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Perceived Barriers to the Implementation of Web Enhancement of Courses by Full-Time Tennessee Board of Regents Faculty.

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Recommended Citation

Perceived Barriers to the Implementation of Web Enhancement of Courses
By Full-Time Tennessee Board of Regents Faculty

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A dissertation

presented to the faculty of the

Department of Educational Leadership and Policy Analysis

East Tennessee State University

In partial fulfillment

of the requirements for the degree in

Doctor of Education

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by

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August 2004

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Keywords: Barriers, Online Courses, Web Enhancement, On-site Courses,

Web-Enhanced Courses, Tennessee Board of Regents, Full-time Faculty

ABSTRACT

Perceived Barriers to the Implementation of Web Enhancement of Courses by Full-Time
Tennessee Board of Regents Faculty

by

Thomas Barron Wallace III

The purpose of this study was to examine faculty reluctance to providing students with access to course resources via the Internet. The study explored known barriers to the use of technology and the Internet within educational settings and provided opportunity for new barriers to be presented. Personal and professional demographic factors were collected to determine if certain characteristics were identifiable as predictors to web enhancement.

An online survey was designed to collect data to address research questions in the study. The survey consisted of 48 questions, including areas for comments and remarks from faculty members. One thousand two faculty out of a possible 4,990 responded to the survey.

Based on the results, conclusions have been drawn. Female faculty and faculty ranked as assistant, associate, or full professors were most likely to web enhance. Faculty who had taught for between 1 and 15 years at a four-year university were also more likely to web enhance than other faculty. Faculty in the fields of biology, business administration, communications, computer science, education, English, nursing, and psychology appeared most likely to web enhance their courses. Major barriers to enhancement include increased time commitment, concerns regarding faculty work load, lack of person-to-person contact, and difficulty keeping current with technological changes.

Recommendations for removing some barriers included the need to recognize and reward innovation, provide incentives to enhance, and establish cultural change within institutions. Meaningful professional development training on enhancement techniques was also recommended as well as providing release time for enhancement development. Contact standards on campus websites, providing a contact at each institution for research inquiries, and becoming more accessible to the public at large was also needed. Recommendations for further research included completing this study on an institutional basis and studying the need for "revamping" the concept of "office hours" when used in connection with online courses. In addition, a qualitative study should be conducted on the pros and cons of web enhancement as well as a time study comparison of students who complete a low level online course then take a higher level on-site course.

DEDICATION

This study is dedicated to my wife and daughter. To my wife, Susan, who provided her endless love, support, and encouragement during my years in graduate school, and for the many times I have had to be away from home, left alone to concentrate, etc. She is truly the love of my life and I could not have accomplished this without her.

To my daughter, Allison, for the many times she has encouraged me, I hope that she has gained an understanding that anything is possible with enough perseverance. I also hope that she too will strive to complete as much education as possible and that she will complete her degrees at an earlier stage in her life than her father did.

ACKNOWLEDGEMENTS

I would like to express my sincere appreciation and gratitude to Dr. Russell West, Chair of my dissertation committee. I was fortunate to have taken several classes under him and have learned a great deal from his experience and wisdom. Dr. West guided and directed me through my dissertation with constant support and encouragement.

I would also like to thank the other members of my committee, Dr. Terrence Tollefson, Dr. Terry Countermine, and Dr. Jasmine Renner. Their suggestions and advice were invaluable in the successful completion of my study.

And, lastly, a very special thank you to my friends and colleagues at Northeast State Technical Community College, Dr. Carol Cole, Dr. Garry Grau, Dr. Carole Shaw, and Dr. James Lefler, who have completed this program of study before me. Their advice and encouragement assisted me when the going got rough and the next hill looked a little too high to climb. The hills always look smaller from the top than from the bottom.

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CHAPTER 1

INTRODUCTION

For the past decade, higher education has been undergoing a not-so-subtle bombardment from critics. One of the main criticisms of our educational structures involves the apparent inability to prepare graduates for placement in the workforce (Taylor & Eustis, 1999).

Competition from private enterprise and private education and elementary and secondary educational institutions, aging faculty, a reduced supply of teacher-candidates, reduced budgets, technology, and increased demands for accountability have brought education to a point of crisis. Added to this is the realization by industry and consumers that a high school education alone is no longer sufficient for employability, and educational coursework beyond the high school level is essential in order to gain meaningful employment (Tagg, Wilson, Trachtenberg, & Rubinstein, 1998).

These challenges have forced higher education into a state of rapid change. The information age in general, and especially the Internet, have caused enormous pressure on education to force it to adapt itself to the fast pace of the 21st century. Just as the Internet has changed the way we do business, it has also changed the way that we conduct education and learning activities (Kirschner & Paas, n.d.).

One suggested cause of this change has been and continues to be the incorporation of technology into all aspects of education, especially course delivery. However, simply knowing how to incorporate the technology into instruction is not enough. Incentives are needed to complete the process and ensure participation by educational professionals (Vilberg, 2001). In

addition to technology, alternative methods of delivering educational courses will continue to play a major role in the college of the future.

Zhang (2002) reported that the U.S. Department of Education statistics (NCES 98-062, Statistical Analysis Report) from October 1997 indicated that 97% of public two-year institutions had already developed distance education courses for undergraduates, with approximately 55% of total community college students participating in distance education. This is compared with 75% of public four-year institutions who had developed distance education courses that enrolled 31% of their students in these courses, and 47% of private four-year institutions enrolling 4% of their students by distance education.

The increased acceptance by institutions of courses available through the Internet and the increasing use of computer-based materials have brought about the demand that courses being offered on a college's campus should include a technology component. This component more often than not is expected to take the form of a presence on the Internet. No discipline is expected by students to be "immune" from the expectation that materials and course documents should be readily available at the click of a button. Reese (2002) suggested how language teachers could enhance their classes using the Internet and Internet technology. One prediction is that before long computers will even take over some of the monitoring of student progress, leading to some form of "cyber teaching" (Zhang, 2002).

Another prediction is that eventually there will be two main types of educational institutions: those that add value in course work and those that are certifying agencies. The certifying colleges and universities reportedly are those that act as educational bankers for students (Dunn, 2000).

This study is an attempt to determine why, in light of all the educational technology available and for all the pressure and expectations being placed on education, there are still sizable segments of higher education that are resistant to these changes.

Statement of the Problem

The purpose of this study was to examine faculty reluctance to providing students with access to course resources via the Internet. After two years of training faculty to produce Internet courses and to use Internet technology to enhance their on-site courses, it was the researcher's personal experience that over 90% of the faculty trained embraced the use of technology and appeared to be "converted" to the use of this technology. Most faculty thus trained expressed the sentiment that had they known how easy it was to use the technology and the benefits to their teaching and their students' learning they would have migrated to the use of the technology much sooner. If this sentiment had only been related by one or two faculty representatives, it would not have been considered important.

Even with this portion of faculty indicating satisfaction with the use of this technology, a significant segment of the faculty population continued to express reluctance and even outright opposition to the concept of web enhancement of their courses. This study examined various categories of reluctance to develop, or "barriers" to, web enhancement of courses, and instructor demographic and professional data to determine if there were any identifiable characteristics of faculty members that would assist in identifying whether or not a faculty member would be reluctant to web enhance their on-site courses. This study also attempted to determine the status of the Tennessee Board of Regents' institutions in relationship to Rogers' (1995) categories of

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adopters to determine at what stage of adoption of web enhancement each institution would be classified.

In addition, the study would provide TBR systems personnel with information for planning future infrastructure improvements based on their institution's likelihood of incorporating additional course resources onto their servers and network capacities.

Research Questions

The following questions served as guides for this research:

Question 1: Which barriers to web enhancement predominate within the TBR system?

Question 2: Are there any demographic indicators that will predict reluctance to develop, or a propensity for web enhancement?

Question 3: Are there any particular academic indicators such as type of degree or area of study, faculty ranking or status, tenure, institution type or job function that will predict reluctance to develop or a propensity for web enhancement"?

Question 4: For faculty already using web enhancement, are there any factors that are still viewed as barriers to web enhancement?

Question 5: Where do individual TBR institutions currently stand in relation to Rogers' categories of adopters?

Significance of the Study

The World Wide Web, or "Internet", has only been in existence since 1992 (Lennertz, 1999, p. 3). The use of this technology as a mode of delivery for courses by institutions of higher learning can reasonably be traced back only to 1995 or 1996. While studies, some

regarding the effectiveness and problems of using this medium, have been completed, there has been little work done specifically about "barriers" to enhancing traditionally taught courses with Internet technology.

This study focused on this particular aspect of course delivery for the sixth largest system of higher education in the United States, the Tennessee Board of Regents System (Tennessee Board of Regents, 2000, TBR System section, para. 4). This research is intended to provide data as to the potential inclusion of web-enhanced technology within this system, thereby providing a planning tool for administrators, Chief Information Officers, and board staff to assist in future purchases of equipment, infrastructure, and services.

Results of this study could also be used by the individual institutions to determine their current level of web enhancement in relation to Rogers' theorized categories of innovation diffusion. This could allow them to determine the probability of any additional web enhancement on their individual campus.

This study will also contribute to the available literature on the topic of barriers and web enhancement of courses.

Limitations and Delimitations

Research was delimited to public two-year and four-year higher educational institutions under the governance of the Tennessee Board of Regents (TBR). To provide for the greatest applicability, the study was limited to only full-time employees holding faculty status. Due to the limited number of full-time faculty at most TBR technology centers, they were not included in this study.

<u>Definitions of Terms</u>

For the purpose of this study, it was necessary to define terms associated with these

higher education institutions and the parameters under which the study was conducted.

1. The State University and Community College System of Tennessee, The Tennessee Board of Regents (TBR*)*: The TBR serves as the governing board for all public higher education institutions in the state of Tennessee, except those reporting to the University of Tennessee system. The TBR system includes six universities, fourteen community colleges, and twenty-six area vocational-technical schools (T. C. A. 49-8-101, 1972).

2. TBR Definition of Faculty: The term 'faculty' shall be limited to regular, full-time personnel of institutions and area vocational-technical schools whose regular assignments include instruction, research, and/or public service as a principal activity, and who hold academic rank as a professor, associate professor, assistant professor or instructor at the institution (TBR Policy No. 5:02:01:00).

3. Online Course: A course that can be accessed anywhere and anytime via the Internet. The online course makes use of the Internet technology and related applications to deliver student learning at flexible times and places. Online courses can be cohort-based, but are not necessarily so. Online courses do not require any attendance or participation in location-specific sites (Boettcher, 1997, para. 4).

4. Web-centric Course: Web-centric courses may be courses that are available within a limited geographic area, such as a campus or a city, but are not necessarily so. Web-centric courses may include use of other "gathering strategies" such as intensive location-based launching activities, weekend seminars, and celebratory events. Web-centric courses can look a great deal like regular campus residency courses, with heavy reliance on Web technology and tools (Boettcher, 1997, para. 6).

5. Web-enhanced Course (or Web-supported course): This type of course label means many

   things to many different people. This was the problem with research for this study because

   courses that fall under the definition of a web-enhanced course were labeled as different

   types of courses. Boettcher (1997) defined a Web-enhanced course as:

   > A course that makes use of the Web technology to support distribution of course materials and student access to the resources on the Internet and on the Web. Designing, developing, and delivering Web-enhanced courses can be an evolutionary step for many faculty and teachers by removing the dependency on paper-based and phone-based materials and communications. It can also be an evolutionary step away from the current classroom-centric model. This would certainly be a 'Web-light' course (para. 7).

Swift (1999) defined it as:

Specifically, web-delivered courses will be taught entirely over the Internet using various tools such as email, bulletin boards, chat interfaces, video-conferencing, video-streaming, and audio-conferencing. Web-enhanced courses will be a combination of the tools listed above in addition to class attendants (Importance of the problem section, para. 1).

