had never been touched. This activity seemed overwhelming. After the orientation session, Pam experienced some problems accessing the conference board but she did not become discouraged. A brief, private session with the instructor was all that was required to solve her problems with the technology. The ability to communicate with Pam via the conference and the e-mail function was a welcome opportunity for the instructor. Having access to other students and the instructor opened up a new educational dimension for Pam. She began to interact with her classmates and the instructor from her home in the evening. It was possible for the instructor to genuinely offer positive critique, encouragement, and direction in response to her postings to the conference board. Pam often commented that the class experience was the most satisfying and growth producing experience of her life. Pam's interaction with her student cohort in the social work program moved to a new and productive level. She was able to develop an open and productive relationship with students and the instructor and her feelings of alienation were replaced with a sense of belonging. Her self-esteem and interaction improved considerably, as did the quality of her academic work.

The instructor's opportunity to develop a responsive mentoring relationship with Pam is characteristic of what can occur through conferencing and use of the e-mail function for feedback, support, and encouragement. This activity holds considerable promise for individualizing the student, communicating regularly and honestly, and demonstrating respect and positive regard.

Opportunities for Feedback: The authors stated earlier in this paper that participation, relationship, and feedback are closely interrelated and interconnected experiences in the pedogogical process. The common facilitating element that makes it all work is communication. The conference can be used to increase communication and provide meaningful feedback in a variety of areas. Instructor activities can include comments and guidance on questions or answers posted to the conference and personal encouragement related to scholarship or professional and individual growth.

In one exercise using conferencing the instructor posted several ethical dilemmas involving direct services for clients and others related to agency and community issues. In responding to the cases students were to identify relevant passages from the National Association of Social Workers' Code of Ethics, point out possible multiple responses to the problems, and discuss the comments of other participants. Here feedback is not just a two way process from instructor to student but has become a multi-layered collection of feedback loops from student back to the faculty and to other students. This process of statement followed

by a series of complex responses also stimulates in class discussion. In one exchange three points of view emerged in conferencing over the issue of client self determination versus the need for social workers to protect clients when their situation becomes self-destructive. The three points of view were used to develop three groups in class who developed arguments supporting each view. This process eventually led to some consensus over the specific case issue. This exercise was more efficient through the use of conferencing. By taking up only one class period for the three groups to meet instead of having to use what could have been two or three sessions to present the ethical dilemma, then develop the ideas or conflicting points of view and then have group meeting to form a consensus. The most important result, however, was in the students seeing their perspectives and points of view being treated in a serious manner. The class discussion became more productive. Students felt prepared for the in-class discussion.

Testing via the conference board has excellent potential but has not been fully utilized by the authors. Generally, questions related to a particular topic are posted to the conference at regular intervals and responses may be evaluated and scored. This approach supports the teaching and learning goals of learning from one another and the opportunity to give and receive feedback. If a more independent testing situation is desired, the instructor may choose to have the responses of students e-mailed directly to his or her address. Secure testing using a variety of question formats such as multiple choice, true false, and short answer can be executed by some electronic conference applications. In one course the instructor gave the students the opportunity to work together in dyads and develop one of the course examinations. The students chose a question from the material discussed in class and/or the text and posted it to the board. The student dyads became moderators of their question and were responsible for providing feedback to all class members regarding their answers. In addition, student moderators graded the answers in consultation with the instructor. This gave students the opportunity to extend their participation to the teaching/learning activity of testing. They were challenged in determining the significance of course material and participation in the collegial activity of critique.

The authors of this article have also been developing a process of student interaction between our respective campuses. One group of advanced practice students in the final semester of field experience use the conference to communicate over assignments and field issues. Students from a class at another university also have access to the same conference board. Both classes have expressed a great interest in communicating with one another over student issues and experiences and some contact has occurred.

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MEASUREMENT

Two methods of measuring the student experience are in process. A survey instrument will be administered to all students who used electronic conferencing in social work classes. The instrument will assess the students' perceptions of the usefulness of electronic conferencing as a teaching/learning tool and measure the extent to which the use of the technology affected participation, relationship building, and feedback. Data will be gathered over several semesters and analyzed in the Fall of 2000.

The second measure is a video-taped panel of students who have used electronic conferencing. They spontaneously discuss the merits of the technology as a teaching/learning tool and its affect on participation, relationship building, and feedback. The video taped is available for viewing. They gave support to the hypotheses of participation, relationship building, and feedback. Statements from the student panel included some of the following:

- "I was much more comfortable discussing topics on the conference than in class. I learned a lot from the opinions of others and comments from the teacher."
- "It was nice to have some place to state your opinions. I didn't seem like there was enough time in

class."

- "I felt much closer to everyone in the class after I got some feedback from them about my posting to the conference board."
- "Using the conference made me more comfortable talking about the class topics."
- "It was great to have the instructor e-mail personal notes directly to me."
- "I didn't participate much in class because I felt I would say something stupid. The conference board gave me the opportunity to see that many students actually gained something from my comments. It made me want to participate in class after awhile."
- "The conference made it possible for me to have much more contact and involvement with other students. My work schedule made it impossible for me to come to school early plus I had to leave right after class and couldn't talk with classmates. After work I could read comments on the conference and respond. It really helped me understand the HBSE material. It was a great help to me as a non-traditional student who had to travel and had to work."
- "I liked Professor Stokes's encouragement that he posted to the conference and the personal messages he sent by e-mail."
- "I really got to know other students in the class better. I felt more comfortable around them and took special interest in their learning, as well as my own. I guess I decided I had something to offer others."
- "I didn't think I was going to enjoy the conferencing board when Dr. ... first told us about it but I found it was one of the most enjoyable parts of the class."

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CONCLUSIONS

For social work education, evaluation of student readiness for entry level social work practice involves more than just a measurement of knowledge obtained over a four or five year period. Care must be given to understanding the student's level of internalization of core practice values and in their potential to handle the emotional demands of what is a challenging line of work. Evaluation for practice readiness must include a high degree of interaction among all the participants in the learning environment. Student participation in class assignment activities is a means of measuring commitment to the work. Active interaction between students and faculty enhances the student's readiness for the complex set of relationships they will find in practice.

Electronic conferencing can enhance participation, relationship, and feedback because of its ability to extend learning and interaction beyond the classroom. It provides an avenue for a continuation of learning through ongoing interaction with material from the class, extended interaction with classmates outside of the classroom setting, and the generation of topics and ideas independent of the classroom. Efficiency and speed can be overemphasized as justifications for the adoption of any computer technology for the classroom. Electronic conferencing, with enhancement of the learning environment to meet specific educational goals, is one tool that can be an effective part of course work in a social work program.

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References

Caputo, R. (1990) Information Technology in Schools of Social Work. Journal of Social Work Education 28(2), 187-199

Gifford, E. (1998) Social Work on the Internet: An Introduction Social Work 43 (3), 243-251

Petraglia, J.(1998) Reality By Design: The Rhetoric and Technology of Authenticity in Education New Jersey: Lawrence Erlbaum Associates

Trow, M. (1997) The Development of Information Technology in American Higher Education Daedalus: Journal of the American Academy of Art and Science 126 (4), 293-314

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JavaScript: Convenient Interactivity for the Class Web Page

http://gray.music.rhodes.edu/mtsu99/mtsu99.html

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Abstract
This presentation will show how JavaScript can be used within HTML pages to add interactive review sessions and quizzes incorporating graphics and sound files. JavaScript has the advantage of providing basic interactive functions without the use of separate software applications and players. Because it can be part of a standard HTML page, it is cross-platform as well. Templates will be provided to participants to enable them to customize their own pages without having to learn JavaScript in any detail.

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Introduction
Interactive exercises are a valuable addition to class web pages. They allow students to review material and to get immediate feedback as they answer questions. A wide variety of software products allow teachers to customize quizzes and exercises for their students. Frequently these are platform specific or they require applications or players to be loaded on to the machine. By contrast, JavaScript can be placed directly into HTML text files and thus can provide an easy and economical alternative to the use of separate applications.

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What is Javascript?
JavaScript should not be confused with Java. Java is a compiled programming language, similar to C. It has the ability to write major applications and insert them in a web page as a special object called an "applet." Java is also unique in its ability to run the same program on IBM, Mac, and Unix computers. Java is not considered an easy-to-use language for non-programmers. JavaScript, on the other hand, is a scripting language that can be used by average Web designers. It is particularly attractive to non-programmers because it requires no separate applications or compilers. It is simply scripted text that is incorporated into a HTML page to add enhanced interaction with the user. For this reason, it is attractive to educators who would like to take a step beyond putting class materials on the Web. JavaScript can provide a variety of opportunities interaction with students.

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a HTML page to add enhanced interaction with the user. For this reason, it is attractive to educators who would like to take a step beyond putting class materials on the Web. JavaScript can provide a variety of opportunities interaction with students.

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Method

It would be misleading to say that JavaScript is as easy to learn as basic HTML. However, as with learning HTML, the best way to get started is to study the code for existing projects on the Web and adapt it. To see the text of the code it is only necessary to View Page Source code, save it as a text file, customize it, and load it on a server. In the Web Resources section below are a number of JavaScript resource sites available on the Web. The list contains archives of scripts as well as tutorials for those interested in learning to program in Javascript. The tutorial in JavaScript for the Non-Programmer published by Webteacher.com is particularly helpful.

When adapting scripts it is important to be aware of copyright issues. Frequently, the text of the code includes instructions to keep the copyright notice in the code even after making changes. This notice may be "commented out" so it is only visible in the source code, not on the actual web page. Requests to include code should be scrupulously observed.

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Application

JavaScript is particularly helpful in creating objective interactive reviews for courses that require the memorization of terms, translations, and other types of short answers. These quizzes can be used as part of class home pages that provide a wide variety instructional information. Currently at Rhodes, they are used only for review and not for on-the-record grades. Small class size minimizes the need for a distance learning approach to testing. However, online reviews that are available in the labs and wired dormitories are valuable in that they adapt to students' variable study schedules.

Student reaction to online reviews in Rhodes music courses has been overwhelmingly positive. Student evaluations credit the exercises with "actively engaging" them with the material. Some of the exercises were created by the students themselves who were intrigued by the idea of producing study materials that will be available on the Web long after the class is finished. Students seem to be more critical of materials they create for distribution over the Web than they are for work that is only seen by the professor. JavaScript quizzes can be created as a collaborative effort between students and professor. They also have the advantage of being very easy to edit and update.

The following Rhodes College music course sites use JavaScript in a variety of ways:

Music 227-228: European Musical Heritage
http://gray.music.rhodes.edu/musichtmls/mh.html

Music 121: History of Opera (The Butterfly Project)
http://gray.music.rhodes.edu/musichtmls/bfproj.html

Music 116: Music and Society
http://gray.music.rhodes.edu/musichtmls/music116.html

A technical advantage of JavaScript is the ability to save the code as a plain text file, store it on a CD-ROM and view it with any browser. This allows students to have portable review files that can be

viewed locally without a live connection to the Internet. CD-ROMs of this type can now be produced easily and economically and can be sold along with the traditional text book.

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Examples
The following are examples of simple scripts that provide difference functions for objective online tests. Following the link to the test will demonstrate how its format. The abbreviated script in the appendix cuts away all be the essential code. The only sections that need to be customizes are indicated in red bold type.

True-False with Hints Given After Incorrect Answers
http://gray.music.rhodes.edu/MTSU99/tfquiz.html
Abbreviated Script--See Appendix A

Multiple Choice with Immediate Response to Each Question
http://gray.music.rhodes.edu/MTSU99/heroine.html
Abbreviated Script--See Appendix B

Multiple Choice with Correct and Incorrect Answers Given after Submission
http://gray.music.rhodes.edu/MTSU99/
Abbreviated Script--See Appendix C

Multiple Choice with Penalty for Incorrect Answers
http://gray.music.rhodes.edu/MTSU99/proktest.html
[Script is too long to include in appendix. Download from source code at the URL on the preceding line.]

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Conclusion
JavaScript provides a streamlined, efficient, and economical way of providing interaction to web pages. Currently, adapting pre-existing code is best way for educators to begin to take advantage of it. This must be done in plain text documents because the most popular entry level web page editors do not support it. However, more professional products, such as Adobe's GoLive 4.0, now provide some JavaScript editing capabilities and point the way to easier use in the future.

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Web Resources

Tutorials:
Javascript for the Non-Programmer: http://www.webteacher.com/javatour/
Thau's JavaScript Tutorial: http://www.hotwired.com/webmonkey/javascript/tutorials/tutorial1.html
Developer.com Tutorial: http://www.developer.com/classroom/tutorials/cl_javascript.html

Script Archives:
The JavaScript Source: http://javascript.internet.com/
JavaScript.com: http://www.javascripts.com
The Last Wave JavaScript Source: http://www.thelastdomain.com/alan/thelastwaved.html
Java Goodies: A Repository of Scripts: http://www.javagoodies.com

Cut and Paste JavaScripts: http://www.infohiway.com/javascript/indexf.htm

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Suggested Reading

Flanagan, David. *JavaScript: The Definitive Guide*, 3rd ed. O'Reilly and Associates, 1998. ISBN: 1565923928

Frentzen, Jeff, Henry Sobotka, and Dewayne McNair. *Javascript Annotated Archives.* Osborne McGraw-Hill, 1998. ISBN: 0078823641

Goodman, Danny. *JavaScript Bible*, 3rd ed. IDG Books Worldwide, March 1998. ISBN: 0764531883

Heinle, Nick. *Designing With JavaScript : Creating Dynamic Web Pages* (Web Review Studio Series). O'Reilly and Associates, 1997. ISBN: 1565923006

Lund, William B. and Brian Holman. *Instant JavaScript*. Prentice-Hall, 1996. ISBN: 0132684349

Negrino, Tom and Dori Smith. *JavaScript for the World Wide Web: Visual QuickStart Guide*, 2nd ed. Peachpit Press. ISBN: 0201696487

Neou, Vivian and Curt Aubley. *HTML 4.0 CD with Javascript* . Prentice Hall, 1999. ISBN: 0130957836

Purcell, Lee, and Mary Jane Mara (Contributor). *The ABCs of Javascript*. Sybex, January 1997. ISBN: 0782119379

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Appendix A

Instructions for Use of Appendices
Copy and paste the code into a plain text document such as one created by SimpleText or NotePad. **Do not copy the text into an HTML editor unless you are sure that it supports JavaScript.** Only the sections in red bold type should be customized.

```
<HTML>
<HEAD>
<TITLE>Opera Quiz</TITLE>
<SCRIPT LANGUAGE="JavaScript">
<!-- hide from old browsers
function userAlert()
{
alert("Very good!");
}
function userAlert2()
{
alert("No, but a Pushkin poem was used for Boris Godunov.");
}
function userAlert3()
{
alert("It was a bass. Feodor Chaliapin was a famous Boris.");
```

```
<!-- done hiding -->
</SCRIPT>
</HEAD>
<BODY BGCOLOR="#ffffff">
<H3 ALIGN=CENTER>Opera Quiz</H3>
<B>1. The title role in Moussorgsky's <I>Boris Godunov</I> is sung by a bass. </B>
<FORM> <INPUT TYPE="button" VALUE=" True " onClick="userAlert()">
<INPUT TYPE="button" VALUE=" False "onClick="userAlert3()" ></FORM></P>
<P>
<B>2. Glinka's <I>A Life for the Tsar</I> was based on poem by Pushkin.</B>
<FORM><INPUT TYPE="button" VALUE=" True " onClick="userAlert2()" >
<INPUT TYPE="button" VALUE=" False " onClick="userAlert()"></FORM></P>
</BODY>
</HTML>
```

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Appendix B

```
<html>
<head>
<title>Puccini Heroine Quiz</title>
<script>
<!-- hide
/* GameQuiz v1.0 by Monichar.
Copyright (c) of Monichar, 1997.
Permission to use, edit, etc. granted as long as the head section is intact!
*/
var ans = new Array;
var done = new Array;
var text = new Array;
var score = 0;
ans[1]= "d";
ans[2] = "c";
text[1] = "Puccini's operas usually revolve around the heroine.";
text[2] = "No, it was Musetta.";
function Engine(question, answer) {
if (answer != ans[question]) {
if (!done[question]) {
done[question] = -1;
alert(" Wrong!\n\nYour score is now: " + score + "\n\n" +text[question]);
}
else {
alert("You have already answered that!");
}
}
else {
if (!done[question]) {
done[question] = -1;
score++;
alert("Correct!\n\nYour score is now: " + score);
}
else {
alert("You have already answered that!");
}
}
}
//-->
</script>
```

```
<BODY BGCOLOR="#ffffff">
<center><H2>Puccini Heroine Quiz</H2></center>
This script will automatically check your answers for you.<p>
<b>JavaScript required!</b><p>
<noscript>JavaScript is <b><i>disabled</b></i>. Get Netscape 3.0 or turn it on!</noscript>
<form>
<b>1. The action in most of Puccini's operas seems to pivot around:</b><p>
<input type=radio value="a" onClick="Engine(1, this.value)">the enemy<br>
<input type=radio value="b" onClick="Engine(1, this.value)">the hero<br>
<input type=radio value="c" onClick="Engine(1, this.value)">the chorus<br>
<input type=radio value="d" onClick="Engine(1, this.value)">the heroine<p>
<b>2. The New Grove Dictionary of Music and Musicians describes the Puccini Heroine as "frail creatures who
live and die for love". This is true of all of the following except:</b><p>
<input type=radio value="a" onClick="Engine(2, this.value)">Violette<br>
<input type=radio value="b" onClick="Engine(2, this.value)">Manon Lescaut<br>
<input type=radio value="c" onClick="Engine(2, this.value)">Musetta<br>
<input type=radio value="d" onClick="Engine(2, this.value)">Mimi<p>
</form>
<H4>Reload the page to take the test again.</H4>
</BODY>
</HTML>
```

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Appendix C

```
<html>
<title>Prokofiev Test</title>
<body bgcolor=#ffffff text=#111188 link=#CC6600 vlink=#006633 alink=#FF0033>
<script language="JavaScript">
//function to display the answers
function display_answers(){
if (document.quiz.answer1[0].checked == true) document.quiz.a1.value=" A";
if (document.quiz.answer1[1].checked == true) document.quiz.a1.value=" B";
if (document.quiz.answer1[2].checked == true) document.quiz.a1.value=" C";
if (document.quiz.answer1[3].checked == true) document.quiz.a1.value=" D";
if (document.quiz.answer2[0].checked == true) document.quiz.a2.value=" A";
if (document.quiz.answer2[1].checked == true) document.quiz.a2.value=" B";
if (document.quiz.answer2[2].checked == true) document.quiz.a2.value=" C";
if (document.quiz.answer2[3].checked == true) document.quiz.a2.value=" D";
}
//function total the quiz answers
// assigns correct answers in array.
function total() {
var tot = 0;
//answer#[0-3] 0=A, 1=B, 2=C, 3=D
if (document.quiz.answer1[0].checked == true) tot = 1;
document.quiz.q1.value="A";
if (document.quiz.answer2[3].checked == true) tot += 1;
document.quiz.q2.value="D";
if (tot==2) document.quiz.totalscore.value ="2 out of 2, Very Good!";
else document.quiz.totalscore.value = "You answered " + tot + " out of 2 correctly.";
}
</script><br>
<CENTER><h3>Prokofiev Test</h3></CENTER>
<form name="quiz">
<table border="0" cellpadding="7" width="600"><tr>
<td valign="top" width="300">
<B>1. Prokofiev received his early conservatory training in:</B><br>
```

```
A <input type="radio" name="answer1">St. Petersburg<br>
B <input type="radio" name="answer1">Moscow<br>
C <input type="radio" name="answer1">Stalingrad<br>
D <input type="radio" name="answer1">Novgorod</td>
<td valign="top" width="300">
<B>2. All of the following are characteristic of Prokofiev's early piano music except:</B><br>
A <input type="radio" name="answer2">striking use of dissonance<br>
B <input type="radio" name="answer2">machine like rhythmic passages<br>
C <input type="radio" name="answer2">strong sense of percussion<br>
D <input type="radio" name="answer2">left hand lines modeled after those of Chopin</td>
</tr>
<tr>
</tr></table>
<table border="0"><tr>
<td width="300"><input type="button" value="Submit" onclick="total(); display_answers();">   <input type="reset"
value="Reset"></td>
<td width="400"><input type="text" size="50" name="totalscore"><br></td>
</tr></table>
<P>
<CENTER><table border="0"><tr>
<td valign="top" width="125"><b>Your Answers</b><br>
Q 1: <input type="text" size="2" name="a1"><br>
Q 2: <input type="text" size="2" name="a2"><br>
</td>
<td valign="top" width="125"><b>Correct Answers</b><br>
Q 1: <input type="text" size="2" name="q1"><br>
Q 2: <input type="text" size="2" name="q2"><br>
</td>
</tr></table></CENTER>
</body>
</html>
```

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Using a Word Processor to Put Math Symbols on the Home Page

Katherine Creery
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Abstract:

This presentation demonstrates the use of Word 97 and WordPerfect 8 to get mathematics symbols onto the web. Participants will learn to use the Equation Editor and web pages to make, or take existing documents and save them as HTML files. They will also learn how to draw graphics and add them to their web pages. Lastly, they will learn a simple way to organize them on their server.

Using a Word Process to Put Math Symbols on the Home Page

Introduction:

Putting math symbols onto a home page does not require the purchase of a special mathematical or graphics program. It can be done using word processors such as, Microsoft Word or Corel Word Perfect. The documents can be created in any version that has an equation editor, but must be changed into an html file using a later version that has this capability. This means that material already created can be converted to an html and placed on a homepage. There is no need to retype your work into a special program. Any new material can be created as a web page and easily saved as an html file. If you do it this way, you will not be able to make it back into a regular word page and have the image files shown on the screen. Therefore, if this is something that you would like to have as both a word document and an html document, start the document as a regular word document, and then change it to the Web document.

The trick that is not clearly given in the directions of these word processor programs, is that when your program is saved as an html, one image file for each equation will be saved at the same time. If you are saving to a file folder that includes other things, the image files will be hard to find. In the word processors, the image files are numbered by the computer, and you have no control over the numbers. Therefore they can get lost in a maze of other image files in your folder.

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Pre-Planning :

The solution is simple, but does require a little pre-planning. Make a file folder for each document you will be putting onto the home page. Save your document as an html to this file folder. Then you will

have captured all of the image files that go with that document. The pre-planning comes in deciding how you want to name the documents for your home page. If you are going to have test reviews and solutions to the tests both on your home page and this will be for different courses, you will need to make a lot of different file folders on your hard drive or floppy disks. You will also have to have names for other documents like handouts, syllabi, quizzes, etc. Here is an example so you can see some possibilities:

Name of item Abbreviated name

Elementary Algebra test 1 review ealg1rev or 08201rev

Elementary Algebra test 2 review ealg2rev or 08202rev

Elementary Algebra test 1 solutions ealg1sol or 08201sol

Elementary Algebra test 2 solutions ealg2sol or 08202sol

Elementary Algebra factoring worksheet ealgfac or 0820fac

Elementary Algebra syllabus ealgsyl or 0820syl

Intermediate Algebra test 1 review ialg1rev or 0821rev

Intermediate Algebra test 2 solutions ialg2sol or 08212sol

Intermediate Algebra synthetic division ialgsyndiv or 0821syndiv

Intermediate Algebra syllabus ialgsyl or 0821syl

Keep your abbreviated names short and easy for you to understand. When appropriate, course numbers may be easier to use. The new word processing programs now allow you to use more than the old 8 character name, but when you move this to your home page you will find that the shorter the better.

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Saving Documents as HTML:

Once you have made all of the file folders on your hard or floppy drive, you are ready to start saving your existing documents as html. Be sure that your version of the program is capable of doing this, or find someone with a computer that can. If you plan to use someone else's computer, you will need to make the file folders on your floppy disks.

Follow the steps below for **Microsoft Office**:

1. Go to the word "File" on the upper left-hand corner of your screen, select new, and then select web pages and click OK.
2. Next open your existing document (It will come up on a different window). Block it and copy it onto the clipboard.
3. Go to "Window", click and select the unnamed document.
4. Go to the paste icon and click. Your document should now be on your web page screen.
5. Go to "File" and select "Save as HTML", then select the file folder you named for this document.
6. Give your document the same name as the file folder and click save.

For **Corel Word Perfect** the steps are similar. You will find what you need under "File" on the upper

left hand corner of your screen, then under "Internet publisher", and then select "Format as web document". To save you go to "File" then "Internet publisher" and then "Publish to html --> save a copy of the current document as html format".

In your file folder, you should have the document you just saved, and an image file for each time you used the equation editor in that document. Repeat these steps for each existing document that you want on your home page.

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Creating a New Document:

To create a new document to put on your home page, follow the steps below for **Microsoft Office**:

1. Go to the word "File" on the upper left-hand corner of your screen, select new, and then select web pages and click OK.
2. Now type your page as you would do in your word processor.
3. Go to "File" and select "Save as HTML", then select the file folder you named for this document.
4. Give your document the same name as the file folder and click save.

For **Corel Word Perfect** the steps are similar. You will find what you need under "File" on the upper left hand corner of your screen, then under "Internet publisher", and then select "New web document". To save you go to "File" then "Internet publisher" and then "Publish to html --> save a copy of the current document as html format".

Again in your file folder, you should have the document you just saved, and an image file for each time you used the equation editor in that document.

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Conclusion:

Before you put your documents onto the server, you will again need to make separate file folders on your server for each document, to keep the image files with the document file. These should have the same names as you have already used. Each server is different, and there are different programs to put the documents onto the server, therefore if you are not familiar with the process, you will have to use your manuals/help to determine how to do this. From this point on, you will treat this document as you would any other in organizing your home page. When you create your link, you will only link to the document name and can disregard the image files. Your document file will contain the information to also link the image files for you.

When your document gets onto your homepage, it may not look exactly as it was on the printed page. If you would like to change the way it looks you can edit them in your homepage. Netscape Communicator Professional Edition (This is free to educators and can be downloaded from the Netscape Icon on the Netscape screen) for this purpose. It generally works like any word processor. However, you will not be able to edit equations this way (Make sure the equations are correct before you put them on your server.), but you will be able to move their location on the screen.

If you would like to include graphs or other drawings on you page you can. Use your paint program, draw what you need and save it. In Microsoft Office 97 there is a program called Microsoft Photo Editor. You will need to start this program, open the drawing from the paint program and save it as a JPEG file. This can now be placed in your document while on the Web page document. It will be saved in your folder when you save the program.

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Assessing the Impact of Technology on Teaching and Learning: Student Perspectives

Barbara Draude and Sylvia Brace

Middle Tennessee State University

The use of instructional technology in higher education has increased substantially over the past several years. "Computer technology provides students and teachers with unprecedented opportunities to transform the teaching and learning process, from the most common and simple uses to the most sophisticated." (Sulla, 1999) Educators are readily embracing the challenges of integrating that technology into their teaching. However, authors and educators still question whether its use positively impacts the learning process. Research is beginning to focus more on the evaluation of the use of technology, but results remain inconclusive. (Sulla, 1999) This study on the effectiveness of instructional technology at Middle Tennessee State University (MTSU) from the student's perspective adds to this area of research. Results from the study provide valuable information that helps to determine measures for improving technology resources for MTSU faculty and students.

MTSU is a regional university that services approximately 18,000 undergraduate and graduate students. Through five colleges and thirty-five departments and schools, MTSU offers instruction toward degrees in the basic and applied sciences, business, education, liberal arts, and mass communication. Efforts have been made over the last several years to provide educators and students with the resources necessary for the integration of technology. From early computer laboratories utilized by a small percentage of faculty and students to the recent opening of a new academic building equipped with forty-seven technology-based classrooms and an approximately 200-station computer laboratory, the administration has demonstrated its commitment to instructional technology as an integral component of the higher education experience. MTSU offers a campus-wide network, approximately 70 technology-equipped classrooms, and over sixty computer labs for technology-enhanced learning activities.