Zhang (2002) stated that:

In addition, the distinction between Web-based learning and Web-enhanced learning is also observed. While Web-based learning takes place when a course is completely online with little or no human contact, Web-enhanced learning is the 'use of computers and Web-based courseware to enhance the traditional face-to-face classroom environment by exposing students to content-specific information and allowing application and expansion of personal knowledge' (Literature Review section, para. 2).

Kirschner and Paas (n.d.) stated, "Web-enhanced learning is learning (and thus the creation of education) where the Internet plays an important role in the delivery, support, administration and assessment of learning" (p. 7).

Smith (n.d.) indicated that web enhancement could actually be a way for students and faculty to ease into technology within the course. Although additional preparation time, time required to get the course materials ready, and faculty not being prepared for the use of technology can add stress to the teaching job, the web enhancement allows the faculty to incorporate data and enhancement materials into their course on a gradual basis as it becomes available and as they are prepared to introduce it. Therefore, according to Smith, "enhancement components included course syllabus, lecture notes (PowerPoint and Microsoft word format), helpful web links, online grade book, online practice quizzes (multiple choice, puzzles, and matching format), and case studies with graphic and sound" (Methodology section, para. 1).

In light of the many possible definitions for a web-enhanced course and the components that can be contained within a web-enhanced course, for the purpose of this study a web-enhanced course was defined as a course using the web (the Internet) for delivery of materials and/or activities and requiring normal classroom attendance, provided the web delivery encompasses more than just e-mail communication.

6. Course Management System (CMS): A course management system is a secure software system that allows the faculty member to present course materials, post grades, conduct discussions, and give quizzes and tests over the Internet with a minimum of training. Two major examples of course management systems are Blackboard® and WebCT®.

7. Web Course Components: Web Course Components may include, but are not limited to, e-mail, discussion boards, course content, assignments, course calendar, group collaboration, grades, exams, chat rooms, personal web pages, and voice and video-streaming, all delivered across the Internet.

8. Adopter Categories: The Adopter Categories were standardized by Rogers and reported in his 1983 and 1995 editions of *Diffusion of Innovations* published by The Free Press. The categories include Innovators, Early Adopters, Early Majority, Late Majority, and Laggards.

<u>Organization of the Study</u>

The study was organized and sequenced in the following manner:

Chapter 1 includes the introduction, the statement of the problem, research questions, the significance of the study, limitations and delimitations of the study, definitions of terms, and the organization of the study of perceived barriers to the implementation of web enhancement of courses by full-time Tennessee Board of Regents faculty.

Chapter 2 includes a review of past and current literature on web enhancement and web delivery of courses. Additionally, the chapter presents relevant information regarding web enhancement and other related areas of distance education.

Chapter 3 includes a description of the research methodology and procedures used to gather and analyze data for the study of perceived barriers to the implementation of web enhancement of courses by full-time Tennessee Board of Regents faculty.

Chapter 4 contains procedures and results of the data analysis regarding the perceived barriers to the implementation of web enhancement of courses by full-time Tennessee Board of Regents faculty.

Chapter 5 summarizes the study and findings, presents conclusions drawn from the findings, and discusses recommendations for practice and for further study of perceived barriers to the implementation of web enhancement of courses by full-time Tennessee Board of Regents faculty.

CHAPTER 2

REVIEW OF THE RELATED LITERATURE

This chapter provides a review of the literature and research related to the study of perceived barriers to the implementation of web enhancement of courses by full-time Tennessee Board of Regents faculty. Due to a very limited volume of literature available on "web enhancement" of courses, several related areas were explored to provide a thorough background. These areas included distance education, web-based learning, and technology-enhanced education. Data obtained from this exploration are presented in the following sections: a) Why do we need to be concerned about faculty using web enhancement? b) Why is it that technological change comes easier to some individuals than to others? c) What is web enhancement? What constitutes a web enhanced course? d) What are advantages to using web enhancement? e) What are barriers to web enhancement? and f) Summary.

Why Do We Need to be Concerned About Faculty Using Web Enhancement?

In "Communicating in the Tower of WWWeb-ble", Boettcher (1997) indicated that the plethora of terminology had started to cause a problem and had begun to hamper our ability to communicate about distance education. This elicited the question; what does distance education have to do with web enhancement of courses? Web technology, web enhancement, web pages, web-based courses, and the myriad other labels that can be placed upon the activity that was the concern of this study represented an outgrowth of distance education.

According to Bers (1999), distance education had begun to change higher education radically. Because of distance education, she predicted that how we viewed education would change because our current definitions would only apply to a small, shrinking segment.

Dunn (2000) predicted, "The distinction between distance and local education will be blurred. Almost all courses will be digitally enhanced. There will be a small group of colleges that will carve out a market niche by maintaining 'live faculty instruction' in their course delivery" (p. 37).

One of the reasons for this has been that technological and pedagogical requirements in distance education and campus-based, web-enhanced courses overlap to a great extent (Taylor & Eustis, 1999). In fact, even the terminology of technology as it relates to higher education has become viewed more and more as some component of distance education.

The National Postsecondary Education Cooperative (NPEC) in 1997 convened a panel to explore how technology was impacting data systems. Many of the panelists' comments and papers tended to define technology as "distance education." Six overlapping themes emerged from this panel: (1) growth in distance and technology-based education would cause our existing definitions of student, faculty load, cost, and other measures to be meaningless or misleading; (2) the shift to learner-centered, rather than institutionally-centered, data would be necessary because curriculum development, course delivery, advising, assessment, and changing patterns of attendance would make it difficult to evaluate; (3) metrics for calculating and reporting workload and contact hours for faculty would have to change, as also would policies and practices associated with contracts, compensation, evaluation, and tenure; (4) students would be difficult to track because of participation patterns at multiple institutions simultaneously as well because of nontraditional courses they would be taking. Admission only reporting of such basic

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indicators as completion or transfer would be affected; (5) competency-based measures of progress would necessarily need grow in acceptability and feasibility. Students taking courses for continual skill upgrading would be less likely to want formal college credit than individuals seeking actual degrees; and (6) could the Interdisciplinary Postsecondary Education Data System (IPEDS) be revised to accurately portray and accommodate revenue streams associated with distance education (Bers, 1999).

Although many debates continue to be waged about the value of technology in education, it appears that very few people would debate that distance education and technology in the classroom have not become permanent. Just as the printing press changed forever the teaching enterprise, information technology will have a profound effect on teaching and learning. Many college students enroll with the expectation that technology would play an important part in their learning. As a result, colleges and universities have continued to invest heavily in campus technology infrastructure and making choices between classroom-based resources and those resources required for electronic programs (Kruger, 2000).

A wide variety of technologies have been used for alternative course delivery. Not surprisingly, this has led to confusion about the premises of "distance learning" (Kent & Carlson, n.d.).

Distance learning could be considered to be "all pervasive", because it encompasses media such as television, books, newspapers, and radio when these are used for education rather than entertainment (Kent & Carlson, n.d.).

Almost all courses in the residential college of the future will be digitally enhanced. Because distance-education methodologies would provide some advantages to student learning,

those techniques would be incorporated into local teaching. By the year 2025 at least 95% of instruction in the United States would be digitally enhanced (Dunn, 2000).

Zhang (2002) reported that virtual instruction would take place through computer-mediated communication typically at a distance; it could be, but would not have to be, synchronous. This means the instructor and learner don't have to be engaged at the same time in the teaching/learning activity. Of concern to many instructors has been how students could be provided with these optional forms of delivery without lessening the strengths of programs that have been based on traditional methods of delivery (Kent & Carlson, n.d.).

New trends indicate an increasing number of students engaging in web-based learning (Zhang, 2002). In fact, many "students expect their courses to include electronic materials and may even leave institutions that fail to provide them" (Bazillion & Brawn, 2001, The Web section, para. 1).

Change is inevitable. We all know this, yet the longer that we remain entrenched in an activity, the more resistant to change we become. There are many kinds of change and many reasons that will force change upon an institution.

Technologically mediated instruction has often been a catalyst for cultural change. Institutional or organizational culture has often been considered to be the way things get done. It includes organizational beliefs, value systems, language, and organization motivation (Berge, n.d.). Indications of technologically mediated change for institutions have included such things as computing technology becoming more prevalent in society and becoming an important part of the educational environment (Jacobsen, 1998, p. 1). Another indication might be the fact that for the first time in history children are more at ease with technological advances then are their parents (Jacobsen, 1998, p. 3).

Why is it that Technological Change Comes Easier to Some Individuals than to Others?

Jacobsen (1998, p. 13) stated, "If an adopter of technology has a negative first experience with technology he or she is likely to view all technology negatively."

Data suggested that the limited use of technology has not been due to faculty discomfort or a lack of confidence, as evidenced by the fact that almost half of U.S. faculty had a personal computer at their disposal. Rather, the computers are being used for such logistical activities as note preparation, preparations of handouts, overhead slides, and other materials that are today's equivalent of chalk and blackboard (Geoghegan, 1994).

Rogers (1995, pp. 262-265), defined five categories of technology adopters. They were: innovators, early adopters, early majority, late majority, and laggards. The basis for the inclusion into the various categories is attributed to the "s-shaped curve of adoption" which demonstrated that if the cumulative number of adopters was plotted, the result was an s-shaped curve. The data from this curve can also be represented by a bell-shaped curve (Rogers, 1983, p. 243).

The adopter categories follow the distribution of the bell-shaped curve, with the divisions into the various categories occurring at -2 standard deviations, -1 standard deviation, the mean or X-bar, and +1 standard deviation. The last category, laggards, could have been divided into an early and late laggard category, but the determination was made that this was unnecessary (Rogers, 1983, pp. 246-247).

Innovators accounted for the first 2.5% of the adopter population. Their most dominant characteristic was termed venturesome. They may be rash, daring, and risky. Innovators would

include the "techies" who would be experimentalists who latch onto a new technology as soon as it appears (Geoghegan, 1994).

The next 13.5% were known as of early adopters and their most dominant characteristic was respect. They would hold a degree of opinion leadership within the organization (Rogers, 1995). Early adopters would be risk takers and not be afraid of failure. They would have an interest in technology and a concern for professional problems and tasks (Geoghegan, 1994).

The next 34% of adopters were called the early majority and their most dominant characteristic would be deliberate (Rogers, 1995). The early majority would be "pragmatists" and makeup the half of the mainstream to first embrace technology. Their focus was more on teaching and research rather than on the tools but they would not be afraid of technology (Geoghegan, 1994).

The next 34% of adopters were known as the late majority. Their most dominant characteristic would be skepticism. Peer pressure would be necessary for them to adopt change (Rogers, 1995). The late majority were more conservative or "skeptical" then the early majority. They were similar in many respects to the early majority though less comfortable with technology. They would normally accept change late in the game after it has already been established among the majority (Geoghegan, 1994).

 The last 16% to adopt were called laggards. Their most dominant characteristic was called traditional. They tended to be suspicious of innovations and change agents (Rogers, 1995). They were the most likely never to adopt change (Geoghegan, 1994).

Rogers (1995) also suggested that a new idea was adopted because of discussions between potential users. The first person to adopt a new technology discusses this with peers who in turn adopt the technology and discuss it further.

It is essential that we recognize mainstream faculty as a distinct and definite grouping within the academic community. As such, the concept of technology enhancement must be "sold" to them differently than to other groups (Geoghegan, 1994).

The mainstream is vertically oriented, which means that within this group are subgroups that focus on specific disciplines or professions, as opposed to a cross-disciplinary focus found in the earlier markets. They are more concerned about problems to be addressed than they are with the technology to address these problems. Technical support staff members for the majority must therefore have experience and credibility with a range of discipline areas as well as an understanding of the "culture" of the organization (Geoghegan, 1994).

Geoghegan (1994) indicated that mainstream faculty actually may have been alienated by the push to incorporate technology into a course. This alienation may be so profound as to establish a block, otherwise known as a "gap", that can go so far as to prevent or eliminate the faculty member from ever incorporating technology. This was often caused by the fact that mainstream faculty were more concerned with teaching, research, and administrative tasks than they were with technology. Differences between those who envisioned technology to help solve problems and the early majority can produce problems where the actual successes of those who have adopted the technology early can intimidate the mainstream. Early successes that were very visible yet had been achieved at some risk could cause mainstream adopters to view expectations as unattainable.

There are several different reasons for the inability to move to mainstream adoption. These included ignorance that a "gap" exists, the focus of the technologists to induce change, the ease of alienating the mainstream, and, above all, a lack of a significant reason to adopt technology.

The technologists sometimes have a tendency to view the technology as the "be all, end all" of problem solving. In their enthusiasm for the "latest and greatest", they are sometimes blinded to other needs. In many cases technology is offered with little thought to other types of technical support. Tools for application development, while sufficient to do the job, may be difficult for the novice to use or improperly matched to the people who need it (Geoghegan, 1994).

Many technological advances have been seen initially as having a potential to transform education. Educational television today is only of marginal importance in a typical classroom. One of the main reasons is simply a resistance to change by university faculty (Thompson, 1998). Several inventions of the past, most notably radio, have also been heralded as having the potential to change education. Now, the Internet holds the potential to produce a nation of educational "haves "and "have nots " (Kruger, 2000; Michaels, 1996, p. 7).

Although the World Wide Web has only been on the Internet since 1992, (Lennertz, 1999, p. 3) it has been seen as a reform strategy to improve education and prepare students for the 21st century (Michaels, 1996, p. 1). The World Wide Web provides heretofore un-imaginable opportunity for asynchronous or on-demand learning which can take place at the students' convenience (Taylor & Eustis, 1999).

There are many factors that must be considered when we try to give reasons why web enhancement is important.

1)   Today more and more students are entering college with computer skills. These students have the expectation to use technology in their learning.

2)   Universities must now contend with the computer as a communication gateway and not just a desktop tool.

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3)   Many administrators view the computer as a tool to increase faculty productivity and help reduce the cost of instruction (Michaels, 1996, p. 2).

4)   Several studies have shown that education is not changing fast enough to keep up with the global change and economic forces (Michaels, 1996, p. 4).

Michaels (1996) quoted Doctor Joseph Burke, Interim Chancellor of the State University of New York, as saying:

> Higher education remains trapped in a time-warp, in a pre-Gutenberg era where instructional information is mostly transmitted by word of mouth, at a time when the outside world is rushing down a super-highway toward a global village where information is instantly available on a worldwide web of databases (p. 5-6).

According to Michaels (1996) Academia must change whether it is deemed desirable or not.   The role of higher education used to be to impart a lifetime body of knowledge. Today's technological information upheaval has changed the college's role to that of continuing education. The engineering degree that used to be valid for 25 years must now be renewed every three years or it becomes obsolete (p. 28).

The rate of change is propelled by technological advancements in four areas: (1) new technology allowing for digitization of information, (2) high speed communications, (3) storage technology, and (4) rapid growth of microprocessor power (Chan, 1999). As of 1998, 40 of the 50 states had adopted virtual university strategies, more than 16,000 courses were indexed on the world wide web, there were already over 1 million online learners, more than 350 companies produce courseware, more than 1,000 corporations sponsor corporate universities, and commercial learning centers were proliferating and successful (Bers, 1999).

Today's rate of change is so dramatic as to place enormous pressure on faculty. New technology has made possible a stream of information that is accessible to all. Knowledge

becomes outdated so quickly then the instructor can no longer be expert of everything (Michaels, 1996, p. 29).

Because of the availability of new knowledge, almost as fast as it is developed, new tools and technologies are shifting the paradigm from teacher-centered to student-centered (Michaels, 1996, p. 53). It now becomes the responsibility of the teacher to train students to teach themselves rather then to impart a rapidly obsolescent body of knowledge. As many forms of technology are developed to assist in this effort, ultimately it is the teacher who must live with the technology (Michaels, 1996, p. 66).

Changes in education are usually forced by external pressures. Two-year institutions are more likely to have plans for changing technology than are four-year institutions (Michaels, 1996, p. 73).

Technological innovation will diffuse faster if it is perceived as having: (a) relative advantage over the methods it supersedes in terms of economics, convenience, social prestige, or satisfaction; (b) a high degree of compatibility with existing values, past experiences, and needs of potential of adopters; (c) a low degree of complexity; (d) a high degree of "trial ability" before commitment is required, and (e) a high degree of visibility to other potential adopters. Thus, the more positively faculty perceive the Internet, the more likely they will adopt it and use it (Michaels, 1996, p. 87).

Public organizations can create a multitude of opportunities in removing barriers of bureaucracy and red tape by government participating in education via the information highway (Hanson, 1994). There are several examples including legislation, both pending and proposed, that demonstrate the concern of public administration to education's perceived plight with regard to technology in education.

House Resolution 645 (1999), which is the Teacher Technology Training Act, would require states "to incorporate technology requirements in teacher training and content standards." This would also encourage the inclusion of technology classes in the educational curriculum (Joint Hearing, 1999).

House Resolution 2417 (1999), the Educational Technology Utilization Extension Assistance Act, creates educational technology extension centers to advise K-12 Teachers, administrators, and school boards how to better use their existing ed-tech investments as well as giving advice on new technology (Joint Hearing, 1999).

According to testimony, 33% of our education schools consider themselves unprepared to instruct teachers how to use technology in the classroom. And more than half of the nation's schools consider this type of training optional. At the time of this writing 25 states do not require technology and computer education for initial licensor (Joint Hearing, 1999).

Concerns can also be seen at the state level. The State Council of Higher Education for Virginia (SCHEV) mandated that technology become an integral part in that state's educational restructuring. In 1992, SCHEV provided grants for faculty to gain experience in managing three technology-based course-transformation projects. These projects only affected individual courses and had minimal impact outside their individual departments (Taylor & Eustis, 1999).

An attitudinal change has been necessary when institutions of higher education have used technology for training. For the better part of a century, "synchronous" teaching, or both teachers and students meeting in a specific place and a specific time, has been the norm. Also, decisions regarding what and how students learn should be the result of collaboration between faculty, instructional designers, students, and college and university administrators as they were within the context of the demands of the institution (Taylor & Eustis, 1999).

According to Kruger (2000), "Technology is advancing so quickly that futurists consider an Internet year to be only three months." The speed at which our knowledge and technology changes indicate that the solutions to problems generated by attempts to handle change, must be made at a system level. A core tenet of systemic change is that lasting reforms do not come through individual changes but through a network of changes that affect the entire system. A shift from centralized authority to an empowered state of autonomy is critical if we are to survive in the information age (Ellsworth, 1997).

Technology enhancement requires different teaching characteristics than those of non-enhanced teaching. The mere presence of technology places pressure for change on peers, computing organizations, students, and the teachers own personal philosophies (Ellsworth, 1997).

According to a prediction by Lennertz (1999, p.15), an important aspect of technological change that will affect all education is that soon colleges and universities will no longer have a monopoly on post-secondary levels. If faculty do not accept change and institutions do not strive for change, third party enterprises will seek accreditation and offer the same degrees that can now be achieved at colleges and universities.

Heeger (2000) stated,

> Today, nearly every higher education institution in the country is involved, at least marginally, in some form of web-enhanced education. *In my judgment, for web-based education to really be effective, it will require the involvement and commitment of the entire institution.* Internet education is not about individual courses; it must be about a total system of education and educational support (Lessons from the UMUC experience section, para. 2).

The knowledge factory, as most of our universities are known today, is suffering as we move progressively farther into the 21st century. The main reason for this is competition. There

are two reasons we are seeing more competition in the educational arena. First, private industry is finding that new employees coming from a traditional educational environment are poorly prepared to do the work that they need to do. The other reason is that contemporary information technology has made it possible to obtain the education from anywhere, at any time. In the face of this competitive challenge colleges who hold fast to an instructional paradigm based on "seat time" will wither and die (Tagg, et al., 1998).

In the race for student headcount, colleges must now vie for the nontraditional student. The students must juggle work, family, and educational pursuits. Their needs are for nontraditional approaches to delivery of education which can fit their time constraints. Many now choose colleges that meet their demands for price, quality, and above all convenience (Michaels, 1996, p. 3).

Dunn (2000) predicted that alternatives to the public schools would continue to grow and be more popular. Television- and Internet-delivered courseware to support home schoolers was already being written and disseminated. Increasing demands for quality would be heard and responded to by public schools, church schools, and both nonprofit and for-profit entrepreneurs. He also predicted that "consortia of colleges, universities, and other kinds of institutions would increasingly band together to produce and deliver courses for students in their member institutions. Many of these consortia would seek their own accreditation and approval" (p. 38).

The use of information technology would remove many of the barriers around which our educational system was designed. The loss of these barriers requires that the entire system be changed and not just a single component of it. Failure to change opens the door for more agile and faster moving competitors to make their presence known. Educational institutions can choose not to change, but they cannot choose for their competitors, and the same technologies

that made the changes possible are also available to the competitors. Activities and

advancements that are wanted by students but are not considered important by the institution can

and would be met by the competition (Ellsworth, 1997).

Ultimately adoption of technology and changing teaching styles would be the

responsibility of the faculty. Simply having technology available does not change anything in

the educational environment. Rather, it is the beliefs and mindsets of the faculty and how they

would use the technology that can fundamentally change education (Jacobsen, 1998, p. 4).

Faculty must always try to keep up with changing technology, increased demands for

productivity and accountability (Michaels, 1996, p. 5). Adding additional responsibilities and

requirements to their time would be detrimental rather than advantageous to technology

adoption.

> Some blame the low adoption of the Internet on the resistance of the faculty to use new
> technologies. Others point out that faculty lacks the necessary skills or training to use the
> Internet, while still others note that faculty often lack the technical support or proper
> hardware (Michaels, 1996, p. 12).

Six reasons have been often cited by faculty as reasons for using technology. To

accomplish tasks that cannot be done by themselves, to do things that can be done better with

technology then without, to do things that they prefer not to do otherwise, to prepare students for

the outside world, to enhance productivity, and to "transcend time and place" (Michaels, 1996, p.

56).

Instructors are not likely to use the Internet until they are convinced that it is beneficial to

their way of teaching (Michaels, 1996). This does not mean, however, that adoption of

technology is not taking place. Lennertz (1999) reported that a study done by Wang and Cohen

in 1998 concerning Internet use by university faculty showed that 85% of the faculty surveyed

used at least one Internet service, that 45% of the faculty surveyed were between the ages of 41 and 50, and that 96% of the faculty used electronic mail, while 55% used the world wide web. Approximately half of the faculty surveyed had Internet access at home.

In 1994, it was reported that although data were limited and scattered, no more than 5% of courses being taught had technology integrated into them (Geoghegan, 1994). More current data indicated that instructional technology has reached what Rogers calls "critical mass", the point where enough individuals have adopted an innovation so that the innovation's further rate of adoption is self-sustaining. This occurred, according to Rogers, when about 15% to 20% of the population had adopted the innovation (Green, 1996).

An indication that we are approaching critical mass came from the fact that the 2000 survey revealed that 59% of all college courses then used electronic mail, 42% of courses used web resources as components of their syllabi, and 30% of all college courses had web pages (Green, 2000). The 2001 survey data indicated that student ownership of computers was up to 71.5%, compared to 58.6% in 2000 (Green, 2001).

In considering the concept of critical mass it is important to consider not only people but also information. The web will not become a core tool for education until a critical mass of credible information becomes available online (Green, 1996).

To embrace instructional technology, many issues must be considered. "As in the past five years, survey respondents across all sectors of higher education identify 'assisting faculty integrate technology into instruction', as the single most important IT issue confronting their campuses 'over the next two or three years '" (Green, 2001).

Another item that must be considered when producing a web-based or web-enhanced course is that the component parts need to be structurally integrated. They need to relate to each

other coherently. The various parts may include the syllabus, a set of lectures or other materials

that add to the students learning, an announcements page, a discussion forum, library, or

electronic resources links, and a course and/or an instructor's information page (Bazillion &

Brawn, 2001).