A 1998 study of MTSU faculty assessed the impact of technology on teaching and learning. The study evaluated the effectiveness of instructional technology by measuring its impact on the depth and breadth of content covered, student performance, and good teaching practices that were widely acknowledged as catalysts for improved learning. Results showed that the overwhelming majority of MTSU faculty believe that instructional technology is essential and is being widely used across campus with different technologies accommodating different teaching practices. This study of MTSU students extends the 1998 study by measuring student perceptions about instructional technology and the impact that it has on learning.
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METHOD

A four-part questionnaire was used to collect data in the study. Approximately 1900 questionnaires were sent to faculty teaching in master classrooms (technology-equipped classrooms) across campus. Faculty

METHOD

A four-part questionnaire was used to collect data in the study. Approximately 1900 questionnaires were sent to faculty teaching in master classrooms (technology-equipped classrooms) across campus. Faculty were asked to distribute the questionnaires to students. The questionnaire was pilot tested by a group of students and deemed a viable test instrument taking an average of ten to fifteen minutes to complete. Eight percent of all undergraduate students completed and returned the questionnaire.

The questionnaire begins with a statement providing the purpose of the study and statements assuring anonymity and confidentiality. Questions give students an opportunity to express some general feelings and beliefs regarding learning styles and instructional technology at MTSU. The first section summarizes the wide variety of instructional technology applications and resources available at MTSU and encourages students to respond based on their general impression or feeling. In this section, students rate how much they agree with a variety of statements that measure their perceptions about various types of instructional technologies and their value in the classroom. Other questions ask students to rate their levels of skills using various types of technologies.

The second part of the survey measures the frequency of use of various instructional technology applications by MTSU students and instructors. These applications include computer applications to present lecture outlines or demonstrate specific concepts; using audio/visual equipment to display materials; communicating electronically with instructors and other students; and supplementary use or development of materials such as web pages, computer-assisted instruction modules, and computer-based applications. In this section, students evaluate the effect of these applications on the depth and breadth of content covered, student performance, and good teaching practices including interaction with students, student collaboration, student participation and feedback, and expectations of student performance.

The third segment of the questionnaire gathers information about the projected future use of instructional technology by MTSU students. Students rate the likelihood of a series of statements that regard their anticipated use/interaction with various types of instructional technologies within the remaining courses at MTSU.

The final portion of the questionnaire gathers basic demographic information such as academic standing, department, and discipline. An open-ended statement allows students to discuss why they feel instructional technology is or is not important. Students are provided with the opportunity to make additional comments.
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SURVEY RESULTS AND MAJOR FINDINGS

The survey results lead to several major findings. These findings give MTSU faculty and administrators a better understanding of the impact that technology can have in the teaching and learning process as well as assist with future planning.

1. The Use of Instructional Technology Positively Affects Student Learning

   Ninety-five percent of responding students agree with the statement, "I believe that the use of technology in the classroom can enhance student learning." The study results show a strong correlation between the number of courses students had in a master classroom (a technology-enhanced classroom) and the positive effects of instructional technology on their learning. Students recognize better organization of course materials as one by-product of the use of technology in the classroom. They write that it makes class notes more legible, accurate, and

accessible. Comments include: "Organization is better. Note taking is easier. You can listen to the instructor more while taking notes." "Instructional technology helps organize presentations and notes while widening discussion outside the lecture."

Students also acknowledge instructional technology's appeal to different learning styles. Reasons vary from ones such as "it helps students visualize things that can't be drawn on a chalkboard" and " it better illustrates concepts" to others such as these:

"It facilitates teaching to students of all learning styles and makes it easier for instructors to supplement teaching with enrichment and extra activities."

"It provides a visual learning source that can help you remember lecture materials."

2. The Use of Instructional Technology Increases Student Interest and Satisfaction

Some students find that instructional technology when used effectively can make learning more stimulating, interesting, or just plain fun. Students write that increased interactivity, added visual components, and variety in instructional delivery methods help to increase their satisfaction. Their comments include:

"It allows diversity in teaching techniques and keeps material interesting."

"It gets students more involved and interested in learning as it provides them with a more visual way to learn."

3. The Role of Faculty and Their Ability to Use Instructional Technology are Major Factors

While the responding students predominantly agree that technology provides valuable teaching tools, they often comment that "it is no substitute for a good teacher or for instruction." Numerous students note the impact that the use of technology can have on faculty/student interaction. Students write:

"Technology can be a powerful tool but classroom success still depends on the quality of student/teacher interaction."

"The use of email as a communication tool is essential. It is another way to initiate student/instructor interaction."

The majority of the responding students feel they have the skills and knowledge to effectively use technology. The ability of faculty to use technology as an effective teaching tool is an issue for some students. Students express concerns about faculty who lack the proper skills to use the technology and faculty who misuse the technology. Comments from them include:

"Some teachers use technology very effectively and others do not. Its effectiveness depends on the teacher's ability to use the technology."

"Technology can be negative when a teacher loses creativity and energy just because he or she has become dependent on PowerPoint or videos."

"I feel that instructional technology's impact on learning depends on how well the teacher uses it."

4. Certain Instructional Technology Techniques Better Facilitate Certain Learning Activities

The primary purpose of this study was to see what role, if any, technology plays in facilitating learning. Survey results indicate that technology does indeed have an important role in improving conditions for good learning in MTSU classrooms. Students find that certain technologies better promote certain learning activities.

Ninety-five percent of the respondents indicate that the organization of content covered is best facilitated by the instructor's use of computer applications to present lecture outlines and to demonstrate specific concepts. Most of the respondents recognize the instructor's use of computer applications as well as his or her use of audio/visual technology as having a positive effect on their understanding of the course materials. One student writes:

"Technology helps present information better. For example, we watch videos about ads that we would otherwise just have to imagine."

The majority of the responding students identify electronic mail as the technology that best facilitates their interaction with the instructor, collaboration with other students, and feedback from the instructor. However, only fifty-percent of them have communicated electronically with an instructor or classmates about class projects. A student comments:

"The use of email as a communication tool is essential. It is another way to initiate student/instructor interaction that is beneficial."

Eighty-five percent of the respondents select the instructor's use of computer applications to demonstrate specific concepts and use of audio/visual equipment as the technology techniques that most positively increased satisfaction with course outcome.

5. Instructional Technology is an Integral Part of Today's Learning Environment

Many of the responding students concede that technology is here to stay and that they must be able to use it effectively as they enter the real world. They acknowledge the role of instructional technology in helping prepare them for the future with comments such as: "Technology is everywhere. Its use in the classroom makes me feel good about my education and also teaches me things I will need to know when I enter the workforce."

"It is undeniably the future. To ignore it would be disastrous to anyone's career. Learning interactively now prepares us for our future."

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CONCLUSION

The results of this study concur with results from the earlier faculty study. Faculty demonstrate their acceptance and adoption of instructional technology as a "good teaching" practice, while students agree that it significantly enhances their learning. As one student summarizes:

"Instructional technology, not only enhances learning through organization and clarity, but adds to the professionalism and atmosphere of the university, which helps motivate students to learn and participate."

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Classroom Assessment Techniques Designed for Technology

Mary Barone Martin

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Abstract:

Angelo and Cross have developed strategies for assessing teaching effectiveness at the college level. As they have stated: "College instructors who have assumed that their students were learning what they were trying to teach them are regularly faced with disappointing evidence to the contrary when they grade tests and term papers." Angelo and Cross have developed some written "instant" feedback techniques which they call classroom assessment techniques. Generally using ungraded activities, the goal is to measure the "current state" of the classroom. We will examine a series of assessment techniques which are most useable in the technological classroom.

Classroom Assessment Techniques Designed for Technology

Introduction:

Thomas A. Angelo and K. Patricia Cross have developed strategies for assessing classroom teaching effectiveness at the college level. As they have stated: "College instructors who have assumed that their students were learning what they were trying to teach them are regularly faced with disappointing evidence to the contrary when they grade tests and term papers." [1, p. 3] In order to address this issue, Angelo and Cross have developed some written "instant" feedback techniques which they call classroom assessment techniques. The assessments are generally ungraded activities which focus on current course work. The goal is neither research in pedagogy nor evaluation of individual students. Rather, the goal is to measure the "current state" of the classroom. The goal of their work is to present assessment techniques which are brief, yet effective, and can be used quickly in the classroom. In order to understand the characteristics of these activities, let us first examine a "case study" of one of the most

techniques. The assessments are generally ungraded activities which focus on current course work. The goal is neither research in pedagogy nor evaluation of individual students. Rather, the goal is to measure the "current state" of the classroom. The goal of their work is to present assessment techniques which are brief, yet effective, and can be used quickly in the classroom. In order to understand the characteristics of these activities, let us first examine a "case study" of one of the most powerful of the classroom assessment techniques presented in Angelo's and Cross's book. After the case study, we will proceed to examine a variety of assessment activities within the context of teaching with technology.

"The Muddiest Point" is an assessment technique which was originally developed by F. Mosteller at Harvard while teaching an undergraduate statistics course. [3] The basic strategy is to ask students to quickly jot down on a piece of paper the single "muddiest point" from the day's lecture. The students submit the notes to the instructor, usually anonymously, at the end of the lecture. The instructor reports back to the students at the beginning of the next lecture by a) responding to the most mentioned one or two points, and b) briefly addressing as many others as possible and reminding students of additional sources of information. In a mathematics class, this is usually done by starting the next class with a well-chosen example problem, emphasizing the responses to the "muddiest point" notes while working it. Generally, there are no grades associated with this activity. The truly amazing aspect for this classroom assessment is that most often there are no more than two or three issues raised during this assessment.

The muddiest point incorporates some of the most useful aspects of classroom assessment techniques. The greatest value of classroom assessment techniques comes from the combination of providing effective evaluation of on-going learning for the instructor and at the same time allowing the almost instant feedback from the assessment. Additionally, effective assessment techniques possess the following characteristics:

- Improve instructor's understanding of student needs and their perceptions of current material
- Are immediately useable
- Do not take up much class time
- Are easy to administer
- Are easy to analyze
- Do not take inordinate time to analyze
- Are flexible and can be useful for a variety of topics

Typically, classroom assessments represent time saved in class since the instructor presents one or two examples and then can continue on with new material; sometimes, the questions can even be answered in the context of motivating the new material. From the students' perspective, an immediate response to confusing questions allows a quick correction and students soon learn to take the process seriously. The whole process increases the trust between instructor and student; the instructor demonstrates concern for the student's learning when implementing the technique and simultaneously receives information about the students' on-going attention to the course.

There are a wide variety of assessments presented in Angelo and Cross.[1, p. xiv] Each of them have a different "best use", a different learning purpose, and can be used by instructors in different manners. Longer techniques can be performed outside of class and may or may not include instructor grading. In each case, the major purposes for the techniques include assessment of:

- Content comprehension
- Analytic thinking
- Student learning skills/processes
- Students' attitudes toward class activities

The assessments chosen should be determined by the specific content/learning to be measured and the

purposes of the instructor. In general, it is not a good idea to use too many different techniques in one semester. Student responses are more useful when the students are comfortable with a particular technique and understand it.

Before addressing technological issues specifically, a few general comments about classroom assessment can be made. It is important to remember that the term "classroom assessment" refers to assessment of learning rather than grade assessment or educational research study. The goals are strictly to enhance "the continuous monitoring of students' learning".[1,p. xiv] These techniques can be so simple that one often asks, "Can this really be useful?" or comments "But I already do this in a different setting." The results are still very revealing. "Completing the loop", that is getting the feedback to the student, is critical to maintaining the integrity of the process – students quit responding if there are no results. Finally, the assessment activities can be assigned in such a manner as to allow them to be graded; however, the most valuable are often the ungraded activities.

When we speak of using technology in the classroom, we are speaking in the broadest sense: everything from calculators, computers and software to distance learning technologies. Although the argument can be made that most instruction involves the same pedagogical issues whether or not technology is involved in the instruction process, it is valuable to note that the dynamics of the teaching process can change with the introduction of technology. The two places where technological issues arise are in assessing whether the technology is providing an effective medium for the transfer of knowledge and whether the details of the use of the particular technology are being mastered. These two issues are at the heart of teaching with technology. Classroom assessment can provide effective analysis of each of these issues. To address the modification of existing classroom techniques, we will describe the general technique first and then suggest a modification specifically for technological issues. Techniques developed specifically for technology will then follow.
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The Muddiest Point:

As described earlier in this article, the Muddiest Point assessment is clearly useful in most learning situations; it can be particularly useful in combination with instruction using technologies. In a distance learning setting, the muddiest point activity combined with e-mail or with a coordinating teacher/facilitator at the remote site can restore some of the interaction between students and instructor which may have been compromised. If a course is using technology for instruction purposes, the instructor can phrase the "muddiest point" question to assess the students' self-analysis of their ability to manipulate the technology. Finally, an exceptionally helpful question for use in the technological classroom is "What is the muddiest point about the connection between the process used on the calculator (computer, etc.) and the principle being studied today?" The Muddiest Point assessment is one of the most versatile of the assessments.

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Empty Outlines:

The Empty Outlines assessment [1, p. 138] has a name which provides a reasonably complete description of the technique. The instructor asks the student to outline some portion of the lecture in a limited amount of time. The student can be asked to start from scratch or the instructor may provide a partial outline of the lecture. This technique can measure student understanding and analysis or student listening. The first time the technique is used, the instructor may want to provide a partial outline before starting the lecture; this would allow the students to be prepared for the task at the end of the lecture. If results are mixed, the instructor may ask the students for feedback – did you not understand the concepts or could you not organize them? This technique has the added benefit that providing partial outlines can enhance students'

understanding of the technique of studying through outlining.

With respect to teaching with technology, there are additional applications of Empty Outlines. Outlines are particularly useful in understanding multi-step processes. Thus, this technique can be used to enhance the understanding of the steps in a technological process. Alternately, the instructor may ask the student to outline the concepts studied and then provide notations in the outline where technology helped demonstrate a particular fact or theory. Finally, when using technology as an instructional medium, the provision for the Empty Outline assessment before instruction can help the students at a remote site focus their attention on the purpose of the lecture and improve their concentration.

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Minute Paper:

This technique, also known as the One-Minute Paper [5] or the Half-Sheet Response [4], is widely used in college classrooms. Once again the name is reasonably self-explanatory. Near the end of class, the instructor asks the students to record on a note-card (or a half-sheet of paper) "the most important thing you learned during this class." One may vary the questions to ask about items left unanswered, ethical consequences of the issues discussed, or once again one could address the question of student learning by asking them "What is the one thing from class today that you would most like to revisit?" The general benefit of this assessment is once again to establish a level of listening and "on-site" critical thinking on the part of the students. The first few times you try this, you will need more time and you will need to be patient. As students learn to expect the question, they will be more prepared and you will have altered their classroom learning style.

The Minute Paper can be used to address specific technological issues by recasting the question. The students can be made aware of the value of the distance learning environment by asking "What aspect of this lecture befitted from the use of the technology available in our distance learning environment?" The instructor can evaluate the students' understanding of the use of technology by asking "Which facts (or theory) have been demonstrated today through the use of technology? Could they have been as effectively demonstrated without the technology?" If one is particularly brave, one can recast the question as "Discuss how the technology improved your understanding or explain how it confused you."

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Double-Entry Journals:

The general description of Double-Entry Journals is that students make notes about the beliefs or theories in their assigned course reading. As a second entry in the journal, the student explains his/her reactions to or questions about the notes in the first entry. This technique is modified in Angelo and Cross [1, p.263] from a technique discussed as dialectical notebooks by Ann Berthoff [2] Depending on the emphasis desired, one can direct these journal entries to focus on different specific aspects of the course work. These assessments can benefit from being graded as they require more of the student and instructor time and as presented must in general be done outside of class.

For technological purposes, the Double-Entry Journal can be modified to emphasize the value of the particular technology in the learning/teaching process. One can request the students divide the pages in half in their journal; on the left side they can record a sample problem and on the right side they can record the steps of the technological process (in words, not keystrokes) used in the solution of the problem. If the learning environment is a distance learning setting, the students can be requested to divide in half the paper used to record class notes. They can take their notes during class on the left side of the paper. When they

are away from the instructor, they can then review the notes and record questions or comments on the right side near the related class item. At the beginning of the next lecture session, the instructor can start the class with the students discussing a portion of the questions and comments. This can provide the students in a distance learning environment with a greater sense of communication with the class as a whole and with the instructor.

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Course-Related Self-Confidence Surveys:

The goal of the Course-Related Self-Confidence Survey [1, p. 279] is to allow students who feel insecure in a specific skills context to establish their level of insecurity and to allow their instructor to monitor and hopefully moderate their insecurity. Requiring a little more preparation by the instructor, a survey is designed which requests that students respond to questions about their self-confidence regarding specific skills. Skills analyzed might involve public speaking skills, specific mathematical skills, or technical skills. The students rate their confidence on a scale of "none...low...medium...high".

Clearly, this technique is very useful when a particular technology is used as a tool in a course. For example, if calculators or Mathematica are used in a calculus class, the instructor needs to know if the use of these technologies is actually interfering with the learning of the theory. If a lack of confidence towards specific processes can be identified, the instructor can direct instruction and practice to improve the students' confidence. In a distance learning environment, this technique can be used during the initial few meetings to establish a better "comfort zone" for the students who hesitate to speak "on-camera".

Instruction using technology, whether the use is incidental to the material, concurrent with the coursework, or the substance of the course, introduces its own variations in the learning process. In the discussion above, some "standard" learning assessment techniques were recast for use in a classroom with a technological component. The remaining techniques are ones that apply directly to the technological interfaces in the classroom – although they too could be modified to a more general setting. The three general attributes of teaching with technology which must be measured are:

- The use of technology in support of other content
- The use of technology as the content being assessed
- The impact of distance learning/ general use of technology.

In all cases, we continue to use the term technology to encompass all equipment of a technological nature – the broadest sense of the term.

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"To Use or Not to Use" Analysis:

The instructor prepares a sample problem or the description of a situation. The student is requested to discuss reasons why technology is or is not needed to augment a theoretical analysis and to conclude with a definite recommendation for the use of technology in the solution to the problem. The solution to the problem is not included in the student work, but a numerical rating ("Rank on a scale of 1 to 10) determining the critical need for technology is to be made by the student. In other circumstances, the question might revolve around the choice between two differing technologies. Depending on the scope of the course, the decision can be based strictly on a student's personal choices or it may include a more objective cost/benefit analysis in an advanced class. This technique is used primarily to analyze the use of technology in support of other content; depending on the detail, it may be done inside or outside of class.

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Procedure Brochures:

The instructor prepares a sample problem or case study and asks the student to form a one-page brochure which would provide directions for the solution of that type of problem. The student is to include a brief outline of the steps to be taken, references to the appropriate pages in the text, and notations regarding where technology is to be incorporated into the process. This is an assignment to be completed outside class and is primarily used to assess the use of technology in support of other content. It can be recast for use when technology as the content is to be assessed by asking the students to create a brochure delineating the directions for "operating the technology" in the sample problem.

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Keystroke Reports:

Often, an early barrier to teaching with technology is assessing whether or not the students have learned the right sequence of "keystroke" or operational steps to operate the technology. In this assessment, the students are divided into pairs and given a sample problem to work. One student works the problem using the technology; the other student records the exact steps/keystrokes used by the student. The assignment to pairs can be made permanent and the students can share the results of their work. For simple technologies, a few minutes of class time are more than sufficient for the assessment. For more complicated procedures, this may be an assignment for submission at a later date. This is an assessment which is directed towards assessing the students' ability to perform procedures using a given technology.

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Technology Maps:

As a student learns to use more advanced features of a particular technology – computer, calculator, etc. – the student may have difficulty finding a particular menu, sub-directory, or button. For this assessment, the instructor asks the student to provide a map or a directory path for several operations or actions. For example, in a class using calculators, the student might be asked to write out the path to the factorial button. In a class teaching a spreadsheet, the student might be asked to write out a map to performing a certain statistical function. These assessments of the student's ability to perform certain technology tasks can be undertaken quickly in class.

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Technology Chain:

The goal for this assignment is to provide improved communication between students and to assess their ability to outline the steps in a procedure using technology. The instructor divides the class into pairs. Depending on the number of students in the class, the instructor hands a description of a process or procedure to one or more groups of students. Each group writes a description of the first step in the process of solving the problem and then hands the paper to another group. This group provides the second step in the process and then passes the paper to another group. The goal is to have each student group in the class provide at least one step. The instructor may take the finished products and compiles them into notes for the class, or the instructor may ask for the developed procedures to be read aloud. Do not do this assessment unless you plan to practice it often – students find the assessment difficult the first few times.

Structuring it as a series of relay races can sometimes help, depending on the character of the class.

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Pen Pals:

Specifically for the distance learning setting, this assessment attempts to combine communication between students with a quick learning assessment. Each student is assigned a "pen pal" for the course. If there are students at two locations, the students should be paired so that one is from each location. The student is asked to write (or e-mail) one of the following: an outline of a particular process or concept, a paraphrase of a particular process, or a brief answer discussion of the most important concept of the day. If e-mail is not available, the teacher collects the papers during class and mails them to the facilitator of the other session for distribution to the pen pals. At the beginning of the next class, students can "read their mail" to the group as a whole. This can improve communication and comfort in a distance learning situation – although the logistics require careful execution.

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Benefits Analysis:

On a day which concludes the use of technology for the analysis of a particular problem, or on random day in a distance learning environment, the instructor asks the student to comment on the pros and cons of the use of technology for that day and write a concluding benefits analysis of the use of technology on that day. If this activity is performed for a distance learning class, it is important to ask the student to include the personal benefits in having the class offered as distance learning. In this manner, the student can be reminded that although the use of technology may come at a price, in most cases it provides access to a learning environment which would otherwise be unavailable. Other than the One-Minute Paper, this may be the best method to assess student response to a distance learning setting; if the students never develop a perception that the final analysis is positive, then the structure of the course can be reconsidered.

The goal of classroom assessment techniques is to "take the temperature" of the class learning environment more frequently than practical if using graded, extended activities. Since the use of technology introduces new variations into the classroom, it is even more important to understand the dynamics of the classroom. When you find an assessment technique that works for you, it becomes a very comfortable and certainly revealing practice which can help determine the direction of your teaching.

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References:

[1] Angelo, Thomas A., and Cross, K. Patricia, *Classroom Assessment Techniques: A Handbook for College Teachers.* San Francisco: Jossey-Bass, 1993.

[2] Bertoff, A. E., with Stephens, J. Forming/ Thinking/ Writing. (2nd ed.) Portsmouth, N.H.: Boynton Cook, 1982.

[3] Mosteller, F. "The 'Muddiest Point in the Lecture' as a Feedback Device." On Teaching and Learning: The Journal of the Harvard-Danforth Center, 1989, 3, p. 10-21.

[4] Weaver, R.L., and Cotrell, H. W. "Mental Aerobics: The Half-Sheet Response." *Innovative Higher Education,* 1985, *10,* 23-31.

[5] Wilson, R.C., "Improving Faculty Teaching: Effective Use of Student Evaluations and Consultants." *Journal of Higher Education,* 1986, *57*(2), 196-211.

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Copyright in the Academic Environment: An Introduction

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Abstract

Copyright concerns, which affect resources and services in higher education, are presented. Topics include a brief overview of the history of copyright, a discussion of copyright components, copyright in the electronic age, and liability. Web sites addressing copyright are listed, and a bibliography of print and electronic sources is provided.

Introduction

Copyright is an issue of endless depth and complexity, particularly in academe. Yet, as educators and librarians we are required to have a basic understanding of its principles. We need to be aware of its implications for teaching and learning since we deal with ideas and information conveyed in copyrighted works on a daily basis. Moreover, understanding copyright in the electronic age, with new modes of communication and publication, poses additional and constantly evolving challenges. To what extent does the law enable teachers, students, and librarians to have access to information without infringing upon the rights of authors? How do we use protected materials in a fair way? As librarians, we cannot offer a comprehensive discussion of the topic but we can offer an introduction to the issues facing the academic environment. In the conclusion, we list sources for ready reference to facilitate an understanding of copyright law.

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Background

Copyright is not a modern institution. The concept of copyright is over 400 years old. The protection of creative property had little impact early in history because copying was a labor-intensive, time-consuming, skilled craft that was expensive to produce. The arrival of the printing press changed the environment of copying and distribution. The emergence of this new technology made printing and copying fast, easy and inexpensive. But it also created an atmosphere of apprehension among copyright holders and copyright seekers. New issues arose and were brought to the forefront. It seems that technology has often been the impetus for taking a close look at current copyright laws. A brief look at

skilled craft that was expensive to produce. The arrival of the printing press changed the environment of copying and distribution. The emergence of this new technology made printing and copying fast, easy and inexpensive. But it also created an atmosphere of apprehension among copyright holders and copyright seekers. New issues arose and were brought to the forefront. It seems that technology has often been the impetus for taking a close look at current copyright laws. A brief look at the history of copyright law will give us a better understanding of our current laws.

The English Stationers' Company, a membership guild that published the works of their members, was granted a Royal Charter in 1557. The guild paid a lump sum to an author and the Stationers' Company held the copyright. This limited most publishing opportunities to the wealthy and upper class and eventually created an unacceptable situation. In 1710, the Statute of Anne was enforced, which allowed the author of the work copyright for 14 years and, if the author was still alive, it could be renewed for another 14 years. In the United States, the Statute of Anne was in effect until the drafting of the U.S. Constitution by the Federal Convention. The Convention deemed it wise to provide copyright protection stating that "the Congress shall have power...to promote the progress of science and useful arts...by securing for limited times to authors and inventors the exclusive rights to their respective writings and discoveries." George Washington signed the first United States Statute in 1790, thereby establishing copyright and patent rights in America. This first statute was amended so frequently to include new formats, new technologies, art forms, and various creative efforts that it became cumbersome. Finally, in 1909, it was completely overhauled, prompting Mark Twain to observe, "Only one thing is impossible for God: to find any sense in any copyright law on this planet." The new statute included many new formats and established a term of copyright of 28 years plus a renewal of 28 years. The last revision, in 1976, included inclusive language that would not limit format or technology. This revision provided a term of copyright for the life of the copyright holder plus 50 years. In 1989, the United States joined the Berne Convention for international copyright protection.

Copyright law grants the copyright owner five exclusive rights, which are explained in more detail below: control of reproduction, preparation of derivative works, public performance, public distribution, and public display. But it also encourages the availability of copyrighted works to the public and facilitates their accessibility and use. Copyright protects intellectual property just as other laws protect real property. Since the United States joined the Berne Convention, it is no longer necessary to register or display copyright. Two things are necessary: the work must be original and must be in a fixed, tangible medium. Any work conforming to these two principles has the potential for copyright.

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Fair Use

Copyright provides exclusive use of original works by the copyright owner. Yet, exclusive use by the owner would not do much in fostering a scholarly environment, or the exchange of ideas. Therefore, the Fair Use Guidelines were implemented to establish a balance in the relationship between the rights of the copyright owner and the rights of the user of copyrighted works. Fair use assures learning is not impeded by copyright but still protects intellectual property. While fair use provides an avenue to photocopy copyrighted works for purposes of teaching, scholarship, or research, it does not allow the abuse of copyright under the guise of educational application. There are four factors that determine fair use as provided by the United States Code, and they are a package deal:

- The material must be used only for educational purposes without a hint of commercialism.
- The nature of the work must lend itself to photocopying a portion of the work.
- The amount copied should represent only a portion that does not impinge on the creative aspect of the work or portion copied.

- The quality and quantity of photocopying does not affect the potential value of the work.

The Fair Use Guidelines set the stage, but it was up to educators to apply them. Model guidelines are available from most professional groups involved in education: teachers, librarians, publishers, producers, and researchers. The common goal is to adhere to fair use and address the concepts of brevity, spontaneity, cumulative effect, and prohibitions as recommended in the Fair Use Guidelines. Brevity would cover a chapter of a book, an article in a journal, a poem, or a chart; it would not be more than approximately 10 percent of the whole. According to the Fair Use Guidelines, spontaneity allows the copying of material, which has just been found and is needed for effective teaching. Cumulative effect limits how much can be copied from one source or one author and curtails the number of copies and distribution of these copies. Each copy should contain a notice of copyright.