> Gandanidis and Rich (2003) suggested that the successful development and
> implementation of online education require two main commitments; one to
> improve the educational experience for students, and another to encourage close
> cooperation-especially among instructors and technological staff-so that subject
> matter, pedagogy, and technological expertise are brought to bear in an integrated
> fashion (para. 1).

Students often expect and demand an IT component in their courses. More and more

faculty are incorporating technology and institutional infrastructures are improving and

expanding despite the financial problems that confront individual institutions (Green, 1996).

Before any new innovation can be integrated widely within an educational environment,

there must be a commitment by the institution toward the infrastructure necessary to support the

innovation and a commitment by faculty to the particular approach. Faculty cannot succeed with

new innovation without information, motivation, resources, and institutional support (Michaels,

1996, p. 8).

Most other considerations to the adoption of technology are meaningless if the institution

itself does not have a solid commitment to the use of technology to continually improve the

quality of teaching and learning. Geoghegan (1994), concluded:

> Technology in the service of ineffective teaching will do nothing to improve the
> quality of instruction; it will simply perpetuate, and even amplify poor teaching.
> Likewise, good teaching can often be enhanced by even simple technology,
> wisely and sensitively applied. Above all, technology must take second place to
> teaching (Conclusion Section, para 1).

The future of technology in education is not a winner take all competition. What lies ahead for most faculty and students is a hybrid learning experience where technology is a supplement to the content and presentation of the course (Green, 2000).

More than just the purchase of computers, successful integration of technology into education must involve staff development, improvements to infrastructure, methodology changes, and an involvement of all parties who have an investment in the educational outcomes (Ellsworth, 1997).

The instructors of the future must be comfortable with technology and the Internet if they are to direct the learning of students and instruct them in the proper use of the medium.

> Many web sites are transitory and disappear without warning or a trace. Legitimate researchers share space with cranks, charlatans, and Holocaust deniers. Critical thought is essential in evaluating websites in their contents. Naive students easily fall prey to pseudo-scholarship peddled on sites, the purpose of which is to legitimize some species of serf-delusion (Bazillion & Brawn, 2001).

Most traditional colleges and universities already could be classified as certifying institutions. But with more than 50% of all college graduates studying in more than one institution before graduating, most colleges readily accept the courses that are transferred in from other accredited institutions. In a majority of institutions, even now, a student has to take only one year of credits from that institution to get a degree (Dunn, 2000).

Digital educational reform is a means and not an end unto itself. No matter how sophisticated or impressive or elegant our electronic tools become they must be second to the purpose for which the university was created. This purpose is to "civilize the young, to fit them for the professions, and to prepare them for governing themselves " (Thompson, 1998).

"Technology…is not a goal or an outcome; rather it is an enabling resource intended to supplement, enhance, and extend the learning experience" (Green, 1996).

<u>What is Web Enhancement? What Constitutes a Web-Enhanced Course?</u>

Although the concept of a course having a web component is not new, the use of this technology may still be considered in an adolescent stage. Even though this form of delivery is an outgrowth of distance education and web-based courses, there are many avenues of thought as to what exactly constitutes a "web-enhanced" course. We must consider not only content and structure, but also delivery and support.

From an educational perspective, web-based and web-enhanced courses are the fastest growing area of the World Wide Web. One reason for this is that more now than ever before, students are comfortable with technology and look for it (Kandies & Stern, 1999).

As of 1996, a growing number of U.S. families, approaching 40%, reported having a computer in the home and a majority of entering college freshman reported having at least half a year of computer training in high school. Word processing and e-mail may not be considered the height of technological skill, but they have become core tools (Green, 1996).

Data have revealed that the use of information technology in education was breaking past the innovator and early adopter stage into the ranks of the mainstream faculty. A rising minority, in excess of 16 million, of students and faculty had some experience in technology-based learning activities (Green, 1996).

Web-enhanced courses have emerged from their simplest form of merely presenting printed documents to the ability to include research and constructive activities (Kandies & Stern, 1999). Web-enhanced courses will normally start by providing redundancy to the live class

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content. Eventually, however, they can evolve to include sessions on topics of interest (Cennamo, Ross, & Rogers, 2002).

Kandies and Stern (1999) reported that one underlying purpose of a web-enhanced course should be to allow students the opportunity to build a background of concepts and skills necessary to use the Internet competently and to expose them to the vast array of knowledge available on the Internet.   They also reported that "the learning enhancement is the opportunity to conduct research on the WWW, e-mail teachers and classmates, submit multimedia projects, practice critical thinking, and learn to "synergize" information in the nonlinear environment of the network."

Because web-enhanced courses have a different structure than traditional courses and may change frequently, the teacher must be willing and able to learn to use the latest array of Internet tools (Kandies & Stern, 1999). Many tools are available, but one tool that is available can be found at the web-enhanced learning environment strategies website. This is called a strategies reflection tool and is diagrammed in four quadrants. Each quadrant represents a single strategy.   Each strategy enhances what a teacher in the classroom already does. The enhancement comes from those web resources the teacher adds to preferred methods of teaching (Grabowski, Koszalka, & McCarthy, n.d.).

The rapid increase in the use of the Internet is causing this technology to play a more decisive role in education. The United States Office of Technology Assessment reported in 1994 that teacher education had significant limitations including faculties' not modeling technology use; student's tending to learn about technology while very few learned with it; field experience in education classes were not modeled to use technology; technology was used in isolation in teacher education (Wedman & Diggs, 2001).

According to Kandies and Stern (1999), for web-enhanced courses to be effective, a "paradigm shift" would have to take place. First, a lifelong learning paradigm would have to replace the seat- or time-based paradigm in place today. The new paradigm would center on "network learning" in place of classroom-centered or achievement-based instruction. In the new paradigm, the "sage on the stage" would become "the guide on the side." The greatest managerial task today is to convince workers and educators that technology integration will not remove jobs but will in fact increase jobs, job security, and specialization in general knowledge (Hanson, 1994, p. 87).

For any type of technological improvement to take place, support will be a key issue. New structures within a course will be required and changes to traditional course "trappings" will be necessary. Whether a course is hybrid in nature (i.e., one in which online materials supplement classroom work) or fully online, the interactive syllabus is a vital component of a successful virtual learning environment (Richards, 2003). The majority of faculty would not know what makes up an interactive syllabus. For this reason technical support must come from content and course design specialists.

According to Bazillion and Brawn (2001), subject matter specialists who know how to teach their discipline make the best creators of Web-enhance courses. Bazillion and Brawn (2001) also point out that they believe it is a mistake to support web-based or web-enhanced courses solely through a school's information technology department. While these departments emphasize customer service and support, their focus is on delivery of technology rather than training. Of vital importance is a "technical communicator "who can mediate between teaching faculty and those who provide network hardware services.

Another issue that must be faced is that of institutional and instructional infrastructure. According to Green (1996) "infrastructure fosters innovation." This means that if the infrastructure to support the technology required for Internet-based instruction is not available, the goal of web enhancement for the majority of courses will never be achieved. Nothing is more detrimental to attempted change then failure to use the change. If students cannot get to the course web site when they first try, they will not use it later when they can.

Recent infrastructure enhancements on many campuses reflect a replacement of obsolete technology and implementation of new software. The expanding use of commercial courseware in computer simulation is directly linked to an increase in publishers creating materials for the higher education market (Green, 1996). These infrastructure changes, however, will not be sufficient if that is the extent of the institutional commitment.

<u>What are Advantages to Using Web Enhancement?</u>

An important factor influencing university faculty to use technology is a need to be certain that the technology contributes to improved student learning (Michaels, 1996, p. 86). Kruger (2000) cited a notation from O'Banion concerning studies at the University of Michigan that found that computer-based instruction had actually improved learning outcomes by up to 20% over traditional teachings approaches. He further indicated that in one study students responded that they felt that they were able to participate more efficiently using web-based conferencing, instructors noted needing less time for orientation and training, and participants exhibited larger gains in critical thinking and the attainment of deliberative skills.

Many reasons have been cited that indicate web enhancement of traditionally taught courses provides a value-added component to these courses that is otherwise not available. Rich

(2002) states that "Because so many students in sociology are not graduate school bound, giving students exposure to computer and research skills is imperative if students are to move along to a technologically based job market " (para. 3). According to Stith (2000), most students found a website helped them with a lecture course.

Technology enhanced courses enrich the learning environment and expose students to online research skills as well as new course content. Publications such as Educause Quarterly, Educause Review, Syllabus, and the Technology Source present the best research into pedagogical outcomes of instructional technology (Bazillion & Brawn, 2001).

The web-enhanced course supplements classroom discussions. Success depends on how effectively the faculty members use the course development software that is available to them (Bazillion & Brawn, 2001). Some students may be reluctant to interact in a classroom environment. Many faculty report stronger relationships are forged in Internet courses then in traditional face to face courses (Kreimer, 2001). Asynchronous communication technologies can increase commuter students' involvement in their out-of-class activities as well as in the academic areas (Kruger, 2000). Additionally, students reported that contact with other students enhanced their learning and made the learning transaction more pleasant (Hanson, 1994, p. 71).

Another advantage of having a web-enhanced component in a course is that students can return quickly and easily to the materials that have already been presented. "Cognitive scaffolding" means that a student needs to visit a learning space more than once in order to construct meaning; the student builds upon prior knowledge as well as new experiences gained from explorations. Between visits the student must reflect upon what is being learned (Richards, 2003).

Hanson (1994) reported that "across all studies of teleconferencing, electronic and computer-based information delivery, and distance education, the findings are fairly consistent. These findings show that electronic delivery systems are at least as effective in teaching and communicating as traditional methods" (p. 81).

Finally, in this age of technological dissemination of coursework, one of the often-stated barriers is time. By gradually web enhancing traditional courses, more and more content is made available electronically. Because much of the work has already been done, web-enhanced courses can be easily adapted for distance delivery (Bazillion & Brawn, 2001).

<u>What are Barriers to Web Enhancement?</u>

Since Plato's time, there has been resistance to change and technology in education. Plato reportedly was opposed to the use of writing because of the detrimental effect it would have on students' memories (Michaels, 1996, p. 59).

Even today some faculty members are not comfortable with technology. They really cannot see how technology can enhance their courses and benefit students in helping with learning. Other faculty members may have experienced frustrations due to problems with administration, course loading, and lack of support (Auernheimer, et al., 2000).

Like web enhancement, the discussion of barriers is open to many interpretations. Often the same problem or barrier falls under two different labels or categories. We must therefore first look at the general categories of barriers to come up with a list of specific problems to be overcome.

Star (Part 1, n.d.) indicated that forces at work that constrain the technology revolution fall into three categories. These categories are technical (bandwidth), institutional (methods of instruction, entrenched bureaucracy), and societal (access, local resources).

Clark (2002), classed barriers to online learning into four groups: barriers to learners who are socially- or economically-disadvantaged, barriers for tutors, barriers for organizations, and barriers for communities. Learner barriers include access to technologies, inappropriate learning materials, a lack of tutors and support staff, cost, lack of special equipment if needed, and personal lack including confidence, motivation, incentive, and basic skills.

Tutor barriers include a lack of expertise in information and communication technologies, lack of expertise in employing information and communication technology in teaching, limited understanding of student needs, limited experience in developing online study skills, and personal attitudes towards using the Internet for tutoring. Organizational barriers include attitudes of existing institutions and staff toward online learning, cost of investment in technology, lack of understanding by decision makers about online learning, an unwillingness to change the structure to accommodate online learning, and limited number of staff with skills to facilitate online learning. Community barriers include access to information and communication technology at locations acceptable to adults, limited local experience or understanding of online learning, limited online materials design for adults, limited online materials in minority ethnic languages, a population that does not see the relevance of information and communication technology to their lives, and limited confidence (Clark, 2002).