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Copyright in Libraries

Two areas of concern regarding copyright in libraries are reserves and interlibrary loan. Photocopied materials placed on reserves for student reading and requested for scholarly purposes through interlibrary loan must adhere to acceptable guidelines.

Reserves

Materials on reserves often are photocopies. The same photocopied materials should not be distributed every semester/lesson plan period. Each student and the teacher can expect to have a copy for their use and the material should contain a copyright notice and complete citation. The copy should be free of charge except for the cost of actual photocopying. When material is placed on reserve in the library, the amount of materials and the number of copies should be within reason and contain a notice of copyright. According to the guidelines, five copies of an article can be put on reserve and nine articles can be copied for one course. The need for photocopied material that exceeds fair use should be collected in a course pack after copyright clearance has been received. The photocopied reserves materials should not have a detrimental market impact. Generally it is best if the library owns a copy of the work. All requests should follow American Library Association guidelines or the guidelines established for the local campus. Electronic reserves should be approached only after careful planning and should follow Fair Use Guidelines and be password protected.

Interlibrary Loan

Interlibrary arrangements are covered in Section 108 of the Act. Interlibrary borrowing and lending operations are expanding for practical purposes, namely to continue serving patrons in the face of decreasing library budgets and dramatically increasing prices, particularly for serial subscriptions. Naturally, publishers, who are the copyright owners in most cases, have a vested interest in keeping the number of photocopies produced low and the number of subscriptions, in the case of serials, high. Therefore, "The need is for a copyright standard that permits customary interlibrary operations, but that signals a reasonable limit and indicates when a library should reinstate its own purchase of the original work... The challenge is to bring practical meaning to that ambiguous limit." Recommendations made by the National Commission on New Technological Uses of Copyrighted Works (CONTU), established by Congress, are generally adopted as guidelines by libraries.

According to the CONTU Guidelines, "systematic reproduction or distribution" of copies is prohibited. However, certain photocopying or reproduction of a work may be within the limits of fair use, specifically as long as the photocopying or reproduction falls under the "Rule of Five." This rule stipulates that during

one calendar year, no more than five articles, published within the last five years, may be copied or reproduced from one periodical title. Also, the requesting library must indicate on the request form compliance with the CONTU Guidelines and must maintain records of all requests for photocopies or phonorecords for three years after conclusion of the calendar year. While photocopies or reproductions from articles older than five years are not addressed in the Guidelines, they must not be considered available for unlimited use. Instead, copyright law is still applicable, particularly Sections 107 and 108.

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Copyright in Digital Environments

The issue of copyright in digital environments is probably the most challenging to librarians and educators alike. Technological developments force us to continuously re-examine and re-apply our understanding of the copyright statute to new formats of communication. The recent Digital Millennium Copyright Act (DCMA) was passed in order to bring copyright legislation into the digital age. The DCMA intends to bring U.S. copyright law into conformance with recent World Intellectual Property Organization (WIPO) treaties, asserting that copyright applies in digital environments just as it applies in print and audiovisual media.

Like the Copyright Act of 1976, the DCMA attempts to balance the right of the copyright owner with the right of the user of copyrighted works. Section 103 of the DMCA adds a new chapter (Chapter 12) to Title 17 of the U.S. Code. New Section 1201 stipulates that it is a violation of U.S. law to circumvent technological measures used by copyright owners to protect their work, as well as to remove any copyright information that copyright owners affix to a digital document. This prohibition is subject to various exceptions. Of interest to academicians is the exception, which "permits nonprofit libraries, archives and educational institutions to circumvent solely for the purpose of making a good faith determination as to whether they wish to obtain authorized access to the work." Also, the DMCA stipulates that nonprofit educational institutions have the right to copy and share digital documents for purposes of archiving and preservation, in accordance with Section 108.

Copyright in the following digital environments are discussed in more detail: nonprint works, the Internet, and distance learning.

Nonprint Works

Nonprint works include audiovisual and multimedia materials. Audiovisual materials are "non-book materials such as records, tapes, slides, film strips and videotapes." Multimedia materials, on the other hand, are "computer systems designed to capture, store, process, retrieve, display and play back multiple types of information: text, picture, sound, animation, and/or video. At least two of the components must be present to qualify as a multimedia product." Nonprint works are protected under the copyright law— the same rights apply. They may be duplicated in educational and library settings under copyright for specific reasons. A pictorial or graphic accompanying a textual work may be copied under the same circumstance as the textual part. All nonprint works may be copied for preservation or to replace damaged and deteriorating copies. Copying and distribution of nonprint works is governed by fair use.

According to the Fair Use Guidelines for nonprint works established by the Committee for Fair Use Guidelines for Educational Multimedia, educators and students may copy portions of copyrighted materials to be incorporated in their productions of classroom projects or classroom instruction. The portion of materials used from a single copyrighted work should not exceed 10 percent. It can be utilized for educational purposes for up to two years and is limited to the number of copies and their distribution. No more than three copies should be made; two for class use and one for preservation. Time, portion, copying

and distribution must always be considered when copying nonprint works. Credit should be given to the copyright owner. Before displaying copied nonprint materials, determine if the following requirements are met:

- Is the copy for a face-to-face educational activity?
- Is the copy being displayed in an educational facility?
- Does the copy adhere to the Fair Use Guidelines?

Internet

The Internet, for the purposes of this paper, is defined as the technology providing the means of transmitting digital formats. The current copyright act is "technology neutral" and, until revised, is the standard for using information transmitted through the Internet. Digitized materials are covered by the guidelines for fair use. The non-requirement to affix a copyright notice to an original work extends to works from all Internet services, including e-mail, gopher, telnet, or the World Wide Web. A common misconception is that material on the Internet is free when indeed material on the Internet must be considered copyrighted and not copied or distributed without permission. In the case of Webpages, in order to avoid copyright infringement, possibly the best practice may be to simply link to a Webpage. An Internet link generally conforms to copyright and fair use since it may be considered equivalent to a cross-reference. Academic institutions often gather material for campus use in this manner. Similarly, material accessed and downloaded or printed from electronic databases with Web-based interfaces are copyright protected. These databases are generally purchased through licensing agreements.

E-mail, another component of the Internet, must be viewed with the potential for copyright infringement. E-mail, regardless whether it is personal or from a discussion list, is often informative, creative and definitely in a fixed medium. Unless the material posted indicates permission for distribution, it is safe to assume it is copyrighted and should be handled in the proper manner. Therefore, these works should be distributed with the consent of the original author, or cited as a copyrighted work.

Computer software as well is copyrighted and usually licensed. Software companies are very clear regarding the copying and distribution of their materials. Generally, a copyright notice is displayed and restrictions, which accompany the copyright, are outlined. Unauthorized use and distribution is a violation of copyright and the license agreement and there is the chance of copyright infringement and liability. Software can include computer programs, databases, CD-ROMs, and electronic publishing.

Copyright infringements on the Internet should be approached much the same way as in the traditional environment. However, the recently enacted Digital Millennium Copyright Act gives the copyright owner the right to demand the Online Service Provider notify a copyright infringer to remove material from the Internet. The infringement must be removed within a given time or the online service can be denied.

Distance Learning

Section 110 of the Copyright Act of 1976 addresses the use of copyrighted works in distance learning instruction. Bielefeld and Cheeseman define distance learning as a situation where "one or more students who are not in the physical presence of the teacher receive instruction through some method of technology." The instruction can take place via different modes of technology, including passive video, audio and video conferencing, the broadcasting of picture and sound from one classroom to another via satellite transmission, or teacher-student interaction via the Internet.

Since modes of transmission of instructional materials in a distance learning situation differ from instruction in a traditional setting, not only the rights to use materials in a course must be acquired but also

the rights for transmitting the course via some type of network. The so-called "classroom exemption" (Section 110(1)), which applies in face-to-face instruction in a nonprofit educational setting, may no longer apply in a distance learning situation. For example, in a traditional, face-to-face instruction context, the law exempts a teacher from seeking copyright permission when displaying (e.g. showing a picture) or performing (e.g. playing a videotape) to a class of students—if the instruction takes place in a classroom (including closed-circuit on-campus networks). In this context, nearly all displays and performances are allowed. In the distance learning context, however, this changes. While the law allows the "transmission" of a performance or display, it restricts the type of work that can be performed or displayed to "a nondramatic literary or musical work." A literary work is any work other than audiovisual, meaning a motion picture, video, or computer screen display is excluded. A definition for "musical work" is not provided. For example, showing a videotape in a face-to-face classroom situation is perfectly legal. In a distance learning situation, however, the instructor has to seek permission from the copyright owner each time the videotape is shown.

While the law offers some guidance on the types of materials that may be used, or may not be used, in a distance learning situation, it remains unclear and legal opinion divided on many aspects. For example, is a remote site considered a classroom? Is face-to-face instruction to be taken literally? Further, in the future, distance learning courses may be received in a student's home. This, however, is not within the limits of the statute.

The delivery of educational courses via the Internet poses additional questions. For its versatility, allowing an instructor to use copyrighted works in different formats, including text, audiovisual, and software, the Internet has become a popular distance learning format. In order to deliver copyrighted works via the Internet, "the institution must restrict access to enrolled students." Further, the guidelines for classroom photocopying (see above) apply to the delivery of an article via the Internet, meaning that permission must be sought to distribute copyrighted works in excess of these guidelines. For inclusion of nonprint works on a course Web site, permission from the copyright owner must be obtained. However, inclusion of "short clips of these works on a protected web site may be a fair use because the copying is de minimis, but including larger portions is not likely fair use."

Until the Copyright Act is amended "to make it clear that distance learning is the modern equivalent of face-to-face instruction," it is better to be on the safe side and seek permissions. Bruwelheide recommends that "Developers may also need to acquire rights to create, reproduce, and distribute any derivative works that might result from the course. Distribution rights to send materials to distant learners may need to be obtained—prior to delivery. A course developer must think ahead about possible uses that will affect distribution, transmission, and taping."

Lastly, the aforementioned DMCA requires that the Copyright Office consult with representatives of copyright owners, nonprofit educational institutions, and nonprofit libraries and archives, and thereafter report to Congress on "how to promote distance education through digital technologies." So look for changes to come.

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Formalities and Definitions

Copyright Notice and Registration

How to protect your work from infringement? As mentioned earlier, since the U.S. has joined the Berne Convention in 1989, registering the work with the U.S. Copyright Office and affixing a copyright notice are no longer required. Instead, a work is automatically copyrighted as long as it is an "original work of

authorship" and "fixed in any tangible medium of expression." Yet, it would be a mistake to overlook the benefits of copyright notice and registration for a work of authorship. Placing the copyright notice "©" on a work not only provides important information to the reader, such as who the owner of the copyright is, it also helps prevent infringers from claiming innocence. Registering the work with the U.S. Copyright Office also provides the author with other important legal benefits. For example, if a copyright owner's work is infringed before registration, the owner is entitled to remedies but cannot legally enforce his or her rights until the work is registered. "The copyright owner of a registered work may recover statutory damages as well as attorneys' fees if a case goes to court. Also, registration clearly advises the public of the copyright for a work. In most instances, registration is required prior to filing suit for infringement."

Duration of Copyright

Published works created on or after January 1, 1978 are currently protected for the life of the author plus fifty years. Anonymous and pseudonymous works, and works made for hire are protected for seventy-five years from their first publication, or 100 years from their creation, whichever term expires first. A work first published more than seventy-five years ago is generally considered to be in the public domain. For example, during 1998 materials first published before 1923 may safely be assumed to be in the public domain and therefore be copied and even republished without copyright permission. Works created by U.S. Government employees during their employment are in the public domain. This, however, is not the case for works created by state and local governments, which may claim copyright.

Similarly, unpublished works created on or after January 1, 1978 are protected for the life of the author plus fifty years. "Unpublished works might include diaries, letters, survey responses, manuscripts, photographs, art, or software – any type of work that has not been distributed to the public in copies." In the case of unpublished works created before January 1, 1978, however, the copyright will not expire before December 31, 2002. "Until then, the privileges of copyright and the limits of fair use apply to unpublished manuscripts, letters, and diaries of even America's leading historical figures."

Copyright Ownership

The person who does the creative work is considered the copyright owner, unless the "work is made for hire." In such cases, the employer rather than the creator is considered the author and copyright owner. Independent contractors are not considered employees and therefore likely retain copyright ownership.

Two or more authors of a creative work jointly hold copyright ownership. Joint copyright ownership allows each co-owner to use or license the entire work but requires them to account for all profits to the other co-owners. A co-owner acting alone cannot transfer the copyright to another party or grant an exclusive right to use the work without the consent of the other co-owners.

Copyright ownership comes with the following exclusive rights, granted by the Copyright Act, which last for a specified time period (see above):

- The right to reproduce or copy the work
- The right to prepare derivative works
- The right to distribute copies or phonorecords of the work to the public
- The right to publicly perform the work (in the case of an audiovisual work)
- The right to publicly display the work (in the case of a literary, musical, dramatic, or choreographic work, a pantomime, or a pictorial, graphic or sculptural work)

Requesting Permission from Copyright Owner

In order to use other people's copyrighted works, written permission must be obtained. First and foremost, the correct copyright owner must be identified, while keeping in mind that copyrights may be sold or given away. A permission letter should include a description of the material to be used and a detailed explanation of how it will be used. It should also include a place for the recipient to sign indicating that permission is granted. An affirmative response must be received, otherwise permission cannot be considered granted.

Liability

Chapter 5 of the Copyright Act deals with the remedies for infringement. Remedies afforded a copyright owner are injunction, impounding or destruction of the copies and the equipment used to produce the copies, and recovery of all costs, including attorney's fees. Monetary remedies may also be awarded. Knowingly infringing on the rights of the copyright owner in a manner not within fair use may result in legal action. If found guilty, penalties can range anywhere from $500 to $20,000 per work infringed upon and up to $100,000 for willful, or knowledgeable infringement. Damages for "innocent" infringement may be $200, or even remitted for employees of educational institutions. "The courts shall remit statutory damages in any case where an infringer believed and had reasonable grounds for believing that his or her use of the copyrighted work was a fair use under section 107, if the infringer was: (I) an employee or agent of a nonprofit education institution, library, or archives acting within the scope of his or her employment... " In the case of willful infringement, the infringer may be criminally liable. In 1997, Congress amended the Copyright Act, adding tougher criminal liabilities for willful infringement, particularly in electronic media.

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Conclusion

In many ways, academe is defined by the conveyance of information from one party to others, with the university overseeing this transfer. The academic enterprise, therefore, is particularly vulnerable to copyright infringement, making awareness of copyright law vital for all educators and academic librarians alike. The Copyright Law is intended to balance the interests of copyright owners with the interests of the users of copyrighted material. The Fair Use Guidelines are particularly relevant for "nonprofit educational purposes." They assure the use of information for appropriate purposes, even without the permission of the copyright owner. This does not mean, however, that librarians and educators can violate copyright law. Rather, the following general guidelines must be considered before taking action: always apply the Fair Use Guidelines, always secure the copyright owner's permission when in doubt, and, if necessary, seek alternatives. In addition, consider seeking legal advice and document that you have done so. Check institution policies or guidelines on copyright. Always act in good faith and use common sense. In short, you protect yourself best by erring in favor of the copyright owner.

Changes in the information world continually challenge interpretations of copyright law. Therefore, we must stay current on legislation, particularly as formats for communication of ideas become more sophisticated. For a topic of endless depth such as copyright, there is an equally endless amount of information published. Following is an incomplete list of ready-reference sources.

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References

Books

Ansell, Edward O., ed. *Intellectual Property in Academe: A Legal Compendium*. Washington, DC: National Association of College and University Attorneys, 1991.

Besenjak, Cheryl. *Copyright, Plain and Simple.* Franklin Lakes, NJ: Career Press, 1997.

Bielefield, Arlene and Lawrence Cheeseman. *Technology and Copyright Law: A Guidebook for the Library, Research, and Teaching Professions.* New York: Neal-Schuman, 1997.

Botterbusch, Hope Roland. *Copyright in the Age of New Technology.* Bloomington, IN: Phi Delta Kappa, 1996.

Bruwelheide, Janis H. *The Copyright Primer for Librarians and Educators*, 2d ed. Chicago, IL: American Library Association, 1995.

Crews, Kenneth D. *Copyright, Fair Use, and the Challenge for Universities: Promoting the Progress of Higher Education.* Chicago, IL: University of Chicago Press, 1993.

Elias, Stephen. *Patent, Copyright and Trademark: A Desk Reference to Intellectual Property Law.* Berkeley, CA: Nolo Press, 1996.

Gasaway, Laura N. and Sarah K. Wiant. *Libraries and Copyright: A Guide to Copyright Law in the 1990s.* Washington, DC: Special Libraries Association, 1994.

Johnson, Wanda K. and Derri B. Roark, eds. *A Copyright Sampler.* Chicago, IL: American Library Association (1996).

Patterson, L. Ray and Stanley W. Lindberg. *The Nature of Copyright: A law of Users' Rights.* Athens, GA: University of Georgia Press, 1991.

U.S. Copyright Office. *Project Looking Forward: Sketching the Future of Copyright in a Networked World. Final Report (May 1998)*, by Professor I. Trotter Hardy. Washington, D.C.: U.S. Copyright Office, 1998.

Willis, Barry, ed. *Distance Education: Strategies and Tools.* Englewood Cliffs, NJ: Educational Technology Pub., 1994.

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World Wide Web Sources

American Association of Law Libraries (AALL)

http://www.aallnet.org/committee/copyright/

American College and Research Libraries (ACRL): Copyright Committee

http://www.library.cmu.edu/Unofficial/ACRL

American Library Association (ALA): Position on Fair Use Guidelines in a Digital Information Environment

http://www.ala.org/washoff/alawon/alwn601.htm/

American Research Libraries (ARL) Office of Scholarly Communication

http://arl.cni.org/scomm/

Association of American Publishers (AAP)

http://www.publishers.org/home/

Copyright Clearance Center, Inc.

http://www.copyright.com

The Copyright Website

http://www.benedict.com

Cornell University Law School, Legal Information Institute

http://www.law.cornell.edu

FindLaw

http://www.findlaw.com

Franklin Pierce Law Center: Intellectual Property Mall

http://www.ipmall.fplc.edu

Indiana University-Purdue University Indianapolis: Copyright Management Center

http://www.iupui.edu/it/copyinfo

International Federation of Library Associations and Institutions (IFLA): Position Paper on Copyright in the Electronic Environment

http://www.ifla.org/V/ebpb/copy.htm

Manning and Napier Information Services: IpFrontline (Recent News, Trends, Technologies, and Legislation)

http://www.ip.com/ipFrontline/

Special Libraries Association (SLA): Selected References on Copyright and Special Libraries

http://www.sla.org/membership/irc/copyright.html

Stanford University Libraries: Copyright and Fair Use

http://fairuse.stanford.edu

University of Texas

http://www.utsystem.edu/ogc/intellectualproperty/cprtindx.htm

U.S. Copyright Office

http://lcweb.loc.gov/copyright

U.S. House of Representatives Internet Law Library/Intellectual Property: Copyrights

http://law.house.gov/325.htm

World Intellectual Property Organization (WIPO)

http://www.wipo.org

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Guidelines

American Library Association: Model Policy Concerning College and University Photocopying

Gopher://ala1.ala.org:70/00/alagophix/50403001.document

Classroom Photocopying, Music, Off-Air Recording

http://www.musiclibraryassoc.org/Copyright/

Classroom Use of Videotapes and Computers Software

http://www.ifla.org/documents/infopol/copyright/ala-1.txt

Ethical and Legal Use of Software

http://www.ifla.org/documents/infopol/copyright/educom.txt

Fair Use Guidelines for Educational Multimedia

http://www.libraries.psu.edu/avs/fairuse/guidelinedoc.html

Fair-Use Guidelines for Electronic Reserve Systems

http://www.cc.columbia.edu/~rosedale/guidelines.html

UCLA: Library Copyright Policy

http://www2.library.ucla.edu/copyright/toc.htm

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Endnotes

1. Gasaway, Laura and Sarah K. Wiant. *Libraries and Copyright: A Guide to Copyright Law in the 1990s*. (Washington, D.C.: Special Libraries Association, 1994), 5.
2. Ibid., 6.
3. Ibid., 7.
4. Ibid.
5. Ibid.
6. Zall, Paul M. ed. *Mark Twain Laughing: Humorous Anecdotes By and About Samuel L. Clemens*. (Knoxville, University of Tennessee Press, 1985), 92.
7. Gasaway and Wiant, 8.
8. Ibid.
9. Model Policy Concerning College and University Photocopying. April 3, 1995. American Library Association. Available: gopher://ala1.ala.org:70/00/alagophix/50403001.document. Accessed March 7, 1999.
10. Ibid.
11. Crews, Kenneth D., *Copyright, Fair Use, and the Challenge for Universities: Promoting the Progress of Higher Education*, (Chicago: University of Chicago Press, 1993), 98.
12. U.S. Copyright Office, *The Digital Millennium Copyright Act of 1998* ([Washington, D.C.]: U.S. Copyright Office, 1998):5.
13. Harrod's Librarians' Glossary (Brookfield, VT: Gower, 1990).
14. 1997 International Encyclopedia of Information and Library Science. (New York: Rutledge, 1997).
15. Bielefeld, Arlene and Lawrence Cheeseman, *Technology and Copyright Law: A Guidebook for the Library, Research, and Teaching Professions,* (New York: Neal-Schuman Publishers, 1997), 135.
16. Bruwelheide, Janis H., *The Copyright Primer for Librarians and Educators*, 2d ed. (Chicago: American Library Association, 1995):89-90.
17. Gasaway, Laura N., "Copyright: A Challenge to Distance Learning, Part 1," *Information Outlook* 2 (October 1998):43.
18. Gasaway, Laura N., "Copyright: A Challenge to Distance Learning. The 1976 Copyright Act," *Information Outlook* 2 (November 1998):15.
19. Ibid.
20. Gasaway (October 1998):43.
21. Bruwelheide, 88.
22. Bruwelheide, 7.
23. Crews, Kenneth D., "Indiana University Copyright Tutorial: Message." March 2, 1998. Online posting. Available E-mail: listserv@listserv.iupui.edu. Accessed March 2, 1998.
24. Crews, Kenneth D., "Indiana University Online Copyright Tutorial." March 4, 1998. Online posting. Available E-mail: listserv@listserv.iupui.edu. Accessed March 4, 1998.
25. Ibid.
26. Crews, Kenneth D., "Indiana University Online Copyright Tutorial." March 6, 1998.
27. Online posting. Available E-mail: listserv@listserv.iupui.edu. Accessed March 6, 1998.
28. Crews, Kenneth D., "Indiana University Online Copyright Tutorial." March 9, 1998. Online posting. Available E-mail: listserv@listserv.iupui.edu. Accessed March 9, 1998.

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Effective Use of Audio Media in Multimedia Presentations

Presented by Brenda Kerr

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This paper emphasizes research-based reasons for adding audio to multimedia presentations. Media examples, links for gaining more in-depth knowledge concerning this topic and procedures for adding audio media from any PC (Macintosh or Windows-based) can be referenced from the following URL: http://www.mtsu.edu/~itres.

This topic was chosen because the author has observed many faculty members adding still images, video, and links to web and non-web documents to their presentations but few faculty members have taken advantage of the learning provided by audio media integration. In preparation for designing a class around this topic the author has begun the following investigation into research in the effective use of audio media in multimedia presentations.

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Why Should Educators Include Audio Media in their Presentations?

Thompson, Simonson, and Hargrave in Educational Technology, A Review of the Research (AECT) reviewed studies conducted on the effectiveness of audio media on learning when accompanied by other forms of media. Their review of the studies offered the following suggestions :

- Students can learn when various forms of audio media accompany other media.
- The use of background music can increase achievement for some learners, but is probably not necessary.
- The use of audio media with other media may enhance the understanding of content material.
- The meaning of a visual message is often ambiguous and subject to personal interpretation. The use of words to direct attention is essential.
- With visuals, some verbalization is better than no visuals, but there is no optimum amount. Slow speeds for transmitting verbal information are favored but they can be too slow. Rates need to be tailored to fit the student and their familiarity with the content.
- When narration is accompanied by video the optimum rate of the narration appears to be slower.
- The audio channel is much more capable of maintaining attention if it is used as an interjection on the visual channel rather than being continuously parallel with the visual.

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Types of Research Studies

Evaluation Research is usually the first type of research done for each media type. Evaluation Research tries to determine whether people can learn from a particular form of media. It was found that given favorable conditions, students could learn from any instructional media. Media comparison studies were then conducted to try to determine if one media type was more effective in learning than another type (1920's – 1960's). Media comparison studies produced insignificant results. For every study that showed that a new medium was better, another study showed the opposite .

Intra-medium studies were the next type of research conducted. Intra-medium studies examined the interactions among student, task, and specific media characteristics in terms of what happens when these variables were manipulated. They compare alternative methods of using a particular medium. According to Thompson, Simonson, and Hargrave the design of these studies were based on Saloman's

observation that the effectiveness of a medium depends on the nature of the instruction. The major research question in these studies was "Which are the most effective instructional approaches using this medium?" A particular medium was used in all groups participating in the study. The independent variable was the instructional approach, not the medium itself .

The next type of research conducted was Aptitude Treatment Interaction Studies. Aptitude Treatment Interaction Studies attempted to take into account student aptitudes in the research design. Media researchers accepted a new paradigm. This paradigm acknowledged the interaction that occurs between external stimuli (presented by media) and internal cognitive processes that support learning (Clark, 1988). Information about a learner was helpful in adapting instruction in order to provide an environment in which particular learners can thrive. Clark tells us that media by themselves do not affect learning but rather it is the particular qualities of media or a specific medium that "affects particular cognitive processes that are relevant for students with specific aptitudes to learn particular knowledge or skills". Research in Aptitude Treatment Interaction Studies have led people to recognize "the importance of different learning styles and methods of processing information as well as the correlation that exists between learner variables and content treatments.

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Learning Styles

Gordon (1998) researched the relevance of learner characteristics and learning styles when planning law school courses. He identified the four major learning modalities, kinesthetic, tactual, auditory, and visual. Kinesthetic learners and auditory learners seemed to benefit the most by the integration of audio media into teaching strategies. Gordon's table below provides a list of suggested teaching techniques based on learning modalities. He does not provide data on the tactual learner .

Modality	Teaching technique
Kinesthetic	This student needs a combination of stimuli. The manipulation of material along with the accompanying sights and sounds (words and numbers seen and spoken) will make a big difference to this student.
Auditory	This student will benefit from hearing audio tapes, rote oral practice, lecture or a class discussion. This student will benefit from tutoring another or delivering an explanation to his/her study group or to the teacher.
Visual	This student will benefit from worksheets, workbooks, and texts. Given some time alone with a book, this student may learn more than the class.

Examples: Effective Use of Audio in Multimedia Presentations

Lee Daniels (1995), in his paper Audio Vision: Audio-Visual Interaction in Desktop Multimedia lists the three elements of sound used in multimedia presentations. He explains how these elements should be used to stimulate learning through the functions they serve and roles they provide. Daniels' ideas are summarized in the next few pages.

Elements of sound

The three audio elements in multimedia production are speech, sound effects, and music. Silence and its effects also need to be considered in planning projects. The various functions of these elements are discussed in the next three sections of this paper. It is important that the educator use care in considering the audience when using audio media to evoke source images in students' minds. If the students have not been thoroughly exposed to the source that produces the sound the effect and learning will be lost.

Audio Element: Speech

Narration, dialogue, and direct address are three functions of the speech element. Their functions will be discussed below.