Economic barriers may cause information systems to be accessible only to those who can afford the connection fee and exclude poorer members of society and information overload may cause less time to reflect and assimilate new ideas (Hanson, 1994, p. 66).

Identifying in a study, five technological use barriers, Wedman and Diggs (2001),

reported that only 52% of faculty had received specific expectations regarding technology use in

their teaching, 22% indicated receiving any feedback as to their performance with technology,

39% indicated an infrastructure conducive to use of technology, 22% indicated any incentives or

rewards for the use of technology, and only half of the faculty reporting indicated possessing

skills to use the technology. The study was conducted in a large American teacher development

program with approximately 1100 undergraduate students and 60 faculty. No technology

background was required to be a member of the teaching faculty.

Cross (1981) reported three headings under which obstacles to adult learning might fall.

They were situational barriers, institutional barriers, and dispositional barriers. Situational

barriers are those that arise from one situation in life at a given time and might include such

things as lack of time, lack of money, and lack of child care. Institutional barriers include all

those items that make it impractical for working adults to participate in education, such as

schedule, inappropriate maintenance fees, and inconvenient locations. Dispositional barriers are

those related to attitudes about one's self such as the feeling that a person is too old to learn.

Muilenburg and Berge (2001) also cited Cross' three categories of barriers to distance

education: situational barriers, institutional barriers, and dispositional barriers, with a fourth

barrier from a 1993 study labeled epistemological barriers. Other categories are time, access,

resource, expertise, support, ethical issues, legal issues, cultural issues, learner-support and

student-related issues, technological advancements, convergence, appropriate application, staff-

development and professional-training issues, curricular/instructional design and delivery,

quality assurance issues, alternative-teaching and learning strategies, collaborative partnerships,

linkages with business/industry/education (inter-institutional and geographical), and continuous and formalized further-education (life-long learning).

Further investigation uncovers more specific concerns. Although not necessarily the main calls for resistance, fear and uncertainty have a definite place among the barriers. Concerns over performance evaluations in a new situation is one example as student evaluations are used in part to make decisions on funding and promotion (McCormack, Applebee, & Donnan, 2003). Hanson (1994, p. 69), describes a learning continuum with three levels where the learner has little if any knowledge, the learner is still in the basics, and the learner is skilled in the field. Within this continuum the instructor's role changes from total to a very little control indicating a potential loss of control.

The fear that technology will be used to reduce the number of full-time faculty members and increase student-faculty ratios is another often-cited barrier (Michaels, 1996, p. 74) as is computer anxiety, which is another reason for unwillingness of faculty to participate an instructional technology (Michaels, 1996, p. 82). Only 20% of teachers felt qualified or prepared to use technology in the classroom according to the CEO Forum on Education and Technology (Joint Hearing, 1999).

Some educators are fearful that technology will lessen the human interaction of today's teaching and therefore the sense of academic community. Although this concern is valid, in reality because of the use of the Internet, human interaction may actually be increasing (Kruger, 2000).

One major factor that cannot be ignored is failure to identify and deal with social and psychological dimensions of technological innovation. Academic and professional goals,

interests, and needs, work patterns, social networks, etc. must be taken into account when attempting to diffuse technology into the workplace (Geoghegan, 1994).

Another way of grouping barriers would be as resistance to change. Although not as direct as abject fear, resistance to change can be just as daunting. Dunn (2000), predicted that "faculty in traditional colleges and universities will revolt against technological delivery of courses and programs and against the emerging expectations for faculty. Unionization and strikes will increase as faculty fight a rear-guard action to try to slow down or stop the inevitable" (p. 37).

Further areas of concern, according to Berge (n.d.), included the fact that many instructors may have felt the loss of their autonomy and control of the course when a team approach was used for developing materials, the fear that changing their teaching methods may have reduced their quality of instruction, a feeling that there is a lack of incentive or compensation for doing something in a different manner, and they fear a reduced interaction with the students. Berge (n.d.) also reports that the most critical obstacle is a resistance or fear of the changes that must take place at a personal level.

While there are faculty members who have used computer technology and the Internet in their teaching, there is still in a large population of instructors who are not comfortable with computers. Many use the computers only because there is no other way to do the job. Reasons for their reluctance range from beliefs that the computer will never replace face-to-face communication with students to fears that it will increase student/faculty ratios and lead to a reduction in the number of faculty (Michaels, 1996, p. 2).

Areas of concern may also include discomfort of some faculty to teach online, they fear that some "hands on" skills cannot be taught online, and a concern over the effect on workload

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(Gandanidis & Rich, 2003).   While the attitudes toward these forms of education may be initially negative, because teachers and students lose face-to-face contact, they normally change to favorable after experiencing distance instruction (Hanson, 1994, p. 57).

Another often-cited concern is that of the time element involved in learning and delivering enhanced courses. Even when incentives, equipment, and other barriers have been done away with the lack of time still seems to be the largest barrier (Vilberg, 2001).

The idea that there is a need for both release time and extensive technical support has grown from a novelty to an accepted fact (Taylor & Eustis, 1999). Lack of time to develop instructional materials, lack of technical support, and lack of resources were seen as significant obstacles to Internet use (Michaels, 1996, p. 74). The more complex the innovation the less likely it will be adopted (Michaels, 1996, p. 91).

Kruger (2000) reported that large numbers of e-mails and the complexity of working with multiple classes were identified as common problems. Also the lack of visual cues in communication leads to instances of miscommunication.

Cost and money are also factors that have been cited. The development costs for the technologically-assisted course may exceed the costs of teaching a traditional course by two or three times (Kruger, 2000).

To ensure adoption, a "beachhead" must be achieved within the majority. This is best done by defining an application that is most compelling because of its "pragmatic value" to the majority. This should be an application of instructional technology that offers value in excess of its costs of adoption (Geoghegan, 1994).

Support issues must also be considered. The major financial, operational, and technical challenge for many institutions is user support (Green, 1996). Investment in instructional

support has either declined or remained constant since the early nineties. Several factors contributing to this have been complexity of the tools required to produce useful materials, instructional development requiring a sustained investment which many campuses were not prepared to provide, and in many cases instructional development had been shifted to serving the growing number of students, faculty, staff, and administrators who need assistance and training (Green, 1996).

On-site support is needed to assist in the implementation of change. This includes helping faculty to set up new technology and troubleshoot problems, discuss future projects, provide answers to technical problems, and provide encouragement. Inadequate administrative support and a lack of curricular support to assist faculty in developing ideas in teaching methods was another barrier (Michaels, 1996, p. 77).

Technical support needs to be housed in the discipline area in order to provide support when it is needed and that is tailored to the faculty's unique needs (Wedman & Diggs, 2001).

System barriers included computer system downtime, download time of materials on home computers, single phone lines, inability to print at home, no Internet access, and lack of proper software. Personal barriers included a lack of computer knowledge, procrastination, fear and anxiety, and time. Other barriers included teacher's inexperience with technology and unwillingness to use it, too many web resources, and a lack of access to library resources off campus (Smith, n.d.).

Although there are many constraints to higher education, we have overcome one of the major constraints, which was Internet access to higher and continuing education. Eventually, the Internet will reach all the schools and public libraries as well as some community centers (Star (Part 2), n.d.).

Technophobia and a fear of increasing workload have often been considered to be barriers to technology inclusion in education. These were often coupled with a lack of technical and organizational infrastructure necessary to assist the faculty members in their inclusion of these technologies. Poor prior experiences with technology were also considered to be barriers. Also, the use of electronic communication requires additional administrative duties. Teachers do not recommend new technology if there is not an infrastructure to support it (Littlejohn & Sclater, 1998).

Additional barriers cited were:

1) Unclear expectations and a lack of feedback about their efforts to integrate technology (Wedman & Diggs, 2001).

2) Students noted several disadvantages including speed of computers at home or sometimes in computer labs. Also slow modem connections were considered disadvantages. Instructors noted disadvantages such as time required to learn the course management package and the time it took to set up a website, difficulties in digitizing new video and making animation, a lack of technical help, and sometimes a lack of reward for integrating the technology and learning (Stith, 2000).

3) Faculty must remember that the Internet contains no guarantees as to the authenticity of the data stored there. It is open to all of the biases and prejudices of whoever places content on it. Younger students lack research skills to make meaningful decisions as to the validity of Internet data (Richards, 2003).

4) Some academics have a limited knowledge of the use of the Internet. Their first exposure to Internet instruction might be when they start developing their course. There is still

a very naïve segment who thinks the Internet is a cure all for problems associated with on-site instruction (Littlejohn & Sclater, 1998).

5) The majority of faculty would likely agree that a lack of funds and lack of technical support would be viewed as obstacles to adoption of new technology. Later adopters are more likely to view lack of support as an obstacle than are early adopters (Jacobsen, 1998, p. 21).

6) Lack of training was viewed as an obstacle by most adopters (Jacobsen, 1998, p. 21).

7) The cost of computer technology could be viewed as a barrier from an institution's point of view. Old technology, such as a microscope, would last for 20 years, but a computer was only good for 36 months (Michaels, 1996, p. 69).

8) The availability of equipment was an important factor influencing the decisions of whether to use computer technology (Michaels, 1996, p. 70).

9) The lack of adequate reward and incentives including recognition, merit pay, and contribution to promotion and tenure were often cited barriers (Michaels, 1996, p. 78).

10) Commuter students may have reduced access to equipment necessary to participate effectively in online activities (Kruger, 2000).

11) Unrealistic expectations concerning the development and dissemination of instructional materials, together with the realities of workload, money, and skills, could lead to disastrous affects and disenchantments (Geoghegan, 1994).

Summary

Barriers with technology and web-enhanced courses can be categorized in as many ways as there are people to set up categories. From the preceding research the following general questions and areas of concern appear to capture most of the barriers cited.

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In summary, these barriers were: 1) problems with student-teacher interaction, 2) doubts about the Internet being a useful tool for course delivery, 3) the comfort factor with the course management system, 4) concerns over student-teacher ratio, 5) access to computer hardware, 6) skill level (Swift, 1999), 7) large enrollments, 8) teaching load, 9) intellectual property rights, 10) technical assistance, 11) lack of state of the art equipment (Auernheimer et al., 2000), 12) lack of resources, 13) lack of time, 14) limited incentives, 15) limited release time (Vilberg, 2001), 16) too slow home computers, 17) slow modem connections, 18) slow computers and labs, 19) time required to learn the course management tools, 20) difficulties in digitizing video, 21) difficulties in making animations, 22) need for technical help, and 23) lack of rewards for integrating technology in teaching (Stith, 2000).

Each of the above-mentioned items has either been discussed directly or indirectly in the literature review. These items were the basis for the survey instrument questions presented in chapter three.

CHAPTER 3

RESEARCH METHODOLOGY

Introduction

There is still a sizable segment of the faculty population that continues to express reluctance and even outright opposition to the concept of web enhancement of their courses. This study examined various categories of reluctance to develop, or "barriers" to, web enhancement of courses, and instructor demographic and professional data to determine if there were any identifiable characteristics of faculty members that would assist in the determination of whether or not a faculty member would be resistant to the concept of web enhancement of their on-site courses. The percentage of faculty who have started using web enhancement, from the system as a whole and individually from those institutions who contributed enough data to constitute a valid sub-sample, was compared against Rogers' categories of adopters to determine their stage of adoption.

This chapter describes the research design. This includes the variables, population, research hypotheses, research instrumentation, data collection, validity and reliability, and data analysis.

Research Design

This study was based on quantitative methodology that used an Internet-based questionnaire to obtain data that, in turn, were used to perform descriptive analysis of faculty perceptions of barriers to web-enhanced course implementation and to compare selected demographic characteristics of full-time faculty within the system. To obtain the required data

needed to address the research questions posed in this study, instructions on how to access the Internet-based questionnaire was sent to all full-time faculty at TBR institutions.   The questionnaire addressed the following research questions:

Question 1: Which barriers to web enhancement predominate within the TBR system?