Narration

Narrative speech can be used to:

- Deliver concrete information: Concrete information could include directions for completing a project or possibly descriptive information that relates to the image being displayed. When narration is presented with text, the text and narration must be exactly the same. Discrepancies may result in distraction and cause interference in learning the material which translates to less retention or misinterpretation of material.
- Replace text:
  Narration is most useful, as a replacement of text when screen space is limited and the addition of text would reduce the visual impact of the page. Narration saves screen space and visual clutter.
- Direct viewer's attention:
  The image displayed on the screen may need to be the focal point. Narration is used to direct viewer attention to the image being displayed rather than forcing the viewer to alternate between viewing an image and reading the text explanation.

Narration and dialogue together can:

Affect intensity by setting the pace. Pace effects the intensity of emotion during a presentation.

Examples include:

- Fast moving narration adds to the intensity of time lapsed animation. Slow moving narration complements the sober mood of a funeral.
- Fast paced dialogue between two characters can reflect tension, anger, excitement, or nervousness. Smooth, even paced dialogue reflects friendliness, relaxation, and confidence.

Affect the listener's perception through changes in tone quality.

Examples include:

- Bright and present narration is perceived to be closer and more intimate and trustworthy.
- Speech that sounds dull and distant would have the opposite effect.

Direct Address

Direct address refers to the character speaking directly to the audience.

Examples include:

- Some TV commercials that talk directly to the audience.
- Speeches
- Newscasts

Audio Element: Sound Effects

Sound effects can function contextually and narratively.

Contextual Function

When sound effects have a contextual function the sound effect interprets the visual as it appears.

Examples include:

- a dog barking or a dog begging for a treat
- the roar of a jet or airplane engine in normal flight or taking off, or the sound of a jet having engine trouble

Narrative Function

When sound effects have a narrative function the sound effect adds more to the image's apparent information. The functions of the narrative format can be broken down even further into those that provide descriptive effects and those that serve a commentary function.

Narrative Function: Descriptive Effect

Sound effects contribute to the subtle aspects of an image. Subtle aspects are those features that are hard to define or perceive but that contribute greatly to the emotional effect of the image or scene.

Examples include:

- The sounds of gentle ocean surf which may include gulls, people playing, and boat sounds used to set a particular mood.
- The sound of a violent ocean surf and warning sirens sounding in the background. The mood of this example would be quite different than the mood of the first example.
- Imagine a picture of a metal triangle being struck with a metal beater. The audience may hear a clink indicating that the triangle may be made of inferior materials or they may hear a clear ringing sound indicating that the triangle is made out of quality materials. Perhaps the audience only hears a thud, indicating that the triangle only looked like it was made of metal but might have actually been made of wood or plastic.
- Imagine a picture of a cymbal player crashing a pair of cymbals. If a clear ringing sound is heard the teacher knows that the player is holding the cymbals correctly as they are being played. If a muffled crash is heard followed by little ringing the teacher assumes that the player is not holding the cymbals correctly and may be placing too much of his/her hands on the cymbals as they are being played.

Narrative Function: Commentative Sounds

Commentative sounds also tell more about an image but the information is usually unrelated to the visual itself.

Example:

- "Imagine a program about air pollution and a scene of city traffic. Treating and blending the car engines to 'sputter' and 'cough' comments on the detrimental effects that air pollution has on the air we breathe" .

Audio Element: Music

Music is very effective in communicating complicated emotions and moods. Functions of music in multimedia presentations include establishing locale or time, identifying characters and events, acting as a transition element between contrasting scenes, and setting the mood and pace of presentations. Examples of each function are listed below .

- Locale: Music can define a locale with ethnic melodies.
- Time: Music can establish time with musical elements that suggest a period in history such as the 1960's or the Roman era.
- Identification: Music can identify characters and events with recurring themes. A short musical phrase or specific sound effect can be used to signal the appearance of a person, action, or situation. This is sometimes called leitmotiv (German for "leading motive") .
- Transitions: Music can be used to connect one idea or scene to another. It can also smoothe the transition to a contrasting theme. It prepares the audience by letting them know that something is going to change.
- Pace: Music can be used to establish the pace of the presentation. This pace can parallel the visual media or provide counterpoint to signify tension or irony.

Silence

Every moment of a multimedia presentation does not need to be filled with sound. Silence can be used to set a mood or to provide a moment for reflection. Producers of multimedia presentations need to consider the use of silence as well as the use of the other audio elements when designing a presentation. As stated earlier in this paper, the audio channel is much more capable of maintaining attention if it is used as an interjection on the visual channel rather than being continuously parallel with the visual.

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Literal Sounds and Non-Literal Sounds

Zettl (1999), in his text Sight Sound Motion, Applied Media Aesthetics breaks down sounds into two categories, literal sounds and non-literal sounds. Literal sounds include speech and environmental sounds. Non-literal sounds include background music and other sounds that seem to influence feeling in some way . All of the sound elements listed in the previous section can be used in a literal or non-literal way. Think about how they can be used as you read the definitions below.

Literal Sounds

Literal sounds are referential. They convey a specific literal meaning. They refer the listener to the sound-producing source. Conversations or the sound of rush-hour traffic refer to people and automobiles. Literal sounds can be source-connected or source-disconnected. The audience can see the sound-producing source when they hear source-connected sounds. The source of source-disconnected sound is off-screen. The listener visualizes the source of the source-disconnected sound.

Non-Literal Sounds

Non-literal sounds are not intended to refer to a particular source or convey literal meaning. They are deliberately source-disconnected and do not evoke a visual image of the sound-producing source. The following sound effects, boings, hisses, and whams, usually used in cartoons, are non-literal sounds. Romantic music played in the background during a love scene or the rhythmic musical themes behind newscasts are also non-literal sounds. Non-literal sounds are called "nodiegetic" which means they occupy non-story space .

Summary

Non-literal and literal sounds are often combined in the same scene. Sounds can be literal or non-literal depending on their context within the presentation or scene. Music played in the background to influence the mood of a scene would be considered non-literal sound. Music played, as the audience watches the orchestra musicians perform, would be considered literal sound.

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Functions of Sound as Used in Radio and Television

Zettl, (1999) has broken down the use of sound in radio and television production into three categories. He tells us that sound functions to provide information, establish outer orientation, and establish inner orientation . These functions should also be considered in multimedia production.

Provide information

Zettl established that information is imparted through speech in the form of dialogue, direct address, and narration. Direct address refers to the character speaking directly to the audience. We see examples of direct address everyday on TV in commercials, speeches, and newscasts. Earlier in this paper Daniels' functions of the audio element, speech, are listed as narration and dialog. Note that Zettl has added the function of direct address. The function narration can be source-connected (on camera) or source-disconnected (off camera).

Establish Outer Orientation

Sound establishes the outer orientation of a scene by orientating the scene in space, time, situation, and external event condition. Orientation in space refers to the location, the spatial environment (sounds produced in a large room sound different than those produced in a small room) and off-screen space (sounds of people and objects not seen on-screen). Morning sounds such as an alarm clock ringing and bacon frying distinguishes the time of day. Situation orientated sounds refer to those that describe a specific situation. These sounds may be predictive such as those used to indicate the recurring appearance of a person or action (leitmotiv), or they may signify the coming of an event such as danger (non-recurring).

Establish Inner Orientation

Sounds that establish inner orientation set the mood, establish the internal condition, and provide energy and structure to the scene. Mood can be set using music or some sort of non-musical, electronically produced sound. Sounds that indicate an unstable environment or the feelings of a person establish the internal condition. Sounds provide or increase the aesthetic energy of a scene. This energy affects the emotions of the viewers.

Structure is the interaction between the rhythmic structure of the sound versus that of the visual source. The interplay between the video and audio structures can be parallel, irregular, or highly independent of each other. If the sound and visual structure are considered parallel they move at the same rate. In irregular structures the rates of the visual and audio structures may vary. They may move together for a period of time and then move separately. If the visual and audio elements move independently of one another they provide contrast and interaction among the media types. \

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Roles of Audio Media in Multimedia Production

Daniels lists four roles that audio media play in multimedia production. These roles are: picture defines sound, sound defines picture, sound parallels picture, and sound counterpoints picture. Each role is described below. Examples are provided .

Picture defines sound

When a picture defines a sound the sound is defined when the visual image is so strong that the accompanying sound is a literal translation of the image. This is very similar to the descriptive function of sound effects described earlier in this paper.

- Example:

- A raging storm, with crashing waves and bent palms demands a soundtrack that consists of wind, surf, and rain sound effects. Audio is supportive of the dominant visual, reinforcing the image.
- A quiet beach with small calm waves demands a soundtrack that consists of soft surf sounds and sounds of children playing.

Sound defines picture

When the sound defines the picture the sound is so distinctive that the listener forms an image of the source in his or her mind before the image is displayed. Examples are listed below. Remember to consider the background knowledge of your students when you use sound in this manner.

- Multimedia program on the Brazilian rain forest

- A still image of the jungle interior is accompanied by the solitary sounds of the environment:

- Rainfall
- Bird calls
- Other animals
- Lively ethnic music

- Distinctive Sounds Produced by Objects

- Sound of chain saws
- Sound of various types of machinery

Sound parallels picture

Sound parallels picture is the most common relationship between audio and visual elements. The audio element combines with the visual element to create a mood or deliver information that is more potent than either element alone .

- Example: The sounds of battle with gunshots, cannon, and anguished screams complement the visual of a battle scene. The ferocity and destruction of war is conveyed by both media separately, but is intensified by both elements together.

Sound counterpoints picture

Sound counterpoints the visual image when both media elements contain unrelated information that creates an effect that is not conveyed by either media element alone. Previously Zettl (1999) told us that visual and audio elements moving independently of each other provide contrast and interactivity among media types.

- Example: In a presentation on the civil rights movement, irony is created when a visual montage of segregated public facilities is underscored by a reading of the United States Constitution.

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Aesthetic Factors of Sound

There are three basic aesthetic factors of sound use in any scene. They are figure ground, sound perspective, and sound continuity. Figure ground is the most important sound in the scene, the sound that is emphasized. All other sounds will be in the background. Sound perspective refers to close-up sounds

matching close up visuals and distant sounds matching distant visuals. Sound continuity is established when the intended volume and quality of sound is maintained over a series of events. Sound continuity is usually achieved by maintaining the same level of ambient (background) sounds. The figure ground may vary in intensity but the background sounds provide the continuity.

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Software

Mac: Recording Audio	PC: Recording Audio	Multi-platform: Recording Audio
• Simple Sound • Sound Edit	• Sound Recorder: • Sound Forge	• QuickTime • Real Audio • Narration recorded from within PowerPoint

Software for Automating Online Multimedia Presentations

- Synchronized Multimedia Integration Language (SMIL): http://webreview.com/wr/pub/1999/03/12/feature/index.html
- RealAudio/Video: http://www.realaudio.com
- Top Class: http://www.wbtsystems.com/
- The Sync-O-Matic 3000: http://www.egr.msu.edu/~crs/projects/syncomat/

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Audio File Types and Platform Compatibility

- Editing Visual and Audio Media Class (MTSU): http://www.mtsu.edu/~itres/itt/VisualAudioHandout/page7.html
- Duquesne University's Digital Duke: http://the-duke.duq-duke.duq.edu/notes/LECTURES/sec2.htm

References:

Daniels, L. (1995). Audio-Vision: Audio-Visual Interaction in Desktop Multimedia. Annual Conference of the International Visual Literacy Association, Tempe, Arizona.

Gordon, H. R. D. (1998). Selected Instructional Delivery Methods and Teaching Techniques for Teaching School Law Courses. American Educational Research Association, San Diego, CA.

Thompson, A. D., Simonson, Michael R., Hargrave, Constance P. (1992). Educational Technology: A Review of the Research. Washington D.C.: Association for Educational Communications and Technology.

Zettl, H. (1999). Sight Sound Motion, Applied Media Aesthetics. San Francisco: Wadsworth Publishing Company.

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Satellite Outreach Program to Rural K-12 Schools

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ABSTRACT:

Middle Tennessee State University recently developed a satellite-linked, interactive, distance learning system with six rural K-12 schools. Faculty were then invited to make a single presentation over this system. The Social Work Department, recognizing both the opportunities and the limitations presented by this new system, elected to be one of the presenters. However, instead of simply broadcasting one presentation, we proposed that a comprehensive program be developed using the distance learning system as one component. The comprehensive program included four broadcasts, contacts by phone and in person with key personnel at the schools and with the students, administration of questionnaires with the students, and the provision of six videotapes to help prepare the students for the broadcasts. The results of this effort are reviewed and evaluated.

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Introduction:

Middle Tennessee State University, with the assistance of a USDA grant, recently developed a satellite-linked, interactive, distance learning system with six rural K-12 schools in Middle Tennessee. Faculty were then invited to make a single presentation over this system. The Social Work Department, recognizing both the opportunities and the limitations presented by this new system, elected to be one of the presenters. However, instead of simply broadcasting one presentation, we proposed that a comprehensive program be developed using the distance learning system as one component.

Our outreach effort to these six rural schools was planned to include the following:

1. A satellite broadcast, on October 29, 1998, to the teachers at the six schools to discuss what their student needs were and how we might best meet those needs.
2. Follow up contacts by phone and in person with key leaders at the six rural schools to refine how we might be of assistance.
3. Provision of six videotapes that we have developed dealing with drugs, alcohol, and violence for the schools to be used in the classes prior to our satellite broadcasts with the students.
4. Administering to the students at each of the schools a questionnaire that would help determine

2. Follow up contacts by phone and in person with key leaders at the six rural schools to refine how we might be of assistance.
3. Provision of six videotapes that we have developed dealing with drugs, alcohol, and violence for the schools to be used in the classes prior to our satellite broadcasts with the students.
4. Administering to the students at each of the schools a questionnaire that would help determine their problems and needs.
5. Having our senior social work students, many of whom went to these or similar rural schools, visit the six schools and interact with the students in a program designed to help them examine their behavior.

- All of the above leading to three satellite-linked, interactive, television broadcasts to the six schools. These were entitled: ***Anger Management: How to Prevent Violence in Our Schools I, II, & III.*** They were broadcast on three successive Thursday afternoons in February, 1999.

We have envisioned that this is part of a long range and comprehensive effort to reach out to these six schools by the faculty and students of the Social Work Department. The problems we encountered, how we were able to overcome some of the problems and not others, and what recommendations we would make to anyone attempting a similar outreach to rural schools will be discussed. The results of this first phase of the program will be presented.

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Discussion:

This type of distance education, which combines a variety of methods of instruction, including broadcasts, need assessment, the distribution of videotapes and meetings between high school and college students at several locations, creates wonderful opportunities and presents significant challenges. One of the most important things we learned and the key concern that anyone needs to anticipate in this effort is that it will take a lot more time and energy to coordinate these types of activities than you can possibly anticipate. Even schools that want to participate in such an endeavor will tend to present obstacles to any such effort. Schools, for good cause, tend to be very turf protecting systems. Also, schools tend to be fairly rigid organizationally. For example, when dealing with six different school systems, we ran into the problem of trying to find a time for our broadcasts that would fit all six schools. They were not about to change their school hours to accommodate our one-hour time slot. Any one-hour slot inevitably was acceptable to some and not other schools. We resolved this by expanding the broadcast to 1.5 hours. The first and last half-hour were repeats and the middle half-hour was the same for all schools. Thus, a school could tune in at 1:00pm and stop at 2:00pm or they could tune in at 1:30 and stop at 2:30. This worked for everyone, however, as you can imagine, it substantially increased the costs, time, and energy for all of us at the university.

Also, communication can become very tangled, to say the least. When both organizations, e.g., MTSU and the six schools, do not have a full-time person responsible for ensuring that information flows correctly, then Murphy's Law takes effect---if something can go wrong, it will go wrong! We made it clear that we were going to have three student broadcasts that built on one another. However, the schools changed student groups on us in mid-stream and the type of student being served changed from ones that needed educational information to those that needed treatment and were inappropriate for participation in a broadcast situation. Although you cannot avoid these types of complications, you do need to anticipate them and be ready to adjust your effort accordingly.

A brief but very scary moment occurred in one broadcast where students at one school, that was watching the performance of students at another school, made disparaging remarks about the other students. We

imagined the future news headline: "MTSU Professors Start Violent School Wars." Fortunately, the offended students handled it very maturely and the broadcast continued without complications. Student participation at both college and high school levels was very positive. Our MTSU students found the visits they made to the high schools to be very educational as they learned how to work effectively with both students and the school environment. However, that does not mean that this was problem free. Some schools and teachers welcomed our MTSU students into their high schools with open arms while others made them feel as though they were unwelcome intruders. Therefore, it is important that the college student be both prepared for this type of mixed reaction beforehand and have a time to talk about it afterwards.

At the time of this writing, we have completed one group meeting between MTSU and high school students and we are preparing for the other visits. The first meeting went very well and proved to be an important component of this distance learning project. This took place in a regularly scheduled high school class, which was visited by, approximately twenty-five of our social work majors and two project faculty. One of us was responsible for videotaping the process; the other facilitated it. The group meeting started with an "icebreaker" activity involving group cooperation and intergroup competition. This led to a discussion, initiated by the college students, of social activities among adolescents. The resulting interaction between high school and MTSU students and the ability of the high school students to share their perspectives with the group were impressive. Both student groups reported that they benefited from the process. The high school students learned something about recreational activities from each other and from the college students. Our social work majors learned a good deal about group processes. Additionally, the videotape of this meeting was invaluable in the preparation of materials for the first February broadcast. Edited segments were used to illustrate the value of group discussion in a process of identifying and understanding different perspectives. This material also provided examples of constructive uses of leisure time by adolescents. In our broadcasts, we made a concerted effort to get students involved. We attempted this in a variety of ways. First, since we videotaped the students during our visits, they knew that they would be seeing themselves on television during the broadcast---their "15 minutes" of fame, so to speak. At the start of the broadcast we also tried to get them enthused by having them not just "sign-in" but do so vigorously---contesting with one another. At each of the remote sites we had one or more of our MTSU students sitting in to encourage participation. We let students know that they could participate by asking questions and being on-camera or by simply passing a note to our student who would present their question. At our first broadcast we did a role-play with our MTSU students and as this seemed to work quite well, we arranged for the students at the remote sites, with the assistance of our MTSU students, to do their own role-plays on-camera. All of this helped to create a learning environment that was participatory and engaging for the high school students and, in general, they reported back, on confidential evaluation forms processed by the satellite program manager, that they thoroughly enjoyed the program. However, this was not always the case. During one broadcast, in an attempt to get the students more involved, we role-played with them via satellite. What occurred is that one of us angrily attacked one of the students, noting both before and after the attack, that it was just a role-play, that we were not ***really*** angry with anyone. However, the anger was so vivid that it erased all of the other parts of the message and the students became offended. Fortunately, our student at the remote site was able to effectively handle this problem. And, eventually, the students were able to see that when a person expresses anger, we often get so fixated on the emotions that are aroused that we fail to understand what is really going on.

Another concern that had to be repeatedly dealt with was confidentiality. We told the students that they should not share personal information about themselves over television, that they should talk about what "others" are doing. However, this was not always followed and should be repeated at the start of every broadcast. Also, each school that participated needed to deal with confidentiality issues as well.

At our third student broadcast we changed the format. We told the students at each of the schools to spend 15 minutes discussing among themselves what problems they wanted answers to and we had one of our

college students at each of the sites to facilitate this brief discussion. At the end of the discussion the schools called in their concerns and we improvised role-plays to deal with each concern.

Assuming that this is a new endeavor on your part as it was for us, you should be alerted to the fact that technology can be challenging and sometimes less than reliable. We needed to have practice sessions to learn both how to utilize the technology as well as how to best develop and present material over this medium. For example, if you ask remote sites to check in with you and then wait for them to do so, you have a lot of dead time that undermines what you are attempting to achieve. Therefore, it is important that you keep presenting material while waiting for them to check-in. Also, you need to be prepared for the unexpected. We were presenting material when all of a sudden a picture of an infant with undistended testicles appeared on the monitor. A glitch of some technical type occurred and someone else's nursing course started to get transmitted instead of our program. As this was a new system and we were among the first to utilize it, the potential for problems was extremely high. However, that potential is ever present and needs to be planned. How do you plan for the unplanned? You first try to think of all the things that can go wrong and have a response for them. For example, what if the remote site fails to receive the transmission? (You then send them a taped copy, an explanation, and an apology.)

If you have the time before starting your broadcasts, it would be a very good use of your time to tape a show without the audience, pretending that they are out there listening, and then viewing the tape. You will most likely learn a great deal by so doing. For example, you may find that what you are doing and saying is slow and isn't capturing the attention of your audience. This is especially likely given the short attention spans of most video audiences. Or, you may discover that the technical crew is not varying the shots of you or not providing enough close-up shots so that you need to provide more instructions to them as to what you would like them to do. If you can't do this ahead of time, then after each broadcast you should review what you did by viewing a tape of the broadcast.

The content of the program was designed to be experiential and spontaneous. This is one of the strengths of this type of programming. However, it also is a challenge, as you have to be prepared to fill the time effectively. You may need to have taped material or other backup plans ready should the need arise.

Next year we are planning on repeating our effort at satellite broadcasts to these six rural schools. However, we feel we will be better prepared and view our first effort as a successful learning experience. We also plan on significantly changing our plan. Next year we are going to visit each of the participating schools in the fall semester and at that time videotape their role playing of critical issues they wish the program to address. We will then use their role-plays, along with videotaped role-plays performed by our college students, as an essential part of the satellite broadcasts. We will show the role-plays and comment upon them and respond to comments coming in from the six remote sites. To encourage participation by the students in the role-plays, we are going to create a contest; one with prizes for ***all*** participants so that it is a **win-win** contest. Since one of our concerns this inaugural year was parent involvement and permission for their children's' participation, we are also going to make sure that parents are more aware of what we are attempting to do to avoid any complications. Although we did not have any problems from parents, we were at times concerned that they might be upset by some of the programming and want to reach out to them to minimize any potential misunderstandings.

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Results:

The results were, in general, very positive. The feedback from the schools that fully participated was uniformly excellent. However, not all schools elected to participate. The reluctance of the non-participants was primarily due to time; they just didn't feel that they could "intrude" upon their schedules to

accommodate this comprehensive effort on our part. As this effort is on-going as we plan on future visits and future broadcasts, we hope to utilize the positive feedback from the more participatory schools to "sell" our program to the other schools. Although the effort takes substantial time and energy on our part, we came away with an appreciation on how important it is to reach out to our schools and a conviction that the investment was well worthwhile.

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Web Site Enhancement of Traditional Classroom Pedagogy

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Abstract:

How does one make use of the remarkable technological opportunities available and yet maintain those cherished traditional values inherent in the classroom setting? An intriguing solution has been to make an Art History web site available to students that prepares them for active participation in the classroom. Moving beyond a passive presentation of information, the site contains interactive reading assignments, images previously shown only in the classroom, and various study aids. Students played an integral role in the creation of the site, ensuring its practicality.

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Digital Technology in the Art History Classroom

Digital technology to enhance art history courses has always held intriguing possibilities. As one might expect, art historians rely, perhaps more than any other discipline, on visual aids. Accepted practice has been to dim the lights at the start of class and show slides of works of art throughout the lecture. Although this has been proven as a highly effective method of presenting the material, particularly when comparing and contrasting works is desired, it should come as no surprise that an investigation of digital imagery has become a primary concern among slide librarians and art historians. Despite the obvious advantages of minimal storage space and easy retrieval, however, projection of digital imagery does not compare favorably to slide projection. Slides are more luminous, contain more detail, and the pixelation of digital imagery is distracting. Because of the poor quality of projected digital images, we have generally shied away from classroom use of this new technology. Yet, increasingly, there are programs available that are so helpful in other areas, despite the poor visual quality, that they warrant use. For example, the Vatican has produced a program that enables one to travel through the rooms of the Papal Palace.(1) For the first time, students in Knoxville, Tennessee can stand in the virtual room of the Stanza della Segnatura, turn around, and view the frescoes on four walls. They can also walk through the door into the adjoining room and see those frescoes on the walls and ceiling. As you can see, however, there are some difficulties with this program. The menu is quite distracting and the resolution is poor, making moving through the rooms rather mechanical and jerky. Nevertheless, with this type of program students can experience a truer sense of Renaissance frescoes and their placement in the rooms. It is not hard to imagine future programs that will take us on a tour through the flowing rooms of a Frank Lloyd Wright

and view the frescoes on four walls. They can also walk through the door into the adjoining room and see those frescoes on the walls and ceiling. As you can see, however, there are some difficulties with this program. The menu is quite distracting and the resolution is poor, making moving through the rooms rather mechanical and jerky. Nevertheless, with this type of program students can experience a truer sense of Renaissance frescoes and their placement in the rooms. It is not hard to imagine future programs that will take us on a tour through the flowing rooms of a Frank Lloyd Wright house or the soaring cathedrals in Europe. At the moment, however, the emerging technology has only slightly improved the plight of an art historian showing reproductions of art work.

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The Art History Web Site

For this reason, we decided that perhaps the best use of current technology would take place outside of the classroom, so a student could prepare for, and review, material presented in the lecture. Although art historians show many images in the classroom setting (often times thirty or more slides each class), students have little opportunity to see them beyond their presentation in the lecture. Placing slides on a light table for students to view is impractical for forty students taking any one art history class. The images are, of course, too small for several students to view at one time; and projecting single images does not accommodate those who need to look at different slides. As a result, students have generally been held accountable only for those limited works of art that are accessible to them through a reproduction in their text.

We have resolved this problem in our History of Photography class by placing all the images shown in class on a web site.(2) Students need only click on the gallery and find a menu that contains the many artists discussed in class. Each artist has a list of images under his or her name. With a click of the mouse, the photograph can be brought up to a full screen complete with title and date. Should they need to review a comparison that was made in class, they can bring a split screen up so that two images can be accessed side by side.

Throughout the semester, reading assignments have traditionally been distributed with the intention that they will be discussed in the following class. Placing those articles online has allowed us to contribute to the depth of understanding expected of the student. The articles are often written by photographers whose work can be accessed by clicking on their name, bringing you again to the gallery containing their work. Specific images can be accessed throughout the article whenever they are mentioned, as can definitions for the technical terms. At the end of each article are questions to help the student prepare for discussion in class. These questions are broad in nature and allow students to interpret what they have read. The site also contains a syllabus, reading list, and definition of terms.

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Creating the Site

The construction of the site presented us with many challenges. I had never created a web site, or even visited them very often, and my knowledge of the process, and the obstacles, was quite archaic. In fact, most of my students had a better understanding of the web than I did and so I was led to them in my quest for rudimentary knowledge. I quickly became aware that their insight would be essential to the success of

the site. Under the guidance of our Visual Resources Specialist, Sandra Walker, I entrusted the design of the site to the very student body that would use it.

At the University of Tennessee we have a unique situation where our Graphic Design students undertake professional assignments. The Art Department Design Center was developed to give students supervised professional experience in design. Projects are presented to the class from the business community or from within the university. The Design Center operates like a design firm. Although there is no charge for the final product, students are requested to behave in a professional manner when associating with their clients. I presented my project to the Design Center with the hope that these students, several of whom had taken my class, would develop a user-friendly site that was also helpful. The response was quite positive and so I went about writing up a proposal that included the essential ideas I wanted to incorporate into the site. Primary among these ideas was that the site make available for review all the images shown in class. Initially, we considered posting the images week by week according to what had been presented in lectures. After much discussion, however, we rejected this idea primarily because some members of the Design Center committee suggested that this might discourage students from coming to class. In an admirably frank way, they admitted that if they knew the images were available in a weekly package they would be more likely to miss class, use someone else's notes, and try to match them to the images. Of course, this can also be accomplished in the present gallery system; however, ease of accessibility, they felt, would become an incentive to stay away from class.

Another obstacle that presented itself to us was that of labor. This became an especially acute problem when we realized that it took approximately ten minutes to scan and adjust images for the site.(3) The time-consuming process of scanning over five hundred slides seemed prohibitive and likely to postpone the project until such time was available. Once again, however, we turned to the student body for a solution. Many students had expressed interest in working on the project because of the practical web experience involved. The more complex work with HTML coding and links was undertaken by two Library Science practicum students who had expressed a keen interest in distance learning. These students created much of the layout for the pages as well as many of the links between pages. Each article was typed into the system because we had not had much success with scanning the articles and then creating links to the images. Our knowledge of HTML coding was limited so we used the extremely informative site at Case Western Reserve University that explains, in layman's terms, how to utilize the coding.(4)

The cost of this venture was also a challenge for us. Our department, like most Art Departments, did not have ample funding for technological innovation. Regardless, we were able to create a remarkable site with limited resources. We used our Zenith PC (purchased by the department a few years ago to service all five art historian's needs!) with Windows95 and Netscape 2.01.(5) The graphics were created with Adobe and WordPerfect software.(6) Images were scanned with a Polaroid Slide Scanner and stored on an external Zip disk.(7) The site was then loaded onto the university UNIX mainframe, on personal space provided to professors for their own web site, for use by those students in the class.(8)

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Copyright

Perhaps the most complex issue we struggled with was copyright. The legality of reproducing images and articles on the web for educational purposes is, at the moment, unresolved. For years, professors have made copies of articles and shown slides in a classroom under the assumption that, in a nonprofit educational setting, these practices fell under the "fair use" clause of the Copyright Act of 1976. This

clause, however, was meant primarily for textual works and has little applicability to visual materials or to digital reproduction of those materials. The ongoing debate may come to a satisfactory conclusion soon as the Library of Congress concludes a six month study that was mandated by Congress through Section 403 of the Digital Millennium Copyright Act enacted October 28, 1998. The Library of Congress's recommendations, which may include legislative changes, will be submitted to Congress no later than April 28, 1999.

As a part of this study, on Tuesday, January 26th, Virginia M.G. Hall, Senior Information Technology Specialist for the Humanities at Johns Hopkins University and co-chair of the Visual Resources Association Intellectual Property Rights Committee testified at the Library of Congress hearings as to the insufficiency of the Copyright Act of 1976 in covering transmission of digital images. As she explained: at that time "distance education was defined according to the technology of the time: primarily closed circuit television broadcasts to overflow classrooms, with the requirement that such teaching technologies be face-to-face or synchronous."(9) Accessibility to a web site would seem to conflict with that definition. New fair use guidelines should apply, she concluded, to new digital practices:

"In real-life digital practice, distance education is a term used broadly to include a range of instructional concepts from courses taught completely on-line, with little or no true face-to-face contact, to selected enhancement materials placed on a web site by a professor for students to view. Generally speaking, the term distance education as applied to digital media should cover any course related material that is intended to be accessed via computer."(10)

Ms. Hall also brought to light an important aspect of the art historian's classroom that for years has pertained to slide libraries. Namely, that the works of art we show in class are often of an esoteric nature, little-known images which "typically have inconsequential commercial value and even less general market interest and are therefore unlikely to be targeted for licensed distribution."(11) She concluded that fair use should not be restricted in any way for digital media. She did concede, however, that availability may be limited to students registered at the institution and enrolled in the course; and that it is fair to require some measure of security such as a PIN or password to course materials protected by copyright.(12) We recognize the importance of complying with the spirit of the Copyright Act and have incorporated a password system onto our site. This was a relatively easy adjustment and, in fact, the software, called Codelink, was shareware available from Silk Webware.(13) Because we wanted to keep our attractive graphics and make the first page accessible, without a password, to all students who would like to preview the syllabus and use the links to the Art Department, the images on the first page were either taken by our Professors of Photography or are part of my own collection and thus copyright is not an issue.

Ms. Hall's effect on final legislation is yet to be determined; however, most academics would applaud her clarification of the fair use issue and agree with her summation in which she quotes the Copyright Office's *General Guide to the Copyright Act of 1976*:

". . . the primary purpose of copyright legislation is to foster creation and dissemination of intellectual works for the public welfare. . . ."(14)

The College Art Association has also filed comments with the Copyright Office. They have systematically taken issue with some points of the 1976 Copyright Act. A crucial point for them is one that Ms. Hall had also addressed: the fair use provision that considers "the amount and substantiality of the portion of a work used in considering whether the use is fair."(15)

Although this seems appropriate for literary works, it does not make sense when considering the study of the visual arts. The art historian must have access to the entire work of art. All of us would agree that showing only a portion of Michelangelo's *David* or Titian's *Venus of Urbino* would not be very helpful. As mentioned earlier, professors have been using slides for many years in the classroom. Digital images are simply what the most recent technology has to offer and should be treated in the same manner as other fair use material. Professors must be free to propagate knowledge using the best technology available to them and non-profit educational institutions must be secure in their belief that they will not be sued if they pursue the goals of their charter using the newest technology.

Indeed, the copyright issue has already curtailed the progress of education. The College Art Association has explained that institutions everywhere have "fundamentally limited the quality and breadth of academic programs for fear of lawsuits and, in some cases, have been prevented from embarking on digital projects."(16)

It should be stressed, once again, that commercial vendors are not a viable option because of the esoteric nature and breadth of material that a professor might use in the classroom. Much of the material is simply not available, and undoubtedly will never be available because of its unprofitable use. Should an institution limit its curriculum according to the few options available in the commercial market place?

The conclusion of the College Art Association is, I believe, one that should guide the ongoing discussion as to how to resolve the copyright issue:

"that the traditional classroom and the traditional relationship the student has with the learning process should serve as the paradigm for the exploitation of new educational media and processes."(17)

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Student Feedback

Student feedback has been very positive and my initial misgivings about use of the site were allayed almost immediately. To ease the transition into text and image online, I made available paper copies of the first assigned article, suggesting that those who were hesitant to use the site could still read the material on a hard copy. Only one student obtained the paper copy, and it was unnecessary to provide them again. Shortly after the midterm, we polled the class to determine their use of the web site. The approximate percentages of that poll are as follows:

Frequency of use

1) 100% of those polled had used the site for study and review

2) 60% had used the site once a week

3) 10% had used it several times a week

4) 10% had used it before every class to prepare for class

5) 20% used it less than once a week

Accessing the site

1) 30% accessed the site at computers at the main university library

2) 40.5% accessed it from a computer lab on campus

3) 40.5% through a modem connection from a home computer or dorm room.

General response

1) 100% of those who responded felt that the web site helped them study for the class

2) 83% stated that they would be more likely to select a course that included similar web sites for study and review

The project was a success for all concerned. Student response was extremely favorable and we were encouraged to continue to put our art history courses online. This initial site was time-consuming and labor intensive with much trial and error. (In fact, our Visual Resources Specialist is hoping I wait until she retires before I pursue another course!) Everyone involved agrees, however, of the merit of the venture, and result, and would like to see all of our art history courses online. Cost is no longer a prominent factor, now that the software has been purchased, and consists mostly of labor and storage disks. The learning experience of creating the site was invaluable. The student who created most of the graphics is now gainfully employed in an organization that designs web sites, and one of our practicum students is now working at the Metropolitan Museum of Art helping to digitize their images. We seem to have stumbled across, for this brief shining moment, a win-win situation.

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References

1. *Raphael: An Artist for the Vatican.* Films for the Humanities and Sciences, 1997. System requirements include: MS DOS operating system version of Windows 3.1, 3.11, or 95; a multimedia PC or compatible with a 486 DX 66 MHZ processor or higher (Pentium recommended); 8 MB of RAM (16 MB of RAM recommended) 4 MB of available hard disk space; SVGA monitor (640x480, 32,000 colors or higher); double speed CD-ROM drive minimum (300 Kb/sec); windows compatible sound card;

speakers/headphones; mouse.

2. http://web.utk.edu/~twh/photo.htm

3. Software provided with the Polaroid Sprintscan 35 LE previewed each slide to be scanned and then scanned the image. We chose to scan at 72 dpi. The scanned images were saved as JPEG files and then opened in Adobe Photoshop. For the black and white images, the color information was removed to make the file smaller and the "auto function" was used to sharpen the image. Color photos were more time consuming because of the color shifts that often occurred. In one instance, for example, a sepia toned image took one half hour to complete. The final image was saved as a JPEG file. Then the file was copied to the university web server site from a Zip disk using file transfer protocol (FTP).

4. Case Western Reserve University <http://www.cwru.edu/help/intro/introHTML/toc.html>

5. We used the Zenith, Z Station, multi-media PC (pentium) with a minimum of 32 MB of RAM. Windows95 was used in conjunction with Netscape 2.01 (although we found that Netscape 4.0 is more flexible and offers more features).

6. Adobe Photoshop was used to manipulate the images, and Wordperfect 5.2 was used for the text.

7. The Polaroid Sprintscan 35 LE was used because it was compatible with the plastic mounted slides of our slide library. Other scanners we considered have difficulty with slides that are not paper mounted and also do not open up if a slide becomes jammed.

8. The university campus is wired with the fiber optics ethernet cable system. It was possible to work on the site from my phone modem at home; however, the process was much slower.

9. The text of this testimony was e-mailed to members of the Visual Resources Association, of which our Visual Resources Specialist is a member. Testimony of the hearings are available at <."http://lcweb.loc.gov/copyright/disted/>.

10. Ibid.

11. Ibid.

12. Ibid.

13. Codelink from Silk Webware is Java Shareware. The file size is 61.1K and it is available in version 4.1 at:

<http://www.download.com/pc/software/0,332,0-48824-s,1000.html?st.dl.redir.txt.tdtl>

14. Hall, op cit.

15. Comments of the College Art Association were submitted to the Library of Congress, Copyright Office by Robert A. Baron, Kathleen R. Cohen, and Jeffrey P. Cunard. The text of these comments is available at <."http://www.pipeline.com/~rabaron/CIP/CAA-DxEd.htm>. The College Art Association is located at 275 Seventh Avenue, New York, New York 10001.

16. Ibid, p. 4.

17. Ibid, p. 9.

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What happens after the online course ends?

Online student performance in subsequent campus-based courses

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Introduction

Christopher Newport University (CNU) has offered its students online courses since the early 1990s. The online courses originated through the efforts of a single faculty member from one department who used a bulletin board to support class discussions and assignments. Over the course of 18 months, faculty members in other departments became attracted to the idea of teaching online and began offering additional courses. In 1994, a cadre of online faculty members lobbied for and received funding from the Virginia General Assembly to support a two-year pilot online program at the university.

To meet legislative funding requirements, CNU was required to provide evidence that the students participating in online courses demonstrated learning outcomes equivalent to student learning that occurred in traditional, campus-based courses. During the two-year pilot stage, CNU collected a variety of qualitative and quantitative data to assess student learning outcomes. In 1996, CNU submitted a final report to the General Assembly stating that, indeed, online students performed at least as well as students in traditional courses, and that online instructors considered their courses to be at least as intellectually rigorous as campus-based counterparts.

With the educational quality of its online courses documented, CNU began operating CNU Online, a program independent of any particular departmental sponsorship, in 1996. Since 1996, CNU Online has witnessed an increase each semester in the number of online enrollments and in the number of online courses offered. At the time this paper was written--in the midst of the Spring 1999 semester--CNU Online included 1063 enrollments in 52 courses. CNU Online also offers two complete degree programs, a bachelor of science degree in Government and Public Administration, and a bachelor of arts degree in Philosophy and Religious Studies.

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Developing the research question

Establishing that online education is as educationally sound as traditional courses is an important and requisite step to creating a distance education program. But as a distance education program evolves and as each semester brings a new wave of data into an institution, the kind of questions a university can pose also changes. At CNU, we have noticed that many of our online students alternate between online and traditional courses. That is, there is no distinct "online student" group at CNU. Instead, the great majority of CNU's online students (88%) live within commuting distance to campus and combine online

and traditional courses during their college careers. Many of our online courses are 100- and 200-level courses that act as prerequisites for more advanced study. Although some advanced courses are available online, many are only offered in traditional instructional settings. Therefore, CNU houses a body of students for whom the prerequisite course was taken online while the advanced course was taken on campus. This situation allowed CNU to consider how well our online students perform in traditional courses that build on information encountered in the online course. We wondered if online students would be at a disadvantage in traditional courses, compared with classmates who had taken the prerequisite through traditional means (for our purposes "traditional" forms of prerequisites included CNU on-campus courses, courses transferred in from another college or a community college, or credit given for performance on an examination). Our concern was that if the online students did not perform at least as well as classmates who had taken traditional versions of the prerequisites, then two potentially serious scenarios might exist. First, it might be that the online courses were not conveying the information necessary for preparation for more advanced study, which could be remedied fairly easily by changes in the course content. Alternatively, it might be that online students might be at a disadvantage because of the format of the course itself. That is, perhaps the content of an online course does not have "staying power" with students, and students are therefore not able to call upon this knowledge in subsequent academic settings. This alternative would not bode well for the expansion of distance education at CNU and, perhaps, elsewhere. If, however, online students did as well as their classmates from traditional prerequisites, then the online program as a whole could rest assured that online students were being prepared for advanced academic study. To shed light on this issue, we focused our attention on the relationship between student performance in prerequisite courses (online *versus* traditional) and advanced courses (traditional) at CNU, and relied on methods employed in previous studies of college transfer (e.g., Quanty *et al.*, 1998).

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Methods and findings

A single question guided our study: Do online courses prepare students for advanced study at least as well as traditionally accepted forms of prerequisites? We began by reviewing the enrollment records from six departments at CNU that offer a majority of the lower level online courses. We examined a total of nine courses offered between one and four times each, between the Fall 1994 and Spring 1998 semesters. We traced all the online students' course of study after their participation in the lower level online course to see whether they went on to enroll in a traditional advanced course. Using this approach, we located a total of 44 enrollments for whom the online course acted as a prerequisite for a traditionally offered advanced course.

To determine whether the online courses had prepared these students as well as the traditional prerequisite courses, we compared their final grades with the grades of their classmates in the advanced course (Table 1). We operationalized student success as achieving a grade of a C or higher, and compared the proportion of students who had received a C or higher through traditional and online prerequisites. Using Fisher's Exact Test of significance, we found that there was no statistically significant difference in the students' final grades ($p = .19$). Based on this finding, we concluded that the online courses we examined prepared students for advanced study at least as well as the traditionally accepted forms of prerequisites at CNU.

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Table 1: Final grades of students in advanced courses who took the prerequisite either through traditional or online means.

	Advanced course grades		
Prerequisite	A-C	D & F	% passing
Traditional	658	83	88.8
Online	40	4	90.8

Conclusion

When it comes to assessment, evaluation, and research, distance education programs typically focus on student performance in the here-and-now of the distance education setting for a particular semester. Investigators seldom consider how well distance education students perform on tests, exams, and assignments **that build on** the knowledge the students gleaned through their non-traditional study. An initial examination of the data collected at Christopher Newport University indicates that online students take with them the information they obtained in their online study, and successfully apply it to subsequent advanced courses to the same extent as students in traditional settings. Although our data are few at this point--despite the hundreds of online enrollments CNU has hosted since the early 1990s, we were only able to locate 44 cases that fell within the parameters defined by our research question--we are optimistic that future research will continue to support the academic quality of our online courses. It is our hope that if other institutions employ a similar strategy as they consider student performance, a more elaborate dialogue on distance education can proceed.

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References

1. Quanty, M.B., Dixon, R.W., & Ridley, D. (1998). Community college strategies: A new paradigm for evaluating transfer success. *Assessment update*, vol. 10, no. 2, March/April.

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Establishing a Faculty Technology Center

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In the spring of 1998, Northwest Missouri State University established its Center for Information Technology in Education (CITE). The focus of this presentation will be on the process involved in staffing the center, determining hardware and software needs, budgetary considerations, and other issues a college or university interested in establishing such a center may encounter. Key considerations related to faculty and administration relations, training, and the production of technology-based learning materials will also be discussed.

Establishing a Faculty Technology Center

Over the past two years, a growing panic seems to have set in among educational leaders at the college and university level. Most of these leaders feel that their schools must embark as rapidly as possible into the new frontier of high tech, web-related course delivery. The underlying basis for this panic is the fear of losing on the field of competition for needed student enrollment figures. Unfortunately, soon after charging into this new arena, many of the schools find that they lack the necessary infrastructure to support the endeavor, particularly in the area of faculty support.

Starting in 1987, Northwest Missouri State University began building ten years of extensive experience with its campus-wide VAX computer system, which it called the Electronic Campus. The Electronic Campus included terminals in every dormitory room and faculty office. Based on the knowledge it had accumulated, Northwest proposed in 1996 that the university be designated as Missouri's center for the testing and development of personal computer applications for the enhancement of learning. As part of this Mission Enhancement plan to the state, Northwest indicated that a Center for Information Technology in Education (CITE) would need to be established. The center would be used to provide the necessary faculty support infrastructure to achieve the above stated goal and to increase Northwest's engagement and leadership in the application of information technology to learning. In the spring of 1997, Northwest's Mission Enhancement proposal was accepted by the state legislature and funded to the tune of $800,000.

While awaiting the selection of the first CITE director in 1997, 22 faculty members participated in a series of summer course modularization projects under the auspices of the academic provost. The purpose of these projects was to incorporate information technology into existing courses in such a manner as to enable the course materials to be available to learners in modularized units that better serviced their educational needs. As a director was finally appointed late in the spring of 1998, a second group of faculty was provided summer stipends (at a cost of about $90,000) to again develop modularized, technology-based course materials.

As described in its Mission Enhancement proposal, a major goal of CITE was to facilitate and enhance the educational opportunities of students at Northwest by identifying and testing computer-based learning packages already available on the market and to develop new ones where there were important gaps. These packages were to be made available to both Northwest's own students and to learners enrolled in programs in other Missouri institutions. But a more immediate aim soon captured the exclusive focus of CITE.

Growing out of a series of discussions between Northwest president Dean Hubbard and Colorado Electronic Community College's president Mary Beth Sussman, an articulation agreement was signed in

the summer of 1998. Based on the associate degree in business provided entirely online by the Colorado consortium, it was agreed that Northwest would begin the process of providing all of the necessary courses online that would enable students with the Colorado associate degree to complete a bachelor's degree in business management. Thus, in the summer and fall of 1998, the focus of CITE had to be realigned toward assisting Northwest faculty in developing content-specific learning materials for distribution through web-based courses.

All of this was taking place while the new director was settling in. Besides working with the faculty as stated above, the director and the temporary assistant director (a faculty member on halftime release) had to hire the staff (curriculum design specialist, computer specialist, and secretary), physically establish the center in office space provided by the university library, and purchase needed hardware and software. The purchases quickly surpassed the $60,000 mark. The items bought were based on hardware and software platforms that were widely used on campus: PC computers, Office 97 and Toolbook II Assistant and Instructor for the development of online course materials.

One of the first things the new faculty technology center had to do was to designate, after extensive faculty and staff input, the major software packages the center would support both through purchases and technical and training assistance. It was quickly found by the CITE staff that it would not be financially feasible for the center to support the wide array of idiosyncratic software desires of the campus faculty. This policy is especially important in the area of course development software, where an extensive knowledge about a particular software package on the part of the staff is necessary in order to fully utilize its properties.

As part of its Mission Enhancement money, CITE provides each Northwest faculty member with a notebook computer on a two to three year rotation cycle, at a cost of approximately $250,000 per year. The notebooks are distributed based on faculty needs and administrative targeting of academic areas that require technological enhancement.

But beyond the expense associated with the notebook computers, the CITE office soon learned that a policy had to be established as to the depth and breath of financial support it would provide to faculty for the purchase of computer-related hardware, such as digital cameras and CD-ROM burners. The policy, as currently implemented, calls for the center to make a reasonable effort to provide the hardware requested by faculty on a short-term loan basis, with "ownership" of the hardware to remain with CITE. This policy helps to minimize the needless duplication of seldom-used hardware and to maximize the array of hardware available for the faculty to use.

As CITE was getting settled into place and the necessary policies codified, it rapidly became apparent that the center did not have the level of staffing that was necessary to properly assist faculty in transforming course materials to completely web-based online courses. Using some of the funds available within the budget to support faculty stipends, the center decided that the hiring of student help to assist the individual faculty members would be the most economical approach to the problem. Funds were thereby transferred to the participating faculty members' department budgets to pay for the student help, thus minimizing student-related paperwork for the CITE office. Student assistance was also provided through the departments by means of student internships and independent study projects.

During the fall of 1998, while waiting for final negotiations to take place between Northwest and Real Education (which is to provide the course management software and related hardware and technical resources for the online business courses), CITE undertook the selection of Web Course in a Box as its local online courses management software. The reason this package was selected was due to its minimal learning curve and the fact that version 2.02 was free. It was through this software that four online courses were hosted for the spring, 1999 semester: Introduction to Business Finance, Introduction to Philosophy, Enjoyment of Music, and Peoples and Cultures (a cultural geography course). To provide a stronger, more comprehensive, online testing and student tracking system, it was later decided to switch the local course management software to CourseInfo by Blackboard, Inc. for the summer, 1999 online courses. While this may seem a duplication of course management software packages (Real Education vs. CourseInfo), it was decided that an inexpensive means had to be provided to faculty for them to disseminate some online course materials to their students without incurring the high fees associated

with the provision of such materials through the auspices of Real Education.

To aid in establishing strong ties with the faculty, a comprehensive survey of every faculty member was undertaken. This provided the center with the opportunity to clearly explain to the faculty the role of CITE, determine the technology needs of the faculty, and to establish a baseline measurement of the faculty's technological skills. The information gleamed from the survey will be used to organize training sessions covering the hardware and software needs of the faculty. Related to this is the center's extensive involvement in the hosting of a technology conference at Northwest. The goal is to encourage a wide range of faculty to participate in the conference.

As its first full year as a functional center comes to a close, the Center for Information Technology in Education can look back at a long list of accomplishments. A key element in the success of the center was the strong support provided by the administration in terms of both budget and status. The center quickly became a critical component in several of the university-wide initiatives and in the continuing effort on the part of the university to enhance the technological abilities of its faculty.

As development of course materials in association with faculty members continues, and as more courses are offered on the web, the role of the center will become more central to the mission of the university. It is in light of this role that the center must maintain strong ties to both the administration and the faculty in order to further the goals of the university and to best serve the needs of the students of Northwest Missouri State University.

Faculty Collaboration on Multidisciplinary Web-Based Education

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Paper Abstract

Teaching, learning, and doing business online through the Internet and World Wide Web (WWW) are bound to change the structure of our traditional educational and business institutions. However, the effects will be more greatly felt by those who are directly involved in education. This motivated six professors of five different departments of the OMI College of Applied Science, University of Cincinnati (UC), for the interdepartmental collaboration in enhancing the professional development of OCAS faculty on WWW-based education. The paper describes in details the main outcome of the UC Faculty Development Grant – i.e. OCAS faculty "brainware" on WWW-based education, which enabled several OCAS professors to create WWW-based courseware in various technological areas.

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1. Motivation

The Internet is having a profound impact on the delivery of instruction and the means for conducting business. Each day, millions of users harness its interconnectivity to access forums or databases, enroll in online courses, and supply information online to clients, vendors, and staff. In increasing numbers, organizations are implementing corporate-wide Web sites and Intranets. Intranets, which are implemented via Local Area Networks (LAN) and Wide Area networks (WAN), utilize many of the same Internet services and features *internally* within the organization (and hence the name for this type of networks) – and therefore more securely.

Whether over the Web or over an intranet, a variety of instructional tools are becoming commercially available to help instructors in preparing for the delivery of courses online, either in support of distance education goals or as complimentary to a traditional course offering. On the business side, collaboration tools are being developed to enable engineers to cooperatively design a product over the Web, regardless of their "physical" presence in the world. Web-based tools being developed for both areas of instruction (teaching/learning) and engineering (product development/project management) have one objective in

available to help instructors in preparing for the delivery of courses online, either in support of distance education goals or as complimentary to a traditional course offering. On the business side, collaboration tools are being developed to enable engineers to cooperatively design a product over the Web, regardless of their "physical" presence in the world. Web-based tools being developed for both areas of instruction (teaching/learning) and engineering (product development/project management) have one objective in common: to provide sufficient features and software functions that would enable a group of individuals to communicate online in pursuit of their common goal – either instruction or product development.

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2. Interdepartmental Collaboration

Project Team. The authors, faculty members in several departments of the OMI College of Applied Science (OCAS) at University of Cincinnati (UC), started a project in 1998 as an interdepartmental collaboration to investigate the use of Web-Based Instructional (WBI) tools at our college [1]. The project team included representatives from various areas such as Information Engineering Technology, Mechanical Engineering Technology, Chemical Technology, Professional Practice and Career Placement, and Humanities and Social Science, thereby providing an objective multi-disciplinary performance of the project and evaluation of its results.

Goals. Two project goals were set since the beginning of our project:

a. As an interdepartmental and multi-disciplinary team, to form *a kernel* of instructors at OCAS who acquired the *know-how* of Distance Education (DE), including Web-Based Education (WBE), and WBI tools, and therefore ready to
b. develop *a pool* of faculty at OCAS and at UC on the use of WBI tools at WBE through a series of workshops and training seminars.

Methods. The following set of activities were deemed necessary to achieve both goals:

1. individual faculty development on various WBI tools, DE and WBE-related aspects, such as organizational models of DE systems, DE hardware, DE software, DE courseware, DE students, DE teachers, DE facilitators and administrators, grants and funding in the DE area;
2. regular faculty interdepartmental group discussions on instructional technology and pedagogical methodology of Web-Based Education, and demonstrations of WBI tools;
3. attending hands-on training and workshops/seminars on Web-Based Instructional tools, and
4. team-working, peer-to-peer mentoring system, and individual instruction and consulting with participating OCAS faculty.

Faculty Development. As a result of this project each faculty - project participant, succeeded to:

a. Develop himself independently on various selected topics of DE, WBE and WBI tools, and make a minimum of one presentation at an OCAS faculty meeting, thereby providing an interdepartmental faculty development and collaboration.
b. Attend a minimum of one DE or WBE-related national training seminar and a minimum one top-ranked national/international related conference during the project period. Make a presentation about this seminar and conference for the OCAS faculty.
c. Attend meetings twice a month to discuss findings and generate ideas/solutions on various topics/problems of WBE. In particular: pedagogical methodology, instructional technology, "student-teacher" and "student-student" communications in virtual classrooms, Web page and WBE courseware design and development, various WBI tools, suitable forms of video-, audio-, and

data-conferencing via the Internet, as well as other topics.

d. Submit at least one proposal to present a project-related paper at a professional conference in 1999.
e. Submit a minimum of one project-related article to a scholarly journal for possible publication in 1999-2000.
f. Acquire necessary hardware, software, and textbooks on DE, WBE, and WBI tools, as well as books on different educational technologies and pedagogical aspects of DE and WBE.

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3. Main Project Outcomes

Outcome # 1 - Faculty "brainware" on DE systems. The project team conducted research to identify various aspects of DE, WBE, and DE systems worldwide. Particularly, the list of research topics included but was not limited to:1) the examples of well-known *international* and *national* (USA) DE systems, as well as smaller *local* DE systems, 2) models of DE systems (international, national (USA), local), 3) generations of DE related technology, and popular DE media /support technologies, 4) organizational aspects of DE, 5) DE degree programs, DE credit/noncredit courses, 6) DE teachers, and DE facilitators, 7) DE classrooms and equipment, 8) DE targeted student body – i.e. DE students, 9) DE tuition fee, 10) DE administrators, 11) list of features of common DE system (international, national (USA), and local), 12) costs of DE hardware, courseware, and software, 13) financial support/initial investments to DE systems, 14) DE students, DE teachers, and DE facilitators, and 15) "No Significant Phenomenon" of DE education. Numerous DE systems worldwide have been analyzed such as:

1) Well-known international DE systems: National Technological University (USA) [http://www.ntu.edu], The Open University of the United Kingdom (UK) [http://www.open.ac.uk], British Columbia DE System (Canada) [http://www.etc.bc.ca], The Open University of The Netherlands (The Netherlands) [http://www.ouh.nl], The University of South Africa - UNISA (South Africa) [http://www.unisa.ac.za], The Open Learning Agency of Australia (Australia) [http://www.ola.edu.au], Open Learning Institute of Hong Kong [http://www.oli.hk], Centro de Ensenanza a Distancia (Spain) [http://www.ceac.com], and other international DE systems.