Question 2: Are there any demographic indicators that will predict reluctance to develop or a propensity for web enhancement?

Question 3: Are there any particular academic indicators such as type of degree or area of study, faculty ranking or status, tenure, institution type or job function that will predict reluctance to develop, or a propensity for web enhancement"?

Question 4: For faculty already using web enhancement, are there any factors that are still viewed as barriers to web enhancement?

Question 5: Where do individual TBR institutions currently stand in relation to Rogers' categories of adopters?

The data fell into two categories: demographic characteristics and perceived barrier data.

Variables

The purpose of this study was to examine faculty reluctance to providing students with access to course resources via the Internet. Research questions 1 and 4 use perceptual data from the survey questionnaire as well as demographic data pertaining to which institution's faculty the respondent is a part of. For research questions 2 and 3, nine hypotheses were developed and tested. Two criterion (dependent) variables were combined into a single variable for use. The two variables were whether or not the respondent had taught a web-enhanced course in the last year and whether the respondent had ever taught a web-enhanced course. Nine predictor

(independent) variables were used to address research questions 2 and 3. These included: 1) years of service; 2) age; 3) gender; 4) academic rank; 5) highest degree earned; 6) teaching discipline area; 7) tenure status; 8) type of institution, and 9) job function. Research question 5 used data gathered from direct contact with each institution as to the total number of full-time faculty, to determine the percentages of respondents who have used web enhancement.

Hypotheses

There were nine research hypotheses derived from research questions 2 and 3. See Appendix H for a complete listing of each research hypothesis. The following summarizes the hypotheses tested in this study:

Hypotheses 1-3: There is no association between a reluctance to develop a web-enhanced course and a) years of service, b) age, and c) gender of faculty members.

Hypotheses 4-9: There is no association between a reluctance to develop a web-enhanced course and a) academic rank, b) highest degree earned, c) teaching discipline area, d) tenure status, e) type of institution, and 9) job function.

Population

Instructions on how to access the Internet-based questionnaire, which included the URL link to the website, were sent to all full-time faculty at TBR institutions. Support for the study had been requested by e-mail and personal conversations, and approval tentatively given by Dr. Paula Myrick Short, Vice-Chancellor for Academic Affairs, for the Tennessee Board of Regents.

Dr. George Malo, Assistant Vice Chancellor for Research & Assessment at the TBR was contacted by telephone and the request was made for the e-mail addresses of all full-time faculty.

Dr. Malo indicated that this information was not kept by TBR and have to be acquired from each individual institution. Permission was given to contact each institution to request e-mail addresses of all faculty at that institution.

An e-mail was sent to all Human Resource departments at each institution to be surveyed, requesting an e-mail listing of the full-time faculty at that institution. Several institutions responded by sending the list requested. Others responded in various manners, including single e-mail addresses into distribution lists, and even printed phone directories that included the e-mail addresses of the faculty. Several institutions did not respond.

The web sites for all institutions that did not respond were then visited, and all web pages pertaining to academic areas were accessed, as were all pages designated as directory pages. Most academic departments maintained a listing of faculty and/or contact information for the faculty or department. Where individual faculty e-mail addresses were maintained, these were "harvested" into a list for the school. Where only a single contact for the department was listed, these were "harvested" in a separate list for the school.

In a very few cases, there was no e-mail contact information listed on any web page for any academic department. In these instances, the human resources e-mail contact was placed in a third list by school. In one or two extremely rare instances, and in the case of one institution where outside access to the provided faculty distribution list was not allowed, the human resources office was contacted by telephone and the e-mail address to that office was obtained and placed on the third list.

This procedure resulted in three separate lists of e-mail addresses, each of which was separated by institution: one list of faculty e-mail addresses, one list of department e-mail addresses, and one list of institutional contact e-mail addresses.

An e-mail was prepared which explained the purpose of the study and included the

Internet address URL for the faculty to click on that directed them to the questionnaire. This e-

mail was sent in three versions: one went directly to the faculty whose e-mail addresses had been

obtained, a second went to the departments, requesting them to please forward the e-mail to the

full-time faculty in their departments, and a third to the human resources directors, requesting

them to please forward the e-mail to all full-time faculty at their institution (Appendix G).

Two weeks after the initial requests were sent, a second e-mail in the form of a thank you

for those who had already responded, and a reminder for those who had not responded was sent

through the same channels. Two weeks after the reminder, a third and final reminder was sent

through the same channels. This final contact resulted in a total return of 1065 responses, which

yielded 1002 usable data records.

Sample

The entire population of full-time faculty was contacted and invited to take part in the

survey. The Tennessee Board of Regent's website

http://www.tbr.state.tn.us/research/quickfacts.htm, reports that 4-year Faculty/Academic filled

positions to be 4,117. The reported 2-year Faculty/Academic filled positions are 2,176 (August

13, 2003). This would give a possible population of 6,283. Due to recent budgetary cutbacks

and legislative mandates within the system, Dr. George Malo, Assistant Vice Chancellor for

Research & Assessment at the TBR in a telephone conversation on April 15, 2004, indicated that

the actual figures were closer to 5200.

E-mail, telephone calls, and more intensive searches of each college's websites resulted

in a more accurate figure of 4990 full-time faculty.   Using this figure, the Sample Size

Calculator, located at

http://www.isixsigma.com/offsite.asp?A=Fr&Url=http://www.surveyguy.com/SGcalc.htm was

used to calculate the number of responses needed to make valid assumptions based upon the

collected data. Using a confidence level of 95%, and a margin of error of 3%, the total responses

needed was 879. One thousand two valid responses were received.

Data Collection

An electronic survey was developed to allow participants quick access to questions

formulated to gather data needed for this study. The results of the survey were automatically

collected in a database table. The participants were contacted by e-mail with a cover memo

which explained the purpose of the study and included instructions on how to access the survey.

The URL for the survey was

http://courses.northeaststate.edu:85/wallacesurvey/dissertationsurvey.asp. After completing the

survey, the participants clicked a button located at the end of the survey to send the information

to the database.

Research Instrument

The questionnaire used for this study was originally used in a study of barriers to distance

education and training (Berge, Muilenburg, & Haneghan, 2002). The original study (n=2504)

was conducted to help understand and study barriers to distance education. The survey

addressed six factors that affect individual perception of barriers. The factors included

workplace, job function, delivery system, individual expertise, and work discipline.

E-mail messages were sent to thousands of individuals collected from participation lists and membership lists gathered at conferences, seminars, and professional organizations. Data were collected between June, 1999 and January, 2000.

Factor analysis resulted in 10 factors that accounted for 52% of the overall variance. The factors were: administrative structure, organizational change, technical expertise, social interaction and quality, faculty compensation in time, threatened by technology, legal issues, evaluations/effectiveness, access, and student support services (Berge, Muilenburg, & Haneghan, 2002). The study was obtained from http://cgi.umbc.edu/cgi-bin/dharley/misc/barrier_survey.pl . Permission was obtained from the author to allow the use and modification of the original instrument for the purposes of this study (Appendix A).

The Barriers to Web Enhancement of On-site Courses Survey (Appendix B) was developed by removing certain questions from the original instrument that had no relevance to the current study, rewording certain questions to make them more relevant to the current study, and adding new questions to cover topics that were not covered in the original instrument, including the required demographic information. A matrix illustrating the changes can be found in Appendix E.

The survey instrument consisted of two major sections. Section one was designed to capture demographic information. This information was gathered by either being typed in by the respondent, being chosen from pull down menus of choices, or by selecting the check box or radio button.

The second section was a series of choices for the survey participant to indicate whether or not the items were considered to be barriers. The original survey instrument was arranged with choices ranging from no barrier to a serious barrier. The arrangement of choices failed to

determine if the barrier's status as a barrier had been changed, i.e. had a barrier choice being selected as not being a barrier ever been considered to be one, or if the barrier was merely an inconvenience or strong enough to prevent the desired action from taking place.

Because the survey was to be administered to all faculty members, including those who may have already overcome some of the barriers mentioned above, the response options were changed to better represent the purposes of this study and to capture if a former barrier had been overcome. The point range of the scale has the one as being "No Barrier", or that the item is not/was not considered a barrier. If this was chosen, the person taking the survey was asked to indicate if the item had ever been considered a barrier. A two indicated a "Weak Barrier" or a barrier that usually did not prevent enhancement but caused difficulty. A three indicated a "Moderate Barrier" or a barrier that may or may not have prevented enhancement. A four indicated a "Strong Barrier" or one that would usually prevent enhancement. A five indicated a "Very Strong Barrier" or a barrier that always prevented enhancement.

Questions 1 through 11 were designed to collect demographic information that was used to determine if there were any differences between certain categories of faculty, in regard to the strength of various barriers.

Questions 12, 13, and 14, gathered data as to the respondent's teaching with regard to how current it was. These questions were also used to determine whether or not they had ever taught a web-enhanced course.

Questions 15 through 47 presented specific barriers. Responses to these questions indicated the respondents' determination of the item's status as a barrier. Questions 16, 25, 27, 29, 37, and 43 measured perceptions about barriers related to support and training. Questions 17, 18, and 20 measured perceptions about barriers related to faculty incentive and advancement.

Questions 19 and 21 measured perceptions about barriers related to time factors. Questions 22, 23, and 24 measured perceptions about barriers related to quality delivery of courses. Questions 26, 36, 42, 44, 45, and 46 measured perceptions about barriers related to institutional involvement. Questions 28 and 40 measured perceptions about barriers concerned with potential legal issues. Questions 30, 31, 32, and 47 measured perceptions about barriers related to course structure. Questions 33 and 34 measured perceptions about barriers related to access to materials. Questions 35, 38, 39, and 41 measured perceptions about barriers related to fear. Question 15 measured perceptions about barriers concerned with identified need. Question 48 allowed for input of barriers that may have been missed in the design of the survey.

Data collected from faculty responses provided the information required to answer the following research questions: 1) Which barriers to web enhancement predominate within the TBR system? 2) Is there a demographic indicator(s) that will predict reluctance to, or a propensity for, web enhancement? 3) Is there any particular academic indicator(s) such as type of degree or area of study, faculty ranking or status, tenure, institution type, or job function, which will predict reluctance to develop, or a propensity for web enhancement"?   4) For faculty already using web enhancement, which factors are still viewed as barriers to web enhancement?

In addition, the percentage of responses from each institution were analyzed as separate groups to address research question 5) Where do individual TBR institutions currently stand in relation to Rogers' addressed categories of adopters? A matrix in Appendix F illustrates the relationship between the research questions and the survey questions.

Web Design

The questionnaire was produced using FrontPage ® which is part of the Microsoft office suite. The questionnaire was produced as an active server page and published to a web server for testing.

The questionnaire was pilot-tested using 11 professional colleagues from Northeast State Technical Community College, Mountain Empire Community College, East Tennessee State University, and the Tennessee Board of Regents. The pilot-testers were asked to complete the survey and critique as necessary. (Appendix C) Individuals selected to review the questionnaire were chosen due to their professional expertise or interest in Internet-based learning. Comments and concerns were addressed and the questionnaire revised as necessary.

Permission to conduct the research study was sought from the department of Educational Leadership and Policy Analysis and the East Tennessee State University Institutional Review Board. Additional approval had been tentatively granted (Appendix D) but was reconfirmed from the Tennessee Board of Regents and the individual institutions by telephone conversations and e-mail communications.

E-mails describing the project and requesting participation were sent to all full-time employees at TBR institutions who hold faculty rank. Included in the e-mail was the Internet address (URL) pointing to the web page that contained the questionnaire. Respondents only needed to complete the questionnaire online and click on a "submit" button included in the web page. Their responses were recorded into a database located at Northeast State Technical Community College.

Data Record Validation

An inherent problem with the collection of data via an Internet-based survey was caused by the time lag between the submission of the information and the verification that it had been received. Depending upon the amount of Internet traffic, this time lag could vary between seconds to several minutes. When verification of the submission was delayed, there was a tendency to attempt the submission again. In several instances, this caused a duplicate record to be included in the database.