2) Well-known national DE systems: The Pennsylvania State University (USA) [http://www.cde.psu.edu], The Indiana State University [http://www.ind.net], The INTEC College (South Africa) [http://www.intec.edi.za], Monash University (Australia) [http://www.monash.edu.au], Instituto Nacional de Educacao a Distancia (Brazil) [http://www.ibase.org.br/~inld], Horizons University (France) [http://www.h-university.com], and other national DE systems.

3) Local (USA) DE systems: Bellevue Community College (CC) [http://online.bcc.ctc.edu], Clackamas CC [http://dl.clackamas.cc.or.us], Laramie County CC [http://www.lcc.whecn.edu], Cerro Coso CC [http://www.cc.cc.ca.us], Cosumnes River College [http://crc.losrios.cc.ca.us/online], Contact South – a Consortium of Ontario Colleges (Canada) [http://www.contactsouth.org], and other local DE systems. A library of on-line courses in the information Technology area can also be found at the University of Cincinnati [http://gartner.uc.edu/gartner].

The detailed results of our investigation on DE systems are presented in [2].

Outcome # 2 - Faculty "brainware" on WBI tools. We conducted research to identify the features and capabilities of various WBI tools that can enable an instructor to design, develop, maintain and manage WBE curricula and courses. Vendors were contacted for demo versions of products. Members of the project team met regularly to discuss various WBE-related issues and, specifically: advantages, disadvantages, features, and problems encountered during pilot course creation. More than twenty

available WBE tools were selected for analysis on the first stage of research. They were ToolBook Assistant/Librarian [http://www.asymetrix.com], AuthorWare [http://www.macromedia.com], ClassWare [http://classware.uc.edu], Convene [http://www.convene.com], CourseInfo [http://www.blackboard.net/courseinfo], Director [http://www.macromedia.com], FirstClass Collaborative Classroom [http://www.education.softarc.com], Front Page'98 [http://www.microsoft.com], Intrakal [http://www.anlon.com], Learning Space [http://www.lotus.com/learningspace], MentorWare [http://www.mentorware.com], TopClass [http://www.wbtsystems.comindex.html], Virtual-U [http://virtual-u.cs.sfu.ca/vuweb], Web Course in a Box [http://www.madduck.com/wcbinfo.wcb.html], WebCT [http://www.webct.com], Webmentor Enterprise [http://avilar.adasoft.com], as well as Norton Connect, Allaire Forum, Team Wave, WebBoard, QuestionMark, and PlaceWare.

Features of WBI tools, usually, fall under three categories [3], specifically, 1) WBI tools for WBE courseware design and development, 2) WBI tools for WBE courseware management, and 3) WBI tools for "student-student" and "student(s)-teacher" communications via the Internet.

Course design tools include: 1) *course templates* to maintain consistency to the course format and provide the instructor with the tool to easily publish a course on the Web by focusing on the content that will be entered in the template, without having to worry about learning HTML, 2) *search tools* to provide a topic- or keyword-based search of course material, and 3) *course-related links*: to refer students to other web sites with information pertaining to the course, without having to exit the course site.

Course management tools include 1) *on-line assessment tools* such as quiz/test generation, administration, and grading – based upon a bank of test questions, and 2) *student tracking tools* to track student access of course material as well as student progress on assignments and tests.

Course communication/collaboration tools [4] include 1) *synchronous communication* – support for live interaction such as chat rooms, shared whiteboards, audio- and video- conferencing, and 2) *asynchronous communication* such as built-in email, file sharing, threaded discussions, bulletin boards, and workgroups.

As a result of our research, the variety of available WBE tools was reduced to several applications for further careful and in-depth consideration and utilization by OCAS faculty. These applications fall under two categories:

1. WBI tools for instructors with *limited software development background*: Macromedia AuthorWare, ClassWare, Blackboard, WebCT, and Asymetrix ToolBook II Assistant.
2. WBI tools for instructors with *strong programming skills* and *strong background in computer science*: WebCT, Asymetrix ToolBook II Librarian, and Macromedia Director.

The second group of applications offers more advanced tools/features for the creation of Web-based courses at the expense of learning how to utilize those tools/features.

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4. Other findings

While our project has primarily focused on DE, WBE and WBI tools, our investigation had led us to conclude that features of WBI tools can be readily deployed in a collaborative multidisciplinary engineering environment. Nowadays, many engineering companies cannot have the experts needed for the development of a given product under the same roof. For instance, a number of engineering disciplines come together in order to develop and produce an electromechanical device (e.g. a cellular telephone), such as: digital electronics, mechanical engineering, production engineering, and even environmental

engineering – to decide on which environmentally-friendly materials can be used for the product. Experts in each field can utilize an on-line collaboration tool to interact while designing the product, therefore breaking the barrier of distance between them. It is therefore extremely beneficial for the students of our College to learn how to deploy and use WBI tools, since such skills will be highly valued by their future employers. Going forward, our objective is therefore to first get students familiar with these tools through the learning experience of a course that utilizes them. The next step would be to require them to master one of these tools, augment it, and then deploy it as a collaboration tool in an engineering setting for cooperative multidisciplinary problem-solving.

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5. Future Work

Future activities of the project team in 1999-2000 deal with a design and development of pilot WBE courseware in various technological areas that are appropriate for the College of Applied Science, University of Cincinnati.

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6. References

1. V. Uskov, A. Saad, S. Geonetta, J. Spille, K. Cedercreutz, and D. Abel (1998). Interdepartmental Collaboration In Enhancing the Professional Development of College of

   Applied Science Faculty on WWW-based Education: Preparation for Teaching in the 21st

   Century", ***Faculty Development Council, University of Cincinnati***, March 1998.
2. V. Uskov (1998). Systems of Distance Education: Design, Development, and Grants/Funding Available. ***Proceedings of the 15th IFIP World Computer Congress***, Vienna, Austria.
3. S. Gray (1998). Web-based Instructional Tools. ***Syllabus***, September 1998.
4. S. Gray (1999). Collaboration Tools. ***Syllabus***, January 1999.

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Portrait of the Early-Adopter: Survey of Instructors of WWW Courses, Spring 1998

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Abstract: A portrait of the early-adopter of WWW courses is painted in the results of a survey of the 71 instructors who had a WWW course listed on the Southern Regional Electronic Campus (SREC) site during the first semester of its operation, Spring 1998. Data about their perceptions, practices, concerns, and the institutional norms under which they work were collected. The data collected from the survey yielded a prioritized list of faculty concerns and needs. Institutions must develop the infrastructure to provide: technical training, technical support, administrative support, time for faculty to develop and teach these courses, a revised faculty reward system, and reliable computer hardware. The delivery of distance education on the WWW has great potential that can not be realized until the needs and concerns of the faculty that will develop the courses are met.

Because instructional delivery on the Internet is such a new application, there is no existing body of research available. For the most part, journal articles address broad policy issues or are anecdotal, describing the implementation of a particular course. The few surveys that have been done are mainly concerned with quantifying the number of courses and the number of students. Dillon and Walsh(1992) conducted an analysis of 255 articles from five major distance education journals. Of these articles, only twenty-four dealt with faculty issues in distance education. Because a committed and well- trained faculty is the key to the successful delivery of distance education, there is a need for basic research in faculty issues related to the delivery of distance education on the Internet.

Rodgers (1983) developed broad categories to classify technology adoptors: innovators, early adoptors, early majority, late majority, and laggards. The early adoptors have a high degree of opinion leadership and the organization looks to them for cues, information, and advice for adopting new technologies (Rodgers, 1983). This valuable knowledge was captured by surveying a group of early adoptors who developed and delivered a course on the WWW to learn from their experiences and identify their needs and concerns.. Data about their perceptions, practices, concerns, and the institutional norms under which they work were collected.

The sample for the study was limited to the instructors of the 77 WWW courses listed on the Southern Regional Electronic Campus (SREC) site for the Spring 1998 semester. This was the first semester of operation for the SREC. The instructors' names and mailing addresses were obtained by following links from the SREC site back to the offering institutions. The 77 listed courses were being taught by 71 different instructors. Surveys were mailed to these instructors. Thirty six (50.7%) responses were received, but five courses were canceled or not offered during Spring 1998, leaving 31 (43.7%) usable surveys.

The respondents formed a cross-section of postsecondary faculty. Their teaching fields were from various disciplines: 26% social science, 26% humanities, 35% scientific/technical, and 13% business. They also taught in a variety of types of institutions: 7% large universities, 58% regional universities, 32% community colleges or technical schools, and 3% correspondence studies.

The instructors surveyed represent an experienced, teaching faculty. They averaged 16.4 years of teaching experience with a range of 1 to 36 years. Sixteen of the 17 instructors, who were currently

taught in a variety of types of institutions: 7% large universities, 58% regional universities, 32% community colleges or technical schools, and 3% correspondence studies.

The instructors surveyed represent an experienced, teaching faculty. They averaged 16.4 years of teaching experience with a range of 1 to 36 years. Sixteen of the 17 instructors, who were currently teaching in a tenure-track position, had already earned tenure. Their typical workload was broken down as follows: teaching 63%, research 8%, public service 11%, and other 18%. The "other" category was mostly administrative duties.

Chi-square tests were made to determine if there was a difference in instructors' concerns based on the discipline (humanity, social science, science/tech, or business) or type of postsecondary institution (large university, regional university, community college or technical school, or correspondence studies). Faculty concerns about web-based distance education were universal. The chi-square tests indicated that almost all differences were not statistically significant. The following table ranks the instructors' concerns in descending order.

Table 1

Concerns Ranked in Descending Order

(Measured on a 5 pt. Likert Scale 1 = Minor Concern 5 = Major Concern)

	Mean	Sd. Dev	% (Choosing 4 or 5)
Sufficient time to develop and maintain course material	4.133	1.074	68%
Technical support	3.710	1.371	65%
Administrative support	3.613	1.383	48%
Sufficient time to interact with students	3.355	1.330	45%
Technical training	3.194	1.352	39%
Student familiarity with computers	3.194	1.108	39%
Equipment problems	3.097	1.274	45%
Academic honesty	2.968	1.378	32%
Necessary equipment available in faculty offices	2.903	1.535	32%
Student access to computers	2.867	1.224	16%
Web course design	2.839	1.241	36%
Student assessment/grading	2.733	1.230	29%
Intellectual property rights	2.700	1.489	32%

Sufficient Time to Develop and Maintain Course Material. As seen in Table 1, the instructors' number one concern was the necessary time to develop and maintain their courses. Sixty-eight percent of the teachers rated this a major concern. The respondents were critically aware of this problem because 81% of them personally developed at least 75% of their courses. A science/technology instructor observed, "It takes a lot of time and effort initially. Also faculty need proper training in online development (curriculum conversion)." A business instructor commented, "Need financial support and release time. Very time intensive."

The reported length of time required to develop a course was difficult to quantify. The amount of time that developers reported was in different units of measurement and some represented full-time effort and others part-time effort. Seven instructors reported their effort in hours of full-time work. The development time ranged from 48 to 300+ hours with a mean of 152 hours. Four instructors reported the time in weeks, with a range of 5 to 6 weeks and a mean of 5.8 weeks. Fifteen instructors reported the time in months of part-time effort. The time ranged from 3 to 18 months with a mean of 6.6 months. Two instructors expressed the development time as "A lot!" and "More than I got paid for." No matter how it was measured, the development time was substantial.

Institutions have recognized the burden of course development for the WWW. Fifty-eight percent of the instructors surveyed received release time or financial incentive for developing the course. The most common incentive was release time. Nine (29%) instructors received a one- course load reduction while developing the course. Nine (29%) instructors received financial compensation ranging from $1,500 to $11,000, with a mean of approximately $3,600.

Few rewards exist for the time consuming task of maintaining the course. Only four instructors reported receiving any compensation. One received a one-time-only one-course load reduction, one was "discussing" the issue, and two, who were paid on a correspondence course model, received a small amount per student.

Eleven (35%) of the instructors reported receiving additional help or incentives for teaching the course. One was assigned a graduate assistant. Two received a one-course load reduction. Two were paid a lump sum, $2,500 and $3,500, for teaching the course. Six were paid per student enrolled or lesson graded.

Technical Support/Technical Training. Technical support and technical training ranked among the top five concerns. 65% of the instructors rated technical support a major problem despite the fact that 67% of the instructors reported having a department on campus to assist in the technical development of a web course. Only two instructors commented that their support department was "excellent" or would help with "any need". The following is a typical comment: "Lack of technical support staff. I am responsible for all maintenance."

There is a problem matching faculty needs with technical support services. Why? This is an area that requires further study. The instructors were aware that technical support services existed but they were not taking advantage of the services, had difficulty accessing the services, or the services were inadequate.

Technical training was also reported to be inadequate. Sixty-one percent of the instructors surveyed received no training in web-course development and only four instructors, out of the 12 who had received any training, reported that the training was adequate. A social science instructor commented, "[I attended] conference sessions and workshops [and did a] tremendous amount of reading. Didn't "receive" training - got it myself."

Administrative Support. Administrative support ranked third as a major concern. Administrative support encompasses such issues as the institutional climate for distance education, and promotion/tenure. The SREC WWW distance education courses were being taught by curriculum pioneers. Forty-four percent of the courses were taught for the first time in Spring 1998 and 84% of the courses were taught three or fewer times. Only two instructors reported that they felt administrative pressure to develop web courses. The spirit of the pioneering instructor was expressed in the following comment: "[I] decided to join the computer age & enhance [my] skills vs. going for early retirement or being left behind."

But not all comments were positive. The administration has expressed its commitment to distance education, but often the supporting institutional infrastructure has not yet been created. A regional university instructor complained, "The institutional climate is good. The department climate stinks. This university has made a commitment to distance education, but most of my colleagues are resisting. I am a renegade!" A community college instructor commented, "There are a lot of unanswered questions about web-based courses at our school. I did the course because I am interested in it - not because of financial support or administrative pressure."

Concerns about capping course enrollment and compensation for teaching large classes were often expressed. The following comments were from instructors at regional universities:

- Concern - allowing too many to enroll. Administrative folk want to enroll large number[s] in web course.
- Some administrators see only the potential cost savings, not the opportunity to do more and better teaching.

Faculty members generally support the concept of using technology to improve instruction, but using technology to reduce costs is a volatile political concern. They argue that reducing costs with the aid of technology "translates into reducing the number of faculty members and increasing student-faculty ratios" (DeSieno, p. 2). Teaching is not a mechanical process that can be delivered without human interaction.

However, evidence of large enrollments was not supported by the data gathered. The class sizes ranged from 2 - 150. The median class size was 21 and only one course enrolled more than 30 students.

Forty-eight percent of the instructors reported that developing and teaching a WWW course did not count toward promotion or tenure and an additional 26% reported that they did not know if it counted. There can be little incentive to develop a WWW course if it does not count in faculty productivity.

Nowhere are the challenges more pivotal than in the area of institutional support for faculty. Faculty members and administrators must work together in identifying and resolving the issues that inhibit systematic use of distance education in meeting academic goals.

Sufficient Time to Interact with Students. Sufficient time to interact with students was ranked as a major concern by 45% of the instructors surveyed. This issue is closely related to the changing role of the instructor in distance education. The teacher becomes a mentor rather than a sage and directs student learning. This requires frequent communication with the students. The most common communication mediums cited in the survey were: e-mail, fax, listserv, bulletin board, chat room, phone, and postal service. The following comment emphasizes the time requirements of teaching on-line:

- With being on-line, I have to keep constant contact with the class to make sure that they are on schedule. Some of them are doing well, others are not due to the lack of responsibility on their part. Grading is taking a great deal of effort since it is done on computer.

Student Familiarity with Computers/Equipment Problems. These are inter-related concerns that are also institutional problems. For a web based distance education program to be successful the institution must provide a reliable computer network with convenient and timely remote access. The students must also be provided with training in basic computer literacy and have a resource to contact when there are technical problems. One instructor commented, "Our institution is having problems.... the computer system is not 100% reliable for an on-line course to be fully successful."

The instructor has no direct control over the reliability of the hardware, but an unreliable computer system can adversely affect student satisfaction with the course. Because faculty- teaching evaluations are dependent on student satisfaction, the instructor is ultimately held responsible for the unreliable system.

Conclusions . In the pilot study the survey instrument successfully quantified the needs and concerns of the pioneering SREC instructors who developed and taught a distance education course on the WWW. Institutions must develop the infrastructure to provide: technical training, technical support, administrative support, time for faculty to develop and teach these courses, a revised faculty reward system, and reliable computer hardware. Faculty concerns about web-based distance education were universal and not significantly different based on the discipline (humanity, social science, science/tech, or business) or type of postsecondary institution (large university, regional university, community college or technical school, or correspondence studies).

One of the respondents commented on the status of web-based distance education: "Widespread understanding of the potential is yet to materialize. There is considerable fear of the unknown." The delivery of distance education on the WWW has great potential that can not be realized until the needs and concerns of the faculty that will develop the courses are meet.

References

DeSieno, R. (1995). Netlaw: the faculty and digital technology. Educom Review, 30(4), 1-3.

Dillon, C. L., & Walsh, S. M. (1992). Faculty: the neglected resource in distance education. The American Journal of Distance education, 6 (3), 5-21.

Distance Education and Training Council. (1996). "Distance Education survey, 1996: A report on Course structure and educational practices in distance education and training council member institutions". 43 pages. ED407562

Elrod, G. F. & Kelley, V. C. (1998). Maybe the emperor is naked: concerns on the brave new world of distance education. Mid-South Instructional Technology Conference. April 5-7, 1998, Murfreesboro, TN.

Fagan, P. J. (1997). Assessment of distance education implementation in Iowa: Concerns and indicators of success. In N. J. Maushak (Ed.), Encyclopedia of distance education research in Iowa (2nd ed.) (pp. 23-28).Ames: Iowa Distance Education Alliance.

Gabany, S. G. (1996). *Putting a class up on the web.* [Online], 7 pages. Available: http://www.ind.net/fdpapers/#table [1997, Feb. 2].

Moore, S. (1997). The role of the teacher in distance education: The teacher perspective. Proceedings of the Annual International Conference of the Chair Academy (6th, Reno, NV, February 12-15, 1997). ED407022.

National Center for Educational Statistics. (1997). *Distance education in higher education institutions.* [Online], 33 pages. Available: http://nces.ed.gov/pubs98/distance/index.html [1998, Jan. 29].

Peraya, D. (1994). *Distance education and the WWW.* [Online], 8 pages. Available: http://tecfa.unige.ch/edu-comp/edu-ws94/contrib/peraya.fm.html [1998, Feb. 7].

Rodgers, E. M. (1983). Diffusions of Innovations (3rd ed.). New York: The Free Press.

Sherron, T. S. (1998). In support of distance learning. Syllabus 11(7), 44-47.

Sherry, L. (1996). *Issues in distance learning.* [Online], 21 pages. Available: http://www.cudenver.edu/public/education/edschool/issues.html [1997, June 16].

SREB. (1997). *Survey report of SREB state regulations as they apply to distance learning.* [Online], 12 pages. Available: http://www.srec.sreb.org/student/srecdocs/survey/dl_survey.html [1998, July, 15].

SREB. (1998). *Dramatic expansions are announced for Southern Regional Electronic Campus.* [Online], 2 pages. Available: http://www.sreb.org/scripts/news/news1.asp?Code=1018 [1998, July 15].

SREC. (1997). *Southern Regional Electronic Campus created by Southern Regional Education Board provides 15-state electronic marketplace for students.* [Online], 4 pages. Available: http://www.srec.sreb.org/student/srecdocs/pressrelease/PressRelease.html [1998, July, 15].

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Taking It Online: A Bootstraps Approach

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Abstract: Describes the process of creating an online course using locally produced lessons, supplemental text, threaded discussion groups, online examinations, and student access to a transparent third party URL. The Microsoft Office User Specialist Certificate takes advantage of transparent access to a third party software vendor to provide software demonstrations for online students. The presentation will present an overview of the development process form conception to delivery and will include an online demonstration of the course.
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Taking It Online: A Bootstraps Approach

Introduction

In 1454 Johann Gutenberg printed what is widely considered to be the first book using movable type. The Gutenberg Bible, printed at Mainz, Germany, had 42 lines per page. This event precipitated an enormous publishing explosion allowing information to be distributed to the masses. A similar information explosion is happening today via the World Wide Web and Internet. Oddly enough we are suffering some of the same problems that the publishing industry experienced during its formative years. It took a number of years for example for things we take for granted today to become standardized. Practices such as page numbering, including a table of contents in the document, creating an index, and including title pages were all left to the publisher's discretion. Today those involved in publishing on the web find themselves in a similar situation. There is precious little in the way of standardization regarding material prepared for delivery on the web. Materials prepared for instructional purposes are not exempt from this lack of standardization either. However, this problem is being resolved much more quickly today than it was in Gutenberg's time. There is already much more standardization with regard to online publishing than there was just two years ago. It still seems to be the publisher's decision, however. In academic circles this responsibility falls by default to the college or university or maybe even a department in the university.

In November 1997, with the support of the administration in the form of resources and time, several members of the faculty of Northwestern Technical Institute made a conscious decision and commitment to develop courses of study for delivery over the World Wide Web. However, even with significant preplanning, to paraphrase another group of early explorers, "we were blindly going where no one had gone before." Choosing to create an online course with little or no previous experience posed a daunting challenge for the team investigating what we then called, alternative instructional delivery. At the outset the Northwestern team consisted of 10 members. Today three of the original team members have

preplanning, to paraphrase another group of early explorers, "we were blindly going where no one had gone before." Choosing to create an online course with little or no previous experience posed a daunting challenge for the team investigating what we then called, alternative instructional delivery. At the outset the Northwestern team consisted of 10 members. Today three of the original team members have persisted and have courses currently on the web. During that same period of time, the college also became a founding member of the Georgia Virtual Technical Institute, a consortium of institutions offering web based courses, but that is another story.

This paper provides an overview of one instructor's journey to the WEB. Taking a course online requires a significant expenditure of effort from several sources: the faculty member designing the course, the technical support staff who create and manage the network, and the administration who support the project with the allowance of time and resources.

Faculty training was an important issue early on. Even though the developer, Ms. Ginger Sabine, was a computer information science instructor, creating a course for the web was a new and often frustrating experience. The learning curve included developing a mastery of new software, working through instructional strategy issues, many of which were discovered as a part of the instructional design process; and discovering new ways to demonstrate skills to a remote audience. In hindsight and in the best of all possible worlds, additional time and training in the use of software products would have been very beneficial to all involved. In fact, to ensure success and minimize attrition early education and training is essential.

What we will describe in this paper is the route taken by Ms. Sabine at Northwestern from concept to product. We will make every effort to point out failures or what we would do differently and likewise will describe the "good" decisions that were made.

The first attempt at going online consisted of the following stages:

I. The Planning Phase
II. The Design Phase
III. The Production/Trial Phase
IV. The Evaluation Phase
V. The Implementation Phase

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Planning Phase

In the planning phase, Ms. Sabine as a member of a design team of faculty and staff, set about the task of creating a framework around which web-based courses could be developed. Team members involved in the design process identified the following considerations to help guide the project:

- Alternative delivery courses should provide for asynchronous instructional delivery.
- Alternative delivery courses should be available on demand
- Alternative delivery courses should include e-mail in the communication protocol
- Alternative delivery courses should provide for the participation in labs from remote sites.
- Alternative delivery courses should allow for simulation.
- Alternative delivery courses should include all aspects of the course of study or supplements to the course of study that are made available to the student in a traditional class.

In addition to the considerations listed above, the design team agreed upon the following design decisions.

This was based upon a review of the available literature on the design of web based classes.

1. Each online course would contain the same level of academic rigor as a traditional course.
2. A common format-i.e., "look and feel"- would be developed and used by all developers
3. A common software application would be chosen and used by all developers.
4. Course development would be modular.
5. Each course would be offered online to an in house class in a pilot phase before publishing the course to the web.
6. Each online course would contain the same or at least very similar learning activities.
7. The syllabus format would be as similar to the traditional course as possible. (See syllabus format for web classes in Appendix A)

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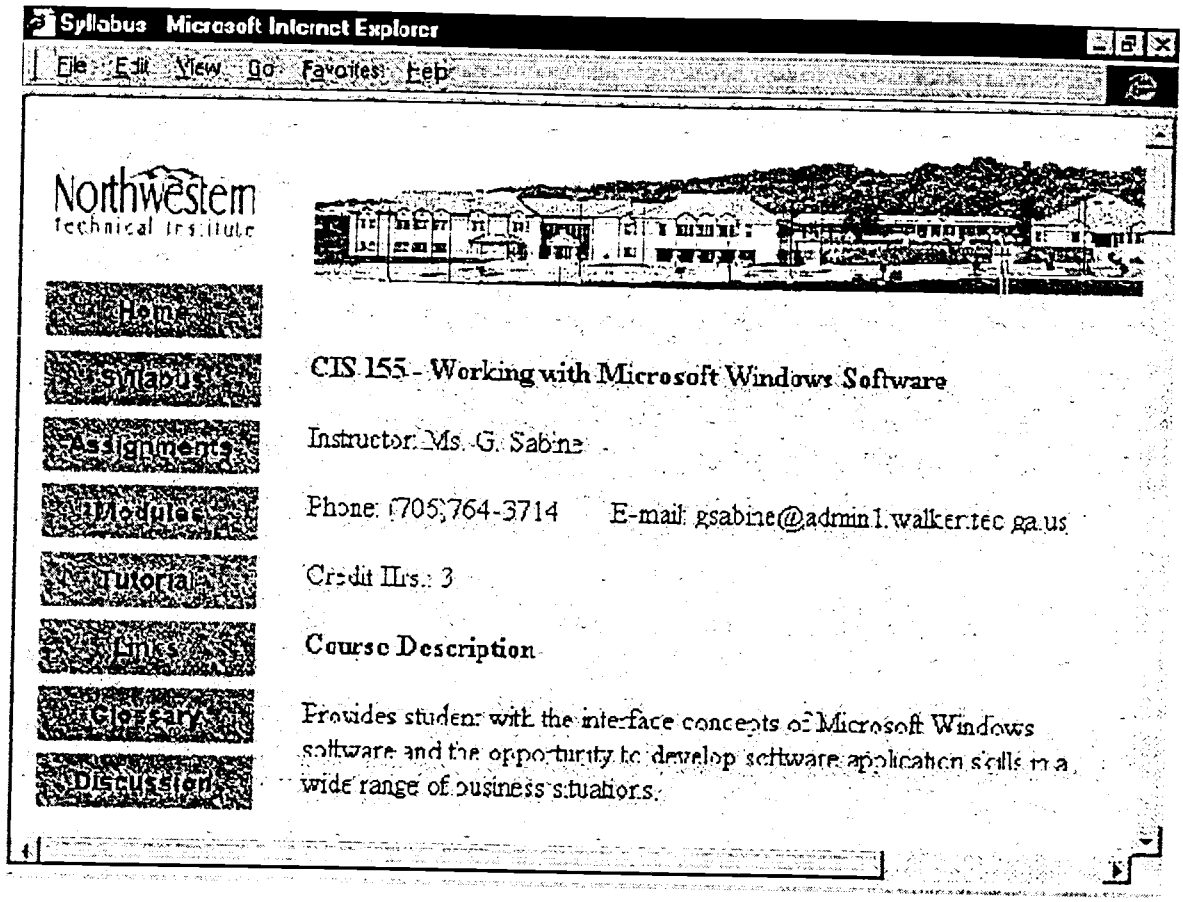
Design Phase

The course developed by Sabine was an introductory course to the Windows operating system, the first course developed for the Microsoft Office User Specialist program, one of two programs Northwestern offers in partnership with Microsoft. As is typical of most introductory computer courses taught in the traditional manner, this course consisted of four major components: lecture, practice labs, assignments, and exams.

Web-based courses, it was learned, are very much a sum of many parts. Of these parts there are at least two organizational decisions that a developer must make when creating a course for the web. One decision deals with the treatment of educational outcomes or the organization of competencies that the student will be required to learn or master. The second decision revolves around the creation of the various course components such as units of study, learning resources, simulations, production labs, assessment, etc. (See figure A.)