Another cause of duplicates could be attributed to the early training that many people received which encouraged them to "double-click" on computer icons. The "double-click" also caused a duplicate record to be inserted into the database.

In order to eliminate these duplicates, the IP address of the computer used to complete the survey and the date and time that the survey was completed were collected in the database record. After all entries were received, the records were first visually scanned to see if any blank records were in the database. These records were then deleted from the table. Next, the IP addresses of the records were reviewed to see if duplicate non-blank records were received from the same computer. If these records were found, the date/time field was reviewed. If the duplicate records were found to have arrived within 3 minutes of each other, the field data within each record was compared. If the field data was exactly duplicated, the latest submitted record was deleted.

In a few instances, two records were found to have come from the same computer within a 3-7 minute time frame, but the second record contained field information that was missing from the first record or only contained fields that had been missed on the first record. If it was

obvious that the second record was an attempt to submit data that had been left out on the first attempt, the two records were combined into one and the extra record was deleted.

The preceding procedures accounted for the elimination of 63 data records from the database.

After all duplicates had been eliminated, any e-mail addresses that had been included for the purpose of receiving the results of the study were moved to separate file and the e-mail column was deleted from the database table. Additionally, any additional comments included in the submitted data was extracted to a separate file and the comments column, the IP address column, the date/time column, and the record number column were deleted from the table, thereby eliminating any information that could be used to identify a specific record as belonging to an individual. The table was then sorted by institution for processing.

Content Validity and Internal Consistency

The content validity was verified through the literature pertaining to what constituted barriers to web enhancement (Auernheimer et al., 2000; Stith, 2000; Swift, 1999; Vilberg, 2001) and the previous work on Barriers to Distance Education (Berge et al., 2002). Nine individuals, including personnel at TBR, instructors of web-enhanced courses, and faculty at ETSU were requested to review the questionnaire. The research instrument was then revised according to the recommendations of the reviewers. The findings from the survey instrument provided the internal consistency of the data. The alpha coefficient for the barrier items of time, workload, lack of need, technical support, and student work quality, was 73.24%.

Data Analysis

Descriptive and inferential statistics were used to analyze the data collected from the questionnaire. The Statistical Package for the Social Sciences (SPSS), version 11.0.1, was used to assist in data analysis. Descriptive statistics consisted of frequency distributions and means tabulated to develop professional and institutional profiles of Tennessee Board of Regents Full-time Faculty with regard to their perceptions of barriers to web enhancement. Inferential statistics consisted of non-parametric testing for analysis. Chi-square statistical tests were used to determine any statistically significant differences in the association between the criterion variables and the predictor variables.

CHAPTER 4

RESULTS OF THE STUDY

Introduction

This chapter provides a demographic profile of the full-time faculty of the 6 universities,

and 13 community colleges of the Tennessee Board of Regents' system, that completed the

Barriers to Web Enhancement of On-site Courses Survey.   Descriptive statistics were used to

present a summary of the data for the profile. This chapter also provides an analysis of the

perceptions of the faculty, toward the web enhancement of on-site courses and the barriers that

have been encountered. Frequency distributions were used to classify faculty members' various

responses concerning their perceptions. Chi square was used to test for any associations between

faculty perceptions and demographic characteristics.

All full-time faculty of the TBR two-year and four-year institutions were contacted using

the methods described in chapter three and invited to participate in the survey. Of the 4990

faculty invited, 1002 (20.08%) responded and participated in the survey. Using Microsoft

Access, each participant's responses were collected and tabulated as they were submitted. The

final results were then imported into Microsoft Excel where all identifying information was

eliminated. Microsoft Excel and the statistical package SPSS 11.0 were used to conduct the

analysis on the data.

As it is possible that a faculty member may hold a non-teaching assignment, survey

question 12 was used to filter out the responses of the non-teaching faculty for research question

1. Research question 1 was concerned with which barriers predominate in the TBR system so

respondents who have not taught a course within the last year were eliminated from this

question. This accounted for 45 responses where the respondent did not indicate that a course

had been taught within the last year.

Each of the five research questions of this study is addressed in this chapter. Tables and

charts that display the results of the descriptive and statistical analysis are included.

Predominant Barriers

This section presents research question 1. "Which barriers to web enhancement

predominate within the TBR system"? Survey questions 15 – 47 address this question. Table 1

displays the mean scores of faculty members responding on a scale of 1 to 5 their opinion as to

the strength as a barrier of listed items.   If all respondents said the item was not a barrier, the

mean score would be a 1.00. If all respondents said the item was a very strong barrier, the mean

score would be a 5.00. The higher the mean score, the stronger the barrier.

Table 1

Mean Scores of the Barrier Items – All, Two-Year, and Four-Year Institutions

Barrier Item	Mean All	Mean 2-year	Mean 4-year
Increased time commitment	3.22	3.20	3.24
Concern about faculty work load	2.91	2.80	2.97
Lack of person-to person contact (i.e. lack of face-to-face Interaction with students)	2.62	2.54	2.67
Difficulty keeping current with technological changes	2.54	2.43	2.61
Lack of knowledge about enhancements	2.53	2.55	2.52
Lack of adequate technology-enhanced classrooms/labs/ infrastructure	2.49	2.49	2.49
Lack of your own personal technological expertise	2.48	2.53	2.45
Lack of money to implement web-enhanced courses	2.41	2.35	2.45
Information overload	2.36	2.42	2.33

Lack of adequate student/participant access	2.35	2.48	2.26
Lack of technical support	2.34	2.21	2.44
Inability to adequately monitor the identity of the web-enhanced participants/students	2.33	2.48	2.23
Lack of training provided by the organization	2.30	2.16	2.39
Concern about faculty incentives	2.29	2.20	2.35
Concern about faculty compensation	2.23	2.21	2.25
Lack of the "right" people to implement a web enhancement	2.18	2.09	2.24
Lack of encouragement	2.14	2.08	2.19
Copyright/fair use issues	2.14	2.11	2.16
Organizational inertia and resistance to change	2.11	2.10	2.12
Disruption of the classrooms traditional social organization	2.09	2.07	2.11
Concern that enhancement lowers the quality of student work	2.06	2.05	2.06
Concern for legal issues (e.g., computer crime; hackers; software piracy; computer viruses)	2.06	2.14	2.00
Concern that enhancement lowers the quality of courses	2.01	1.97	2.03
Lack of policy concerning intellectual property rights/ownership	1.97	2.00	1.95
Lack of adequate instructor access	1.94	1.89	1.98
Lack of identified need for course enhancement	1.93	1.92	1.93
Concern that enhancement lowers learning expectations	1.89	1.90	1.89
Lack of a champion for web enhancement in the organization	1.86	1.75	1.94
Fear of technology	1.77	1.84	1.73
Computers perceived as potential replacement for instructors' expertise and experience	1.74	1.71	1.75
Concern about promotion and tenure consideration	1.71	1.49	1.86
Faculty feel job security is threatened	1.58	1.61	1.56
Threat to instructor sense of competence and authority	1.55	1.60	1.52

As shown in the table, the major barriers tend to be concerned with time and workload issues. Concerns about job security and loss of authority were ranked at the bottom of the barriers. Fear of technology, which has often been considered a formidable barrier, also ranked close to the bottom.

Demographic Predictors

This section addresses research question 2, "Are there any demographic indicators that will predict reluctance to develop or a propensity for web enhancement"? Survey items

addressing this question are item numbers 7, 8, 9, 13, and 14. Survey items 13 and 14 are used

to determine if the respondent has ever taught a web-enhanced course. Survey items 7, 8, and 9

represent the years of service, age, and gender respectively.

Null Hypothesis 1. Null Hypothesis 1 stated, "There is no association between years of

service and a reluctance to develop a web-enhanced course." Table 2 displays the comparison of

responses of those who have taught a web-enhanced course versus those who have not, as

determined by their years of service (N=985). There is a clear trend for faculty with 15 or fewer

years of service to have taught a web-enhanced course. In order to determine if the responses

were statistically significant, the Chi-square test was used.

Table 2

Association between Years of Service and Web Enhancement

| | Never Taught (Reluctant) | | % of Years | Taught (Not Reluctant) | | % of Years | Total % |
Years of Years of Service	f	%	of Service	f	%	of Service	Years of Service
1 – 5	89	26.0%	(31.6%)	193	30.0%	(68.4%)	(100.0%)
6 – 10	62	18.1%	(33.3%)	124	19.3%	(66.7%)	(100.0%)
11 – 15	45	13.2%	(27.6%)	118	18.4%	(72.4%)	(100.0%)
16 – 20	39	11.4%	(36.8%)	67	10.4%	(63.2%)	(100.0%)
21 – 25	32	9.4%	(37.6%)	53	8.2%	(62.4%)	(100.0%)
26 – 30	31	9.1%	(39.2%)	48	7.5%	(60.8%)	(100.0%)
Over 30	44	12.9%	(52.4%)	40	6.2%	(47.6%)	(100.0%)
Total	342	100.0%		643	100.0%		

X^2=17.832, df=6, p=.007

The association between years of service and web enhancement was found to be

statistically significant at the .05 alpha level. Null Hypothesis 1 was rejected. There is clear

indication that faculty with fewer than 16 years of service were more likely to web enhance their

courses than were faculty with 16 or more years of service. This is further illustrated by Figure

1.
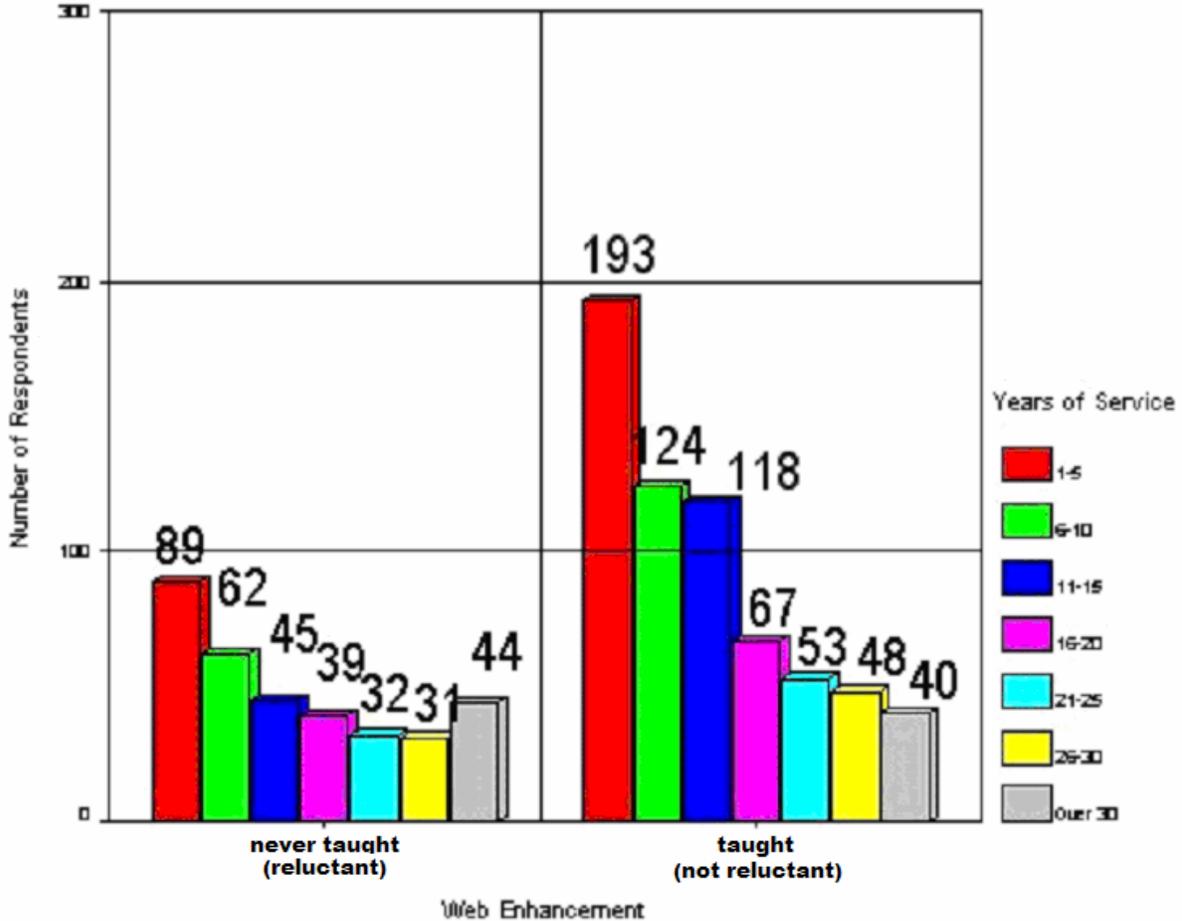
Figure 1. Web Enhancement Trend Based on Years of Service

Null Hypothesis 2. Null Hypothesis 2 stated "There is no association between age and a

reluctance to develop a web-enhanced course." Table 3 displays the comparison of responses of

those who have taught a web-enhanced course versus those who have not as determined by their

age (N=986). The association between age and web enhancement was found not to be

statistically significant at the .05 alpha level.