Figure A



Sabine chose to deal with the course competency areas in the form of instructional modules. The competencies were the same as those taught in the traditional class. Modules were arranged to match the academic calendar-that is, 10 weeks. Each module consisted of a self-contained instructional package including goals of the module, specific learning objectives, various types of learning resources, and assessment. By design, students were forced to satisfactorily complete a module before moving on to the next. Course components included in the Sabine design framework are listed below.

The components of this course differed from those of other developers but each developer did adhere to a mutually agreed upon course template, course design format, and page format. Typically, however, all initial web courses developed consisted of units of study or modules, both on-line and off-line resources, learning activities, and examinations. The specific components of this course are described below.

Home - This button brings you back to this page.

Syllabus - This page contains a copy of the course syllabus.

- Modules - This is the backbone of the course. CIS 155 is broken down into 10 modules each containing a number of objectives. The student must successfully complete one module to progress to the next. At the end of each objective, a button exists which will link the student to the next objective. If at any time the students becomes lost, they can click the Module button on the side of every page and it will bring them back to the beginning. Upon completion of each module the student will be required to complete a test. Students who do not successfully complete the test may trace back through the module until they are able to successfully complete that module's test.
- Assignments - This page contains a condensed list of all assignments in this course.

Tutorial - This page explains how to log-on to the tutorial software.

- Glossary - This page contains the glossary search engine. This glossary will search every page for instances of words typed in the text box. The glossary will also display the words of the glossary by first letter of the word. The student chooses the letter that the word starts with, and the glossary will link to the appropriate page.
- Discussion – This course component includes a discussion group where students can post articles about problems they encounter or tips and resources that other class members might want to know about.

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The Production Phase

After the project design was agreed upon, the instructor began the process of recreating a course of study that could be delivered, with assessment of competencies mastered over the WEB. Faculty were provided orientation and instruction in the use of web publishing software and course management software. Their task then was to repackage the content typically presented in a traditional format so that it would fit into this new delivery vehicle. A number of problems surfaced, which were quickly followed by unique and innovative solutions.

The problem of how to demonstrate a procedure, skill, or technique over the web was an issue that had to be contended with early on. In the process of developing a course in the Windows operating system, an arrangement was made with a third party vendor so that NTI students could have transparent access to that vendor's URL. This particular vendor sold demonstrations of popular software applications such as Windows, Word, Visual Basic, etc. By linking to the vendor's URL, the demonstrations could be streamed into the student's computer on demand. The use of third party vendor software was important in getting this particular course online in record time. If the faculty member had been required to develop the demonstrations, the course would have been at least six months longer in development.

The problem of simulating classroom interaction was addressed with the use of threaded discussion groups, where one question or answer to an e-mail inquiry may prompt other questions and answers from both students and instructor. Threaded discussion groups compare favorably to in-class discussions and may even be superior in that student questions are well thought out before being submitted.

Communication with students should have been simple. E-mail is immediate and reliable. However, complicated messages are sometimes difficult to articulate and to understand using e-mail. It requires someone who is an accomplished writer and technically competent in the subject area. The absence of the human element in communication was a very real detriment to effective instruction, especially when responding to student questions. E-mail communication then was incomplete at best and impossibly frustrating at worst. There were many times when the instructor and the student resorted to using the telephone.

Testing and administrative issues were some of the more difficult problems to resolve. In this course the instructor chose to manage the assessment portion of the course personally rather than depend upon available course management software. Tests and examinations were created and graded by the instructor. Students were notified by email when tests would be available and the constraints under which they would be administered-i.e. time, allowable resources, type of test, etc. All tests were timed. Students could take the test at any time during a given calendar period, but once started the test had to be completed in a set amount of time. The completed test also had to be submitted within a set period of time from when it was begun. This part of the course, therefore, is not asynchronous, but rather governed by scheduled testing events.

Other faculty at Northwestern are dealing with the testing issue in several ways. Some require the test be taken and submitted in a specific time frame. Others design their tests so that the student may have access to materials with relaxed time constraints. Still others require the student to take the test in the presence of a proctor such as at a library, school, or college. Some of the faculty rely on course management software that regulates access to the tests which are always online. This software also grades and records test grades automatically. Initially in Sabine's course all test questions were multiple choice and short answer. After evaluating the testing component, it was determined that test questions that required the student to think through a problem related to the learning experiences of the course and respond in an open ended format might be a better assessment technique. The feeling is that a time constrained test using thought questions that consist of content or learning experience dependent questions or issues is a better measure of knowledge and skill attainment than the multiple choice test, which is at a greater risk of being compromised by the less than honest student.

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The Trial Phase:

One quarter prior to going online, the course was evaluated with a group of students in a traditional classroom situation. Students were required to move through the course as if they were at a distant location. As they encountered problems, difficulties, or even minor inconveniences, they alerted the instructional designer, who noted the problem. Many times the students could suggest remedies for the problem, while at other times it was "back to the drawing board." In addition, the instructor met with the class as a whole on a weekly basis for debriefing sessions.

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Evaluation Phase:

The evaluation phase occurred at the conclusion of the pilot class when a decision was made as to whether the course was ready for immediate publication to the web or needed significant revision. This decision rested with the course designer and the academic dean. All courses were subject to a review team with editorial responsibility.

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Implementation:

After one quarter online we have learned some lessons. What follows is a brief list of lessons learned.

1. Any assumption you have about a student's ability to understand hardware and software requirements for an online course are probably overly optimistic.
2. Student motivation is no mean issue. A mature, self-directed, student will be much more successful than will one who needs constant or even intermittent attention.
3. Every online student should have a password that is required to get into the course.
4. Software packages that propose to solve all of your web publishing problems probably won't. There is no way to get around learning html.
5. Intuitiveness is in the eye of the beholder. What is perfectly clear to the developer is perfectly opaque to the student.
6. Excitement will sustain the developer early on, drudgery will rear its ugly head after about three modules have been developed.

7. Student misunderstandings take on geometric proportions and multiply like rabbits when using threaded discussion groups.
8. The developer's learning curve is marked by mistakes. Trial and error are standard fare.
9. The maximum number of students a teacher can effectively deal with the first time a class is offered is probably about 15.
10. Attrition is going to be high, about 40%, unless stringent admission standards are applied.
11. Assuming an online student is relatively computer literate may be a dubious assumption.
12. Time and effort required to manage an online class of 15 students is about the same as that required to manage a traditional 5 credit hour class.
13. Development of an online class will take approximately 6 months if a faculty member is released ½ time.
14. Developing acceptable assessment methods will be one of the major obstacles to be overcome.
15. The course will be ever evolving due to changes the instructor wants to make, Changes in technology, and unforeseen problems that must be addressed.
16. Be wary of tying the online course too closely with a particular text. If the text changes or you decide to change texts, then the entire online course has to be revised. On the other hand the online course should be referenced closely with a text and not redundant.
17. At our institution the copyright belongs to the college. Establish this or some other arrangement early.
18. Good Luck!

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APPENDIX A

Syllabus Format for WEB Based Courses

Northwestern Technical Institute

Course Name and Number

Credit Hours:	Instructor Name
Lecture Hours:	Office Location
Lab Hours:	Office Hours
Telephone:	Email:

Catalog course description:

Various disclaimer's if required:

Entry level requirements if needed:

System Requirements to take full advantage of learning materials:

Prerequisites:

Required text and other reference material including non-text based materials, including url of online bookstore.

Recommended supplemental materials including non text-based materials

Content by week, by topic, by unit, etc. ***(called modules)***

Course competencies ***(called goals)***

Instructional Objectives (including knowledge skills) ***(called objectives)***

Learning Activities including on-line activities, text based activities, and CD-based activities

Course requirements – assignments, term papers, projects, etc. with due dates

Practice examinations – ***(called self-assessment)***

Evaluation procedure ***(called assessment)***

Work ethic requirement

Grading scale

Policies and procedures for course operation

Policy on academic dishonesty

Communication with instructor and bulletin board policies and procedures

Module Format

Web-Based Class

Course Name and Number

Credit Hours:	Instructor Name
Lecture Hours:	Office Location
Lab Hours:	Office Hours
Email	Telephone:

Module Name and or Number

Goal:

Objectives:

Learning Activities:

Readings, Text

Readings, Links

Pronunciation Activities

Written Assignments

Self Assessment:

Assessment:

Communication With Instructor:

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BIBLIOGRAPHY

1996 ASTD Multimedia Authoring Software Directory. (1996, May). Training & Development, 50 (5), 43-46.

Armstrong, G. (1996). One Approach to Motivating Faculty to Use Multimedia. T.H.E. Journal, 23 (10), 69-71.

- ◦ Bisman, J. (1996, April). Occasional Papers in Open and Distance Learning, Number 19.

  Bitter, G. G. , & Pryor, B. W. (1996, April). Toward Guidelines for Research & Development of Interactive Multimedia: The Arizona State University TMMUIV Project.

Blumhardt, J. H., & Cross, L. R. (1996, January). Making the Jump(s) into Cyberspace: A Discussion on Distance Learning Paradigm Shifts Required for the 21st Century. ED, Education at a Distance, 10 (1), 13-21.

Burgen, A. (Ed.). (1996). Goals and Purposes of Higher Education in the 21st Century. Higher Education Policy Series 32.

Burke, J. J. (1996). Using E-Mail to Teach: Expanding the Reach of BI. Research Strategies, 14 (1), 36-43.

Caudron, S. (1996, May). Wake Up to New Learning Technologies. Training & Development, 50 (5), 30-35.

Chance, E. W. (1996). Electronic Field Trips: Using Technology to Enhance Classroom Instruction. Rural Educator, 19 (3), 34-35.

Eggers, R. M., & McGonigle, D. (1996). Internet-Distributed College Courses: Instructional Design Issues.

Freud, R. (1996, June). Community Colleges and the Virtual Community.

Furst-Bowe, J. (Ed.). (1996). Competencies Needed to Design and Deliver Training Using Instructional Technology.

Furst-Bowe, J. (Ed.). (1996). Competencies Needed to Design and Deliver Training Using Instructional Technology.

Gant, L. P. (1996, February). Lessons in Developing Distance Learning. Performance and Instruction, 35 (2), 22-25.

Garland, V. E., & Loranger, A. (1996). The Medium and the Message: Interactive Television and Distance Education Programs for Adult Learners. Journal of Educational Technology, 24 (3), 249-57.

Hall, B. (1996, March 11). Lessons in Corporate Training: Multimedia's Big Payoff. NewMedia, 6 (4), 40-45.

Hardin, P. C., & Reis, J. (1997, February). Interactive Multimedia Software Design: Concepts, Process, and Evaluation. Health Education & Behavior, 24 (1), 35-53.

Harlan, M. R. (1996). Corporate Distance Learning Systems for Employee Education. Journal of Instruction Delivery Systems, 10 (1), 14-16.

Hart, R. A., & Parker, R. (1996, February 16). Technological Challenges: Designing Large Compressed Video and Multimedia Classrooms.

Information for Web-Based Training Developers. (1996, May). Training & Development, 50 (5), 54.

Kerka, S. (1996). Distance Learning, the Internet, and the World Wide Web. ERIC Digest.

Krile, T., Juell, P., & Vetter, R. (1996, May). Pioneering on the New Frontiers of Education. Computer, 29 (5), 112-114.

Kruse, K, & Feldstein, M. (1997, March). Exploring Multimedia Internet-Based Training. Training & Development, 51 (3), 55-56.

Lee, S. H. (1996). Criteria for Evaluating and Selecting Multimedia Software for Instruction.

Ljutic, A. (1996, May). Learning to Telecommunicate—Distance Learning Projects in Less-Developed Countries. Learning with Technology, 23 (8), 65-67.

Mende, R. (1996, May 28). Building Global Communities through the Internet.

Misanchuk, E. R., & Schwier, R. A. (1996, February). Benefits and Pitfalls of Using HTML as a CD-ROM Development Tool.

Moller, L., & Draper, D. (1996). Examining the Viability of Distance Education as an Instructional Approach. Journal of Continuing Higher Education, 44 (1), 12-21.

Moore, M. G. (Ed.). (1996). Tips for the Manager Setting Up a Distance Education Program. American Journal of Distance Education, 10 (1), 1-5.

Musial, G. G., & Kampmueller, W. (1996). Two-Way Video Distance Education: Ten Misconceptions about Teaching and Learning via Interactive Television. Action in Teacher Education, 17 (4), 28-36.

Nicholls, P. (1997, April). Becoming a Multimedia Author: Courses and Programs for Multimedia. Emedia Professional, 10 (4), 107-112.

Nicholson, A. Y. W. & Ngai, J. Y. K. (1996). Converting a Traditional Multimedia Kit into an Interactive Video CD-ROM. Journal of Educational Technology Systems, 23 (3), 235—48.

Randall, B. (1996). A Marketing Approach to Distance Learning Technology: A Statewide Survey. Community College Review, 23 (4), 15-32.

Richart, V. M. (1996, April). Considerations for the Development of a Higher Education Agenda for the '90s and Beyond.

Ross, J. A. (1996, April). Computer Communication Skills and Participation in a Computer-Medicated Conferencing Course.

Schrum, L. (1996, March). Teaching at a Distance: Strategies for Successful Planning and Development. Learning and Leading with Technology, 23 (6), 30-33.

Sener, J. (1996, April). Delivering an A. S. Engineering Degree Program through Home Study Distance Education.

Sherritt, C. (1996, January). A Fundamental Problem with Distance Programs in Higher Education.

Terrell, S. (1996, March). From Teaching to Learning: Transition in Distance Education.

Tulloch, J. (1996, February). Seven Principles for Good Practice in Distance Learning.

Williams, H. M. (1996, January). Curriculum Conceptions of Open Learning: Theory, Intention and Student Experience in the Australian Open Learning Initiative.

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TECHNOLOGY FOR PRE-SERVICE TEACHERS.

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Abstract

Today's education major, early childhood, K-12, or special education, needs to be comfortable with technology in the classroom. What do preservice teachers need to know about technology? LOTS! Explore the COE media and materials course, newly revised to reflect content that teachers need to know BEFORE stepping into a classroom.

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Technology for Preservice Teachers

Today's classroom is very different from one10-15 years ago. Technology not only makes classroom instruction easier, it can also make it more difficult. This presentation will explore the course content of a media and materials course which is required of education majors, regardless of their discipline and grade range. Teachers in Minnesota are experiencing the Profiles of Learning and new Graduation Standards; technology is at the heart and soul, and preservice teachers must be able to help their students meet these goals and standards. Inquiry and technology are at the foundation. Explore the range of technology (and non-technology) course content.

A recent U. S. Department of Education study reported that relatively few teachers (20%) felt well prepared to integrate educational technology into classroom instruction (1999). The Milken Exchange on Education Technology commissioned the International Society for Technology in Education (ISTE) to survey teacher-preparation institutions. The 416 respondents, representing approximately 90,000 graduates per year, reported on the extent to which future teachers were being exposed to technology in their classes, field experience and curriculum materials. The report finds that teacher-training programs, in general, do not provide future teachers with the kinds of experiences necessary to prepare them to use technology effectively in their classrooms. The federal government has projected a need for 2.2 million new teachers over the next decade. These teachers must meet the challenge head on! This report is one which every College of Education dean must read and every College of Education faculty member must acknowledge. Truly the time to examine each of our teacher-preparation programs is now to insure our students graduate from our programs being able to practice their skills and incorporate the best technology available.

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from our programs being able to practice their skills and incorporate the best technology available.

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Milken/ISTE Study

An analysis of survey data indicated:

- About a third of the respondents felt their programs are limited by deficiencies in their IT (instructional technology) facilities;
- Faculty IT skills tend to be comparable to the IT skills of students they teach;
- Distance education and computer-assisted instruction currently affect only a small proportion of students in teacher training institutions;
- Most teacher-preparation programs do not have a written, funded, regularly-updated technology plan;
- Most institutions report that IT is available in the K-12 classrooms where student teachers get their field experience; most student teachers, however, do not use technology during field experience and do not work with master teachers and supervisors who can advise them on IT use.

Additional findings of the study indicated:

- Formal stand-alone IT coursework does not correlate well with technology skills and the ability to integrate IT into teaching;
- To increase the technology proficiency of new teachers in K-12 classrooms, training institutions should increase the level of technology integration in their own academic programs.
- Where and how education students acquire their basic technology skills.

Studies have been conducted and reports have been written which indicate that information technology is at the foundation of education, addressing effective educational uses of IT for PreK-12 (Sandholtz et al., 1997; Wenglinsky, 1998). Teachers report a need for more time and training in both technology skills and technology-based pedagogy (Office of Technology Assessment, 1995), which indicates they lack confidence in their IT skills. It would be a logical conclusion, therefore, that instructional technology would be a hearty component of preservice teacher programs. During the past 15 years, the amount of IT in PreK-12 education has grown rapidly. For example, one estimate indicates Internet access is in about 85 percent of schools and 44 percent of classrooms (Jerald, 1998). Willis and Mehlinger (1996) summarized the situation in just a few sentences:

- "Most preservice teachers know very little about effective use of technology in education and leaders believe there is a pressing need to increase substantially the amount and quality of instruction teachers receive about technology. . . . The conclusion is that teacher education . . . is not preparing educators to work in a technology-enriched classroom"(p. 978).

This presentation/paper is not designed to summarize the Milken/ISTE Report, but rather to show how St. Cloud State University's College of Education is addressing the need for its graduates to be IT-prepared to meet the demands and expectations of today's classroom.

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All College of Education majors must complete the media/materials course, a stand-alone IT course (IM 421: Media, Materials, and Methods of Instruction), where students are taught more than just computer-literacy skills. They are taught how to incorporate technology in the classroom by seeing their instructors talk it and walk it by including IT in their classrooms. These faculty members serve as role models for the preservice teachers.

Currently the IM 421 course is under revision. When the institution converted from a quarter to semester system Fall 1998, the 4-credit course was initially planned to be a straight conversion to a 3-credit course. As with many program changes, there were negotiations which were necessary and modifications necessary to accommodate the needs of departments as well as maintain a 120-credit (semester) minimum for graduation.

"In the good old days" students would take the PPST and enroll in the media/materials course. As recently as 1993 students approximately 50% of the students in the class had little or no competency with computers and a number of those students had no desire to learn about them! As the years have progressed, more students have a working knowledge of computers (e-mail, WWW and limited word processing). Computer literacy and information literacy are usually not well-honed skills brought into this course, although there will always be the 5-10% who are extremely knowledgeable of computers. Even when they are "computer literate" many lack an understanding of how to incorporate technology into the classroom and do it effectively throughout the course. Currently, most students enter the course with their own e-mail account, limited to extensive skills using the WWW for basic searches, and basic word processing skills).

In this 3-credit course instructors were expected to not only teach the technology but also incorporate it into classroom applications. Because of those negotiations referred to previously, the course was reduced to 2 credits, with a transitional required co-requisite of a 1-credit applications course (the total being 3 credits). This 2/1 combination will be soon replaced with the original 2-credit media/materials course, with the course content to remain approximately the same. One solution for this dilemma has been to have a pre-requisite computer literacy/applications proficiency requirement, which can be demonstrated by enrolling in certain lower-division courses or being able to pass a competency exam. By requiring the computer proficiency as a prerequisite, classroom time is not taken teaching computer and other instructional technology basics, but rather having students do the applications associated with their individual disciplines/grade ranges.

Competencies as a prerequisite. First, it is important to understand the competencies which students are expected to have prior to enrolling in this required media/materials course. The competencies include:

- OS skills: start-up/shutdowns/restarts; desktops (icons, menus, windows management); file handling; disk/volume issues; documents and applications; networking operations.
- Application skills/productivity: general applications (save, file types, editing setting/changing margins; printers/printing options; integration of applications) and within applications (word processing, graphical software, internet, and database and spreadsheet software).

One specific course (IM 260: Information Technologies) has been modified to give students the "proficiency" they need to walk into the media/materials course prepared to create materials to be used with instructional technology as well as use the technology. Students spend time with different aspects of distance education, including designing Web pages and searching the Internet for resources. This course is a general education course, not directed toward education but rather general applications. They learn the basics, but the classroom adaptation is left to the faculty in the media/materials course. Another course within the College of Education (IM 245: Microcomputers in Classrooms and Media Centers) provides most of these same proficiencies but is designed for COE majors, and it is a survey of available hardware,

software, and related instructional materials for use by classroom teachers.

IM 421: Media, Materials, and Methods of Instruction. This course addresses the theory and techniques of selection, evaluation, and use of print and non-print materials, such as library materials, display materials, slides, motion pictures, videotapes, sound recordings, microcomputer programs, the internet, and telecommunications (including interactive television). This media/materials course includes a wide variety of requirements as well as a number of options and alternatives for students, based on their preferences as well as discipline and grade differences.

The course content for IM 421: Media, Materials, and Methods of Instruction include the following:

- World Wide Web - researching educational materials on the WWW and Internet;
- Bibliographic instruction - learning to find resource materials located both in-house within the SCSU library and through other sources (ILL, electronic full-text documents, etc.)
- Trends in educational/instructional technology, based on Donald Ely's book.
- Communications tools -writing letters and memos (as applicable), interviewing to obtain information, incorporating critical questioning in the classroom, creating and giving effective presentations, writing instructions/directions, and designing a survey/questionnaire instrument;
- Media and instruction - understanding the role(s) of media in education and being aware of the domains of learning, and designing media and materials to support these domains;
- Systematic planning for media use - writing behavioral objectives, establishing the behavioral objective as a guide in selection media and materials, and designing and developing learning activities which follow the ASSURE Model.
- Visual principles and design - defining visual literacy, applying principles and elements of design to visual materials, and preparing visuals according font and size guidelines;
- Nonprojected visuals - discussing the types of nonprojected visuals which may be used in the classroom, determining the most appropriate non-projected visuals to be used based on needs and objectives, displaying visuals appropriately, creating bulletin boards, and planning and making arrangements for a fieldtrip;
- Projected visuals - comparing the advantages/disadvantages of types of projected visuals and preparing projected visuals (transparencies, slides);
- Audio media - differentiating between audio formats used in education and determining when audio media can be used to enhance classroom activities;
- Motion media - identifying types and formats of motion media, preparing instructional media/materials that include motion, and understanding the special attributes of motion media;
- Computers in education - identifying the roles of computers in education, demonstrating proficiency in using computers in the educational setting, understanding the role(s) of computers in education, selecting computer software and hardware based on availability and needs, evaluating computer software and hardware, and gaining hands-on experience with CD-ROMs, interactive programs, etc.;

- Multimedia systems - comparing multimedia systems to determine the most appropriate to meet objectives, identifying equipment necessary to use the multimedia systems, and discussing the advantages/disadvantages of each type of multimedia system;

- Computer networks - understanding the characteristics of computer networks (LAN, WAN, Internet, intranet, WWW, etc.), searching the WWW and Internet for resources and information, knowing the basics of creating a Web site/page, and discussing access and supervision students should have for using the Internet;

- Distance education - discussing the educational and instructional uses of distance learning/telecommunications, identifying the formats for distance education (ITV, Internet, WWW, etc.), comparing and contrasting the role of the instruction in each telecommunications system, determining media and materials to be used for each format, and setting up an ergonomically sound distance education classroom;

- Process technologies, simulations, games, etc. - understanding how process technologies help demonstrate effective learning and discussing the similarities/differences between games and simulations;

- Looking ahead - understanding the trends in media and technology, knowing what the "school of the future" will very like look like, using hardware and software which has been designed for the next century, and discussing some professional organizations in educational technology;

- Looking back - identifying earlier media/material formats, using the "older" formats when appropriate, and selecting appropriate mediums to be used in the classroom;

- Equipment and setups - practicing safety when working with different types of media, moving equipment safely, and identifying unsafe working conditions involving media and equipment;

- Copyright guidelines - applying copyright laws and guidelines when creating media and materials, incorporating use of media/materials in the classroom according to copyright guidelines, understanding the implications of the Fair Use Doctrine, knowing the fines and penalties associated with copyright infringement, and explaining to students the purpose and need for copyright laws and guidelines.

Required assignments for this course include the following:

- E-mail account - students must have an active e-mail account. Today, most students have either an SCSU account or one through an Internet provider. Purpose: students must be able to contact me (and visa versa) and it will be a means for submitting one of their assignments;
- Memo - following memo format, students are to indicate to me what their major project will be. Purposes of assignment: have students write a memo using the appropriate format, determine the topic of their course-long project, and identify the culminating project (selected from a number of options, print or nonprint);
- E-mail assignment - e-mail message summarizing WWW search of educational materials. Purposes of assignment: get the students using e-mail (it's still new to some of them), have them search out educational materials (lesson plans, organizations, papers, etc.) found on the WWW, and summarize the contents of the Web search;
- Letter - following the letter format, students are to draft a letter to a publisher requesting permission to duplicate and distribute a copy of a journal article to each of the students in their class. Purposes of the assignment: have students write a letter following appropriate format style, identify a journal

article which might be distributed to students, and emphasize the importance of securing permission from a publisher to duplicate and distribute this material (according to copyright guidelines);

- Paper/project outline - following the ASSURE Model, students will create an outline identifying media, materials, and methods of instruction they will use during a lesson or unit of instruction. Purposes of assignment: encourage (force) them to think about the media/materials they will use and how they help students meet the objectives of the unit as well as encourage effective design and planning of a unit;
- Mediagraphy - using the SCSU library and its outreach capabilities, students will create a mediagraphy (also known as a mediography or bibliography) of resource materials which they might use during this course-long project on which they are working. Purposes: have students learn and use the various search strategies for finding information pertinent to their topic and give students an opportunity to structure their findings in a final format -a mediagraphy which could be used to support academic writing;
- Videotape - in a group of 3-6, students will design, create, and videotape an educational learning activity. They select the topic, the student population, and the place the videotaping will take place. Purposes of assignment: teach students how to plan a videotape (storyboarding), encourage them to experiment with a new educational/instructional medium, and create a finished product that might be used in one of their classrooms;
- Handout - following visual literacy and instructional design guidelines, students will create a handout relevant to their culminating project. Purposes of assignment: get students thinking in terms of computer-generated materials, allow students to create well-planned and high quality materials;
- Transparency - following visual literacy and instructional design guidelines, students will create a multi-color transparency with one graphic, multiple colors of text, and multi font sizes. Purposes of assignment: have students apply appropriate guidelines for creating a transparency, show students there is much more in the way of transparencies that those created with a photocopier or thermofax machine, and encourage creativity in the use of graphics;

- Major project - following visual literacy and instructional design guidelines appropriate to their project, students will create a project (mobile, game, computer-delivered presentation, videotape, audiotape, bulletin board, etc.), write a grammatically correct "blue print" following the ASSURE outline which they created for a prior assignment, and give an oral presentation to the class on the process/procedures they followed in the creation of this project. Purposes of assignment: get students to think of media/material options which they have, encourage student creativity in designing media/materials, reinforce the "writing across the curriculum" concept of well-prepared written materials, document their use of a media/material which they created, and support the need for oral communication skills in the classroom;

- In addition to the above assignments, other activities include, but are not limited to, the following:

- practicing with the ITV (interactive television system);
- designing a Web page;
- previewing and evaluating several CD-ROM or interactive computer disks;
- setting up and using "older" equipment such as filmstrips, film projectors, slide projectors, etc.

The above four options are largely elective based on the individual instructor's preference, strengths, and time commitment.

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Latest Experiment

Recently this College of Education Teacher Development department asked whether the Information Media department would consider offering the media/materials course as part of the elementary education block. Prior to this time, students enrolled in the media/materials course which was most convenient for them. This meant that early childhood, elementary, secondary, special education, music, and physical education majors were all together in a course. It was decided to "block" some sections of this course with elementary education courses. The intent was to have the media/materials course and one of the blocked courses paired so that there was integration of technology in the other course. In order for this concept to work, the need was there for the instructors of both classes to coordinate some of their activities and content. Fall 1998 was the first time this paired concept was used, and (as with many ideas in education) there were some "bugs" and glitches that have yet to be worked out. If this is to continue, there will be continued need for a cooperative work arrangement between the two instructors of the courses so that integration and continuity can and will take place. There were the other normal problems associated with initiating a new concept, but those will be worked out with both time and modification to the courses involved.

Conclusion

This is definitely the time to evaluate and make changes to our preservice teacher education curriculum in order to equip our graduates with the skills they need for today's classroom. As more schools become connected with the Internet and have WWW access, there is greater potential for student researcher. Technology is now advanced so that media centers and classrooms are equipped with more than an overhead projector and a filmstrip projector. Whether we are referring to CD-ROMs, videodisk players, or computers, we are looking to a classroom which is vastly different than the ones 10-15 years ago. Will new teachers be prepared to teach in a digital age- they certainly should be able to if Colleges of Education make the commitment to insure a curriculum which is rich in technology introductions, technology applications, and technology integrations.

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References

JeraC. D. (1998, October). "By the Numbers."

Jerald, C.D. (1998, October). "By the Numbers." Education Week Technology Counts '98, pp. 102-103.

Office of Technology Assessment, U. S. Congress. (1995). Teachers and Technology: Making the Connection [online]. Available: http://www.wws.princeton.edu/~ota/disk1/1995/9541.html.

Sandholz, J. H., Ringstaff, C., & Dwyer, D. C. (1997). Teaching with Technology: Creating Student-Centered Classrooms. New York: Teachers College Press.

U.S. Department of Education, National Center for Education Statistics. Teacher Quality: A Report on the Preparation and Qualifications of Public School Teachers, January 1999.

Wenglinsky, J. (1998). Does it Compute? The Relationship Between Educational Technology and Student Achievement in Mathematics. Princeton, New Jersey: Policy Information Center, Educational Testing Service.

Willis, J. W. & Mehlinger, H. D. (1996). Information Technology and Teacher Education in J. Sikula, T. J. Buttery, & E. Guyton (eds.) Handbook of Research on Teacher Education (2nd ed.). New York: Simon & Schuster Macmillan, pp. 978-1029.

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Through A Looking Glass Dimly
The Implications of the Globalization of Higher Education

Jim Formosa

Abstract:

Higher education is truly on the verge of globalization. Competition will come from traditional as well as non-traditional providers. For institutions to grow in the future significant change to the status quo will be required. Many lessons can be learned from how industry is coping with the global economy. This paper explores required changes beginning with the academy itself and working down through the organization to faculty. Topics covered include the desirability of building learning organizations, the necessity for leadership, funding, reward structures, the new role of faculty, and the increasing necessity for a new conception of professional development. It is important that the reader understand the purpose of this present effort. It is not to provide a complete prescription for the challenges facing the academy. Rather, it is an attempt to raise awareness and point readers toward some potential answers. To do justice to each topic mentioned in this paper would require a paper on each. This paper is a highly condensed version of a book-length manuscript currently under development.

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Introduction:

Any one with even a passing familiarity with the current literature dealing with higher education is aware of the tremendous change that those of us in the academy face. For most institutions, there is a very real prospect of calls coming from multiple constituencies that we do more with less. Technology continues to progress and expand at a phenomenal rate. As the global society shifts to the information age, competition will become a part of everyday life for our faculty, staff, and administrators. Our institutions must become learning institutions. Harasim (1998) wrote "...it occurred to me that in the United States, the rhetoric of higher education almost never promotes "learning" as the character of the institution. Universities boast of "research," and colleges advertise "teaching"; no one that I know makes claims on *learning*. The avoidance of the term is more than accidental; it rests on suppositions that have significant ideological and practical consequences" (p. 92).

Higher education continues to come under attack on many fronts. Most of these criticisms can be subsumed under two headings; efficiency and effectiveness. Politicians, motivated by what they perceive to be a bottomless money pit, as well as tightening fiscal constraints, have called for increased efficiency. Guskin (1996) stated the case as follows:

- There is a growing public acceptance that colleges and universities are not cost-effective, that the tuitions are too high, and that the academic institutions must therefore restructure their operations, much as happened in other sectors of American society. Within the higher education community itself, there is a new awareness of our inability to understand how to do more with less, especially in the delivery of education. What we know is how to do more with more or less with less (p. 27).

Higher education has also come under criticism on issues of effectiveness. Ewell (1994), Peters (1994), Dill, Massey, Williams, and Cook (1996), and the Wingspread Group on Higher Education (1993) have all written about the sad state of institutional effectiveness and/or outcomes assessment. Banta, Lund, Block, and Oblander (1996) analyzed 165 cases representing a variety of institutional sizes and types. Each of these cases purported to be an example of an "exemplary practice". Banta wrote in the conclusion, "I must say that the number of these cases containing concrete evidence that the student learning improved as a result of assessment is very small" (p. 343).

The Pew Higher Education Research Program (1991) decried the fact that much of higher education has turned inward to cope with such criticism. They stated, "Higher education has become remarkably adept at avoiding questions of purpose. Even discussions of the curriculum focus more easily on process than on substance" (p. 1).

As higher education becomes increasingly global, the changes that have been called for may come to pass as many institutions learn the true meaning of competition. Artificially enforced geographic boundaries and sacred cows will come under increasing pressure as institutions struggle to become competitive. Duderstadt (1999), described the impact of these changes on higher education as follows:

- This carefully regulated and controlled enterprise could be eroded by several factors. First, the growing demand for advanced education and training simply cannot be met by such a carefully rationed and controlled paradigm. Second, current cost structures for higher education are simply incapable of responding to the need for high-quality yet affordable education. Third, information technology is releasing higher education from the constraints of space and time (and possibly also reality with virtual universities). All of these factors are driving us toward an open learning environment, in which students will evolve into an active learner and consumer, unleashing strong market forces.... With the emergence of new competitive forces and the weakening influence of traditional constraints, higher education is evolving like other "deregulated" industries (for example, health care, communications, and energy)(p. 10).

This is significant for all of our institutions. As Rowley, Lujan, and Dolence (1998) stated, "...in the information age there will be winners and losers. Those who try to shape change and its effects on them will likely be winners, and those who resist adapting will likely be among the losers (p. 4)". Duderstadt (1998), placed the warning in concrete terms when he stated:

- Those institutions that can step up to this process of change will thrive. Those that bury their heads in the sand; that rigidly defend the status quo or even worse - some idyllic vision of the past that never existed, are at very great risk. Those institutions that are micromanaged, either from within, by faculty politics or governing boards or their own administrators, or from without, by government or pubic opinion, stand little chance of flourishing during times of great change. The real question is not whether higher education will be transformed but rather how and by whom (p.1)?

O'Banion (1997) echoed the same theme when he wrote:

- American society is in a key stage of transformation from the Industrial Age to the Information Age, and all social institutions are - or will be - affected by the change. Many institutions, especially those of business and industry, have been actively involved in responding to these changes for some time; others, such as educational institutions, have begun to respond only recently and in most cases with a reserved enthusiasm. It appears that considerable benefit will accrue to those educational institutions that can successfully navigate the change while those that do not may atrophy or be consigned to the "rubbish heap of history."

Why does higher education find itself in this situation?

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"Isms" That Afflict Higher Education

While thinking about this paper, I began to think about the various "isms" that afflict most of our institutions to a greater or lesser degree. In these and other "isms" may lie some of the reasons for our current condition. They are listed below, rather poorly paraphrased, and without attribution.

- You can't use the same thought patterns that brought you to your current position in the hope that they will somehow lead you out.
- The fallacy of rewarding A while hoping for B.
- The fallacy of doing the same things in the same way and hoping for different outcomes.
- To face tomorrow with the thought of using the methods of yesterday is to invite standstill.
- If you are headed in the wrong direction, integrating technology into your instruction will simply help you get there faster.
- Doing what you've always done, only faster.
- True transformative change only occurs at funerals.
- In higher education, routine work drives out all non-routine work and smothers to death all creative planning, all fundamental change in the university.
- The current change efforts under way in higher education are closely akin to pruning limbs from a dying tree.
- In times of change, the learners inherit the world while the learned remain beautifully equipped to deal with a world that no longer exists.
- Placing good people in bad systems will ultimately end up creating an organization of under-achieving people.
- Much of what goes on in higher education can best be characterized as form over substance.
- Treating every one in an organization the same is a prescription for mediocrity. The level of mediocrity will trend downward over time without outside intervention.

As with all such sayings, there is a grain of truth in each of these.

If these are valid vis-à-vis higher education, we may have discovered the heart of the problem. Can any organization so afflicted hope to truly change and become competitive? How are we to overcome these anchors and look to the future with anything akin to optimism? What are the implications of the globalization of higher education? This paper will look in-turn at the implications for various areas within the academy, beginning with the role of the academy itself.

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The Future Role of The Academy

With the foregoing as a background, we need to ask ourselves how our institutions will respond to these calls for change. Senge (1997) wrote of what he sees as the most significant problem with today's organizations in the following terms. "We have massive institutional breakdown and massive failure of the centralized nervous systems of hierarchical authoritarian institutions in the face of growing interdependence and accelerating change (pp. 125 - 126).

Connick (1997) wrote about higher education institutions in the following words:

- As a result of changing economic and social conditions in the United States and around the world, America approaches the twenty-first century with more than thirty-six hundred accredited institutions that were built in a different era, for a different student population, with a different set of economic realities. Our educational institutions reflect their industrial-era roots. They are organized around centralized structures (similar to the factory model) by aggregating the workers

(faculty and students) at a particular place (the campus) at a particular time (the academic calendar). Education as a public monopoly will cease to exist. The future for most institutions will be determine by the extent to which they have an educational product or products that are provided conveniently for the consumer at a competitive cost (p. 9).

Oblinger and Rush (1997) wrote of three possible scenarios for institutions of higher education as follows:

- One is that the academy does not need to change and won't
- A Second scenario follows the historic model of higher education. A new type of institution will emerge to serve the future needs of learners. Over the past 300 years, much of the growth and innovation of higher education has come about through the addition of new institutions, not through the adaptation of existing institutions. In this scenario they quote Dolence and Norris (1995) as stating that a new design model is essential to meet the needs of the Information Age. This new design would be characterized by 1)open access, to 2) a network of experts, in 3)both traditional and hybridized disciplines using 4) just-in-time learning, providing 5) perpetual learning, facilitated by 6) "fused" learning systems and 7) unbundled learning experiences based on learner needs.
- A third scenario is described by Tate (1996): New production, delivery and certification organizations (PDCs) will invade distribution of higher education courses. These PDCs will operate on a national basis, using the most efficient and effective communications media available. Courses and programs will be designed and produced to commercial standards. These organizations will purchase subject matter expertise from many sources, depending upon the degree of expertise and the quality of content preparation. PDCs will provide competence-based testing and certification services. Students may participate in interactive testing at any time and place of their choosing - and pay a fee to receive certification upon successful completion. At first, PDCs will "flow through" from the institution that provides the content. Later, independent accreditation agencies will assess the process, content, and certification of PDCs. (PPS. 15 - 16)

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Changing the Role of Governing Boards

It is the belief of this author that the governing board may well hold the keys to the future of the majority of our institutions. Another of the truisms that businesses and institutions of all types face is the fact that people generally pay attention to those things that feel are important to their superiors. Until boards demand leadership and change instead of attempting to manage every institution by the same yardsticks of how good their reports look in relationship to other institutions within the system, the quip by Adam Urbanski (1992), that "If you always do what you've always done you'll always get what you always got", will continue to be true.

In the future, productivity will not be measured in terms of inputs (number of FTE students, numbers of faculty, or seat time). Instead, productivity will be measured in terms of outputs (numbers of students completing courses of study, number of students passing certification tests, numbers of students completing their personal learning goals). Governing boards, are, after all, ultimately responsible for the behavior and performance of senior level administrators at most of our institutions. How does the role of senior administration need to change? We turn next to this question.

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The Necessity For Change On The Part Of Institutional Administration

In many of our institutions, particularly public institutions, administrators can best be described as managers. Even those who may understand that what is required is leadership rather than management are slow to move in that direction. The literature is replete with examples of what happens to senior level administrators who attempt to actively lead their institutions. As long as governing boards reward the upper echelon managers of our institutions for being managers and bureaucrats, that's exactly what we

will get. If governing boards want leadership, they will be forced to deal fairly with the criticisms that come with this change.

Bess (1997) identified the administration of higher education institutions as being one of the primary determinants of good teaching that results in student learning. Green (1990) wrote much the same thing and included a list of principles and strategies that administrators can use to improve the quality of teaching on their campuses:

- Make teaching a leadership priority
- Be a partner in the venture
- Have faculty lead the change
- Put your money where your rhetoric is
- Reward good teaching in ways that matter
- Encourage life outside the department
- Encourage contacts outside the institution
- Define teaching broadly
- Work from an understanding of adult development
- Make good teaching an institutional responsibility
- Make teaching ability a criterion for hiring faculty

The role of Leadership

There is a significant and growing literature, which addresses the issue of leadership, leadership development, and how leadership differs from management. It is the intent of the present effort to address leadership as it impacts change. Brill and Worth (1997) detailed the importance of leadership in change efforts:

- No successful large-scale change effort has gone very far without effective leadership throughout the organization. This often requires two things: First, leaders must be trained, because there may not be enough of them, and second, they must be brought on board in support of the change effort. The leaders will move this effort forward if they know how and if they are committed to it. However, they can just as easily destroy a change initiative if they don't know how to support it or simply don't want to go along. (p. 110)

Gregory (1996), in discussing collegiate leadership, stated. "Leadership is about being a leading professional, leading others in a collegiate style, recognizing and encouraging quality, fostering and developing talent, intervening, coaching, and being a role-model for exemplary behavior, taking risks, and acting as a change agent" (p. 48). Heifetz (1994) wrote "Leadership means influencing the community to face its problems (p.14)".

How will the roles of faculty change? The next section of this paper details the changing roles of faculty in a global system of higher education.

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Faculty Roles In The Future

Many people believe that the most significant changes in higher education's future will involve the role of faculty. In an anytime, any place environment, faculty will have to be available to students when students need help. This means answering e-mail and returning phone calls at times that faculty is not used to being available. Faculty shift from being a "sage on the stage" to being a "guide on the side". If faculty is expected to be available in the evening and over the weekend, it is unreasonable to expect that they will be available the same number of hours as usual on campus.

In an environment characterized by intense competition, the basic laws of economics will take over. The new bottom line for faculty will be measured by the amount of learning that takes place on the part of the student. This will result in a shift in emphasis from teaching to learning.

Oblinger and Rush (1997) provide one of many lists of changes currently available in the literature in Table 1.

Alternative Educational Model

Current Model	Future Model	Technological Implications
Classroom lectures	Individual exploration	Networked PCs with access to information
Passive absorption	Apprenticeship	Requires skill development and simulations
Individual work	Team learning	Benefits from collaborative learning and e-mail
Omniscient teacher	Teacher as guide	Relies on access to experts over the network
Stable content	Fast-changing content	Requires networks and publishing skills
Homogeneity	Diversity	Requires a variety of access tools and methods

Table 1

Modified from table found on page 15

A thoughtful review of table 1, will indicate the skill set for the faculty of the future will be significantly different from that of the past. In a meta-analysis of four surveys, Cyrs (1997), listed the following competencies as desirable for instructors who teach at a distance:

- Course Planning and organization
- Verbal and nonverbal presentation skills
- Collaborative teamwork
- Questioning strategies
- Subject matter expertise
- Basic learning theory
- Knowledge of the distance learning field
- Design of study guides coordinated with instruction
- Graphic design and visual thinking (pp. 16 - 17)

When the distance education is moved to the World Wide Web, additional skills will be necessary as follows:

- Collaborative learning
- Cooperative learning
- A wide range of technical skills
- Active learning strategies

One of the big questions is how will faculty acquire the requisite skills? Baiocco and DeWaters (1998) cite the results of several studies that conclude that traditional faculty development efforts are simply not effective. They wrote:

- We have concluded that higher education institutions must increase efforts and offer a radically different faculty development program to ensure that faculty will understand the changing nature of the student population, education, and their respective disciplines. We believe that higher education faculty need major retraining and ongoing support in learning theory, cultural sensitivity, teaching effectiveness, multimedia and technology use, evaluation. And assessment, field supervision, and classroom research. Moreover, that support must include administrative backing, which, as Eble and McKeachie reported, is predictive of program success (1985, p.5) (pp. 40 -41).

If the foregoing conclusions about possible implications are true and if the "isms" outlined above contain even a shred of truth, how do we get from where we are to where we need to be? Industry has begun to turn to the concept of the learning organization to address similar problems in the private sector. This paper turns now to the exploration of the learning organization.

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The Learning Organization

After trying many fads and programs of the month, industry is beginning to find merit in the concept of the learning organization. The learning organization is paradoxical in that it appears so simple in theory yet it is so difficult to achieve in actual practice. Senge (1990), in his classic work, defined five disciplines that characterize a learning organization as follows:

- Systems Thinking.... Business and other human endeavors are also systems. They, too, are bound by invisible fabrics of interrelated actions, which often take years to fully play out their effects on each other. Since we are part of that lacework ourselves, it's doubly hard to see the whole pattern of change. Instead, we tend to focus on snapshots of isolated parts of the system, and wonder why our deepest problems never seem to get solved. Systems thinking is a conceptual framework, a body of knowledge and tools that has been developed over the past fifty years, to make full patterns clearer, and help us to see how to change them effectively.

- Personal Mastery.... Personal mastery is the discipline of continually clarifying and deepening our personal vision, of focusing our energies, of developing patience, and of seeing reality objectively. As such, it is an essential cornerstone of the learning organization - the learning organization's spiritual foundation. An organization's commitment to and capacity for learning can be no greater than that of its members.

- Mental Models "Mental models" are deeply ingrained assumptions, generalizations, or even pictures or images that influence how we understand the world and how we take action. Very often, we are not consciously aware of our mental models or the effects they have on our behavior....Mental models of what can or cannot be done in different management settings are no less deeply entrenched. Many insights into new markets or outmoded organizational practices fail to get put into practice because they conflict with powerful, tacit mental models.

- Building Shared Vision. If any one idea about leadership has inspired organizations for thousands of years, it's the capacity to hold a shared picture of the future we seek to create. When there is a genuine vision (as opposed to the all-too-familiar "vision statement"), people excel and learn, not because they are told to do so, but also because they want to. What has been lacking is a discipline for translating individual vision into a shared vision-not a "cookbook" but a set of guiding principles.
  The practice of shared vision involves the skills of unearthing shared "pictures of the future" that foster genuine commitment and enrollment rather than compliance. In mastering this discipline, leaders learn the counterproductiveness of trying to dictate a vision, no matter how heartfelt.

- Team Learning....The discipline of team learning starts with "dialog." The capacity of members of a team to suspend assumptions and enter into a genuine "thinking together."...The discipline of dialog also involves learning how to recognize the patterns of interaction in teams that undermine

> learning. The patterns of defensiveness are often deeply ingrained in how a team operates. If unrecognized, they undermine learning. If recognized and surfaced creatively, they can actually accelerate learning.... Team learning is vital because teams, not individuals, are the fundamental learning unit in modern organizations. (pp. 8 - 10).

Given the "isms" that afflict higher education, what can be done to insure that the disciplines of a learning organization can take root in this less than fertile soil? Thompson (1995) outlined organizational conditions for building a learning organization as follows:

- Senior management committed to making learning capability part of its ongoing competitive advantage
- A compelling vision of the desired learning organization that people feel part of and are excited by
- A clear blueprint for change
- Milestones - identified, achieved, and celebrated
- Committed leadership willing to model desired changes and drive fear out of the organization
- Immediate corrective action with leaders who resist change
- Senior management committed to significant investment of time and resources
- A performance management system that links compensation to achievement of the desired vision
- Encouragement and acknowledgement of experimentation, collaboration, innovation, and new paradigm thinking
- Urgency - but no quick fixes
- Multiple feedback structures
- Multiple learning channels

If a learning organization has potential for bringing about the necessary change in the academy, how do we begin the process? Beer (1999) argued persuasively that the type of learning processes that are required in today's turbulent marketplace would have to be powerful in order to overcome the inertia common in most organizations. He wrote:

- The powers can, I will argue, be obtained from an organizational conversation - a dialog between the top team (also referred to later as the leadership team) and lower-level people from all parts of the organization concerned with implementing the strategic tasks of the organization. The dialog would have to provide valid data about how well strategy, organizational capabilities, and leadership behavior fit each other. And that data would have to be subject to rigorous analysis of and reflection about inevitably emotional issues that block leaders from fitting their behaviors to strategically driven organizational requirement. Lacking the capability of an open dialog and rigorous analysis of how leader behavior fits strategy and organization, it is inevitable that fundamental transformation in corporations occur only after financial crises leads to the replacement of the CEO and his top team. Although this appears inevitable given present leadership skills and social technology, the economic and human cost of waiting until a crises creates a revolution are sufficiently high to warrant a search for an alternative to the heroic leadership model we argue dominates the landscape of change (p. 129).

Emery and Purser (1996), Lippet (1998), and Weisbord and Janoff (1995) have all demonstrated that the type of change that is required today can only be sustained on a base of trust and understanding and that this foundation can only be built on broad-based and frequent open communication that includes all interested parties from across the organization.

[Top]

Summary and Conclusion

The environment for all of higher education continues to evolve into a truly global system. All aspects of American higher education will have to change in order to prosper in the coming years. It is doubtful if some of the implications outlined in this paper will be felt before the end of the next decade. For higher education to overcome its tendency towards inertia and the "isms" that characterize its day-to-day operations will require a systemic approach. The learning organization as outlined is one possible

approach. Regardless of the approach selected, it is clear from all of the research that bureaucracy will have to give way to open organizations in which dialog is practiced on a daily basis.

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References

Baiocco and DeWaters (1998). *Successful college teaching: problem-solving strategies of distinguished professors*. Needham Heights, MA: Allyn & Bacon.

Banta, T., Lund, J., Blank, K., and Oblander, F. (1996*). Assessment in practice: putting principles to work on college campuses*. San Francisco: Jossey-Bass.

Beer, M. (1999). Leading learning and learning to lead: am action learning approach to developing organizational fitness in Conger, J., Spretzer, G. and Lawler, E. *The leader's handbook: an essential guide to setting direction and taking action*. San Francisco: Jossey-Bass.

Bess, J. (1997). *Teaching well and liking it*. Baltimor: The Jhns Hopkins University Press.

Brill, P. and Worth, R. (1997). *The four levers of corporate change.* New York: AMACOM.

Connick, G. (1997). Issues and trends that will take us to the twenty-first century in Cyrs, T. (ed.). *Teaching and learning at a distance: what it takes to effectively design, deliver, and evaluate programs, New Directions for teaching and learning. No. 71, Fall, 1997.* San Francisco: Jossey-Bass

Dill, D., Massey, W., Williams, P., and Cook, C. (September / October, 1996). "Accreditation and academic quality assurance: can we get there from here? *Change* 31–39.

Duderstadt, J. (1999). Can colleges and universities survive in the information age in Katz, R. and Associates, *Dancing with the devil: information technology and the new competition in higher education.* San Francisco: Jossey-Bass.

Emery, M. and Purser, R. (1996). *The search conference: a powerful method for planning organizational change and community action*. San Francisco: Jossey-Bass

Ewell, P. (November / December, 1994). "A matter of integrity: accountability and the future of self-regulation". *Change* 25–29.

Green, M. (1990). Why good teaching needs active leadership in Seldin, P. and Associates (1990). *How administrators can improve teaching*. San Francisco: Jossey-Bass.

Gregory, M. (1996). "Developing effective college leadership for the management of educational change" *Leadership and organizational development. 17 (4)* 46–51.

Guskin, A. (July / August, 1996). "Facing the Future". *Change Magazine* 27–37.

Heifetz, R. (1994). *Leadership without easy answers*. Cambridge, MA.:The Harvard University Press.

Lippett, L (1998). *Preferred futuring: envision the future you want and unleash the energy to get there*. San Francisco: Barrett-Koehler.

O'Banion, T (1997). *A learning college for the 21st century*. Phoenix, AZ: The Oryx Press.

Oblinger, D. and Rush, S (1997), The Learning Revolution (PPS. 1 - 19)in Oblinger, D. and Rush, S. (eds.) (1997). *The learning revolution: the challenge of information technology in the academy*. Bolton, MA: Anker Publishing.

Peters, R. (November / December, 1994). "Accountability and the end (s) of higher education". *Change* 16–24.

Rowley, D., Lujan, H., and Dolence, M. (1997). *Strategic change in colleges and universities: planning to survive and prosper.* San Francisco: Jossey-Bass.

Senge, P. (1990). *The fifth discipline: the art and practice of the learning organization.* New York: Doubleday.

Senge, P. (1997). Through the eye of the needle in Gibson, R. (ed) *Rethinking the future.* London: Nicholas Brealey Publishing Limited.

Thompson, J. (1995) The renaissance of learning in business in Chawla, S. and Renesch, J. (1995). *Learning organizations: developing cultures for tomorrow's workplace.* Portland, OR: Productivity Press.

Urbanski, A (1992) as quoted by Chaffe and Sherr in Rowley, Lujan, and Dolence(1997). *Strategic Change in colleges in universities: planning to survive and prosper.* San Francisco: Josssey-Bass.

Weisbord, M. and Janoff, S. (1995). *Future Search: an action guide to finding common ground in organizations and communities.* San Francisco: Barrett-Koehler.

The Wingspread Group on higher Education (1993). *An American imperative: higher expectations for higher education.* The Johnson Foundation.

Getting Started with Multimedia in the Classroom and Tutorial Lab

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Abstract

This hands-on session will help participants to get started using HyperStudio to create their own multimedia materials for use with students in both classroom and lab settings. Participants should have a topic for their presentation or tutorial. Examples of multimedia presentations and tutorials currently used with developmental algebra students will be shared, and participants will receive a demo-disk of HyperStudio for both Mac and Windows platforms.

Getting Started with Multimedia in the Classroom and Tutorial Lab

The MTV generation quickly loses interest in math topics presented on the chalkboard by some old fuddy-duddy 60's fossil lecturing about polynomials and rational numbers. A step forward is the use of the overhead projector, but students require even greater stimuli to hold their attention. Use of multimedia brings teaching methods into the 21st Century and helps students catch the dream of success in the 90's and beyond. Multimedia offers avenues for presenting material not possible with other methods, such as: (1) interaction, (2) animation to demonstrate concepts, (3) sound cues, (4) incorporation of stimulating visual effects such as flashing, and (5) non-linear progression. Each presenter has used multimedia authoring software to improve classroom instruction and to provide students additional review in a lab setting. New capabilities allow teacher-made stacks to be accesses vis the internet, allowing students the opportunity to study at home.

Our objectives are to report the benefits of using multimedia in the classroom and lab, to demonstrate actual materials authored by the presenters, and to lead participants in the development of their own multimedia materials. Rapid development of multimedia presentation methods and equipping of special multimedia classrooms provides the opportunity to examine the effects of multimedia based instruction on developmental students. The presenters will share the results of their research comparing the learning and math anxiety of students in a multimedia classroom to the learning and math anxiety of students in a non-multimedia classroom. While the data indicate no statistically significant difference in the learning of students in the multimedia classroom and that of students in the non-multimedia classroom, both students and observers felt that students are more engaged by the multimedia based instruction. The study comparing math anxiety using the Mathematics Anxiety Rating Scale as the pre- and posttest instrument is currently being conducted and will be shared with the participants.

All four presenters have and are developing multimedia based presentations for use in both classroom and lab. A presentation of elementaryalgebra topics and a tutorial on application problems made using HyperStudio will be shared with the participants as examples of teacher made multimedia. The lessons learned in developing these materials will also be shared.

Participants will experience hands-on work with multimedia tools by developing their own presentation. A sample development tool (HyperStudio) will be available for participants. Those who wish to bring their own hardware and software are encouraged to do so. Each participant will create a mini-presentation that can be used as the basis for an expanded tutorial.

Participants should have a topic for their presentation.

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