Table 3

Association between Age and Web Enhancement

Age	Never Taught (Reluctant)		% of Age Group	Taught (Not Reluctant)		% of Age Group	Total % of Age Group
	f	%		f	%		
Below 25	1	.3%	(50.0%)	1	.2%	(50.0%)	(100.0%)
26 - 35	31	9.1%	(32.6%)	64	9.9%	(67.4%)	(100.0%)
36 – 45	71	20.8%	(32.1%)	150	23.3%	(67.9%)	(100.0%)
46 – 55	124	36.3%	(33.2%)	250	38.8%	(66.8%)	(100.0%)
56 – 65	95	27.8%	(37.0%)	162	25.2%	(63.0%)	(100.0%)
Over 65	20	5.8%	(54.1%)	17	2.6%	(45.9%)	(100.0%)
Total	342	100.0%		644	100.0%		

X^2=8.126, df=5, p=.149

As there was no association between age and web enhancement, (Chi-square = 8.126, df=5, p=.149), null hypothesis 2 was retained. As illustrated by Figure 2, no particular age grouping could be considered strongly biased either for or against web enhancement. Because approximately twice as many respondents indicated they web enhance as did the respondents who did not web enhance, the comparisons are in line with the population.
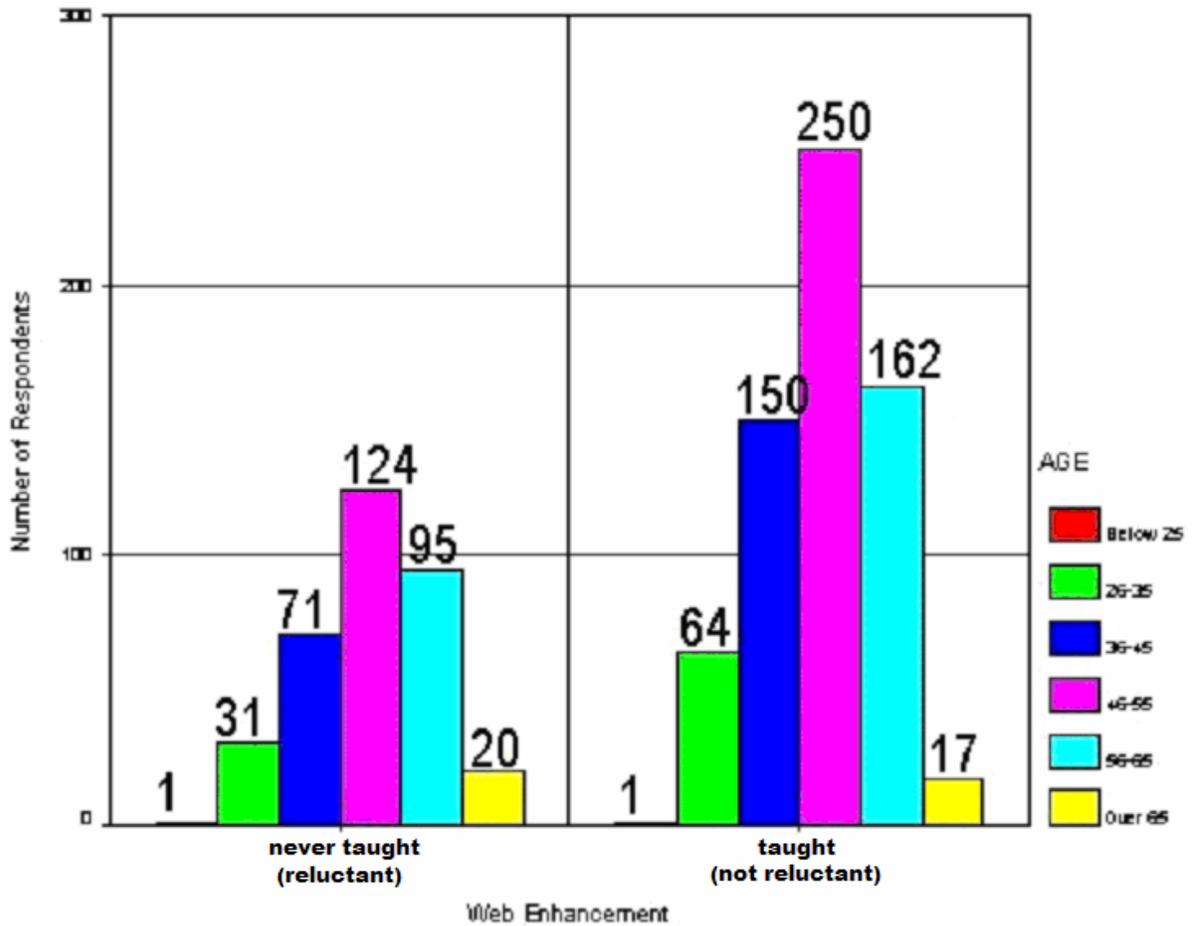
Figure 2. Web Enhancement Trend Based on Age

Null Hypothesis 3. Null Hypothesis 3 stated "There is no association between gender and a reluctance to develop a web-enhanced course." Table 4 displays the comparison of responses of those who have taught a web-enhanced course versus those who have not, as determined by their gender (N=983). The association between gender and web enhancement was found to be statistically significant at the .05 alpha level.

Table 4

Association between Gender and Web Enhancement

Gender	Never Taught (Reluctant)		% of Gender Group	Taught (Not Reluctant)		% of Gender Group	Total % of Gender Group
	f	%		f	%		
Male	196	57.3%	(39.7%)	298	46.5%	(60.3%)	(100.0%)
Female	146	42.7%	(29.9%)	343	53.5%	(70.1%)	(100.0%)
Total	342	100.0%		641	100.0%		

$X^2=10.444$, df=1, p=.001

Null Hypothesis 3 was rejected. As illustrated in Figure 3, females were more likely to web enhance than were males.
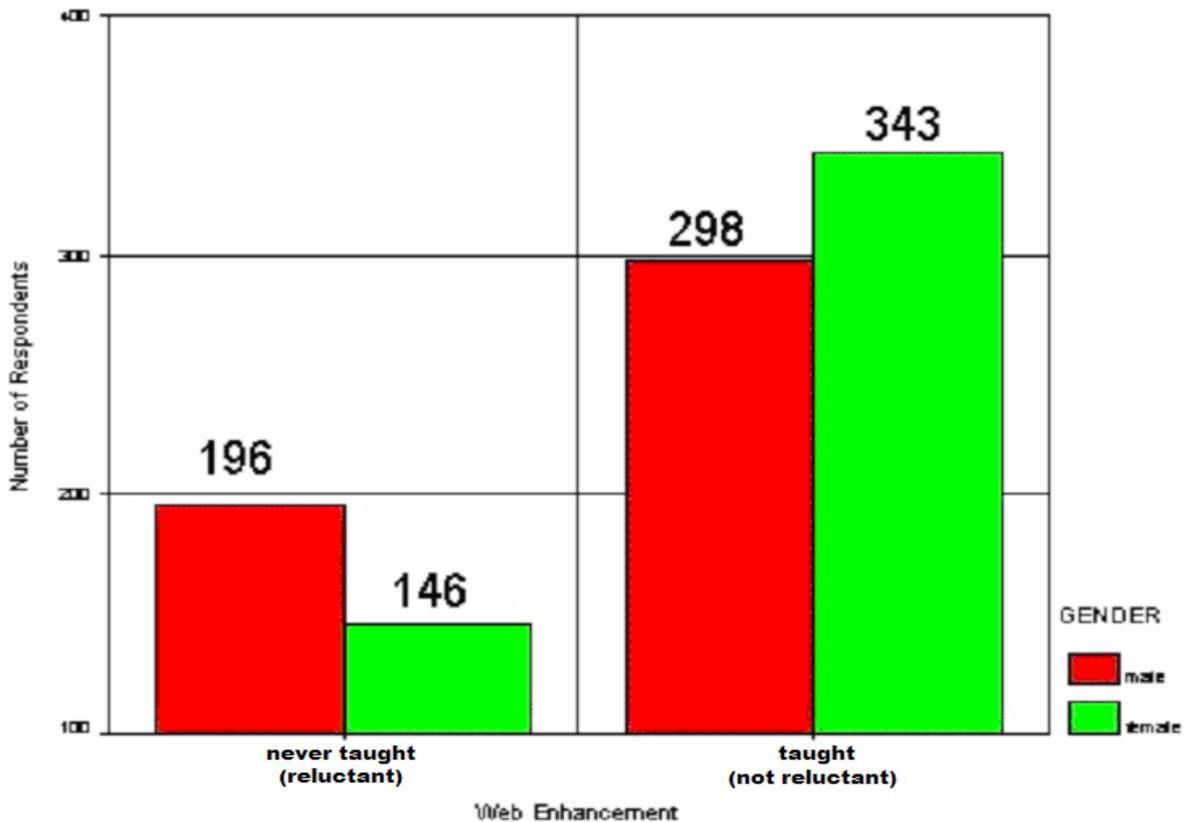
Figure 3. Web Enhancement Trend Based on Gender

This section address research question 3, "Are there any particular academic indicators such as type of degree or area of study, faculty ranking or status, tenure, institution type and job function, that will predict reluctance to develop, or a propensity for web enhancement"? Survey items addressing this question are 3, 4, 5, 6, 10, and 11. These items represent academic rank, highest degree earned, teaching discipline area, tenure status, type of institution, and job function respectively.

Null Hypothesis 4. Null Hypothesis 4 stated, "There is no association between academic rank and a reluctance to develop a web-enhanced course." Table 5 displays the comparison of responses of those who have taught a web-enhanced course versus those who have not as determined by their academic rank (N=990). The association between academic rank and web enhancement was found to be statistically significant at the .05 alpha level.

Table 5

Association between Academic Rank and Web Enhancement

Academic Rank	Never Taught (Reluctant)		% of Rank	Taught (Not Reluctant)		% of Rank	Total % of Rank
	f	%		f	%		
Instructor	55	16.0%	(48.2%)	59	9.1%	(51.8%)	(100.0%)
Assistant Professor	67	19.5%	(26.0%)	191	29.6%	(74.0%)	(100.0%)
Associate Professor	129	37.5%	(34.6%)	244	37.8%	(65.4%)	(100.0%)
Professor	93	27.0%	(38.0%)	152	23.5%	(62.0%)	(100.0%)
Total	344	100.0%		646	100.0%		

X^2=19.048, df=3, p=.000

Null Hypothesis 4 was rejected. As illustrated in Figure 4, Assistant, Associate, and Professor ranks show the most tendency web enhance. The Instructor rank appears to be neutral with respect to web enhancement.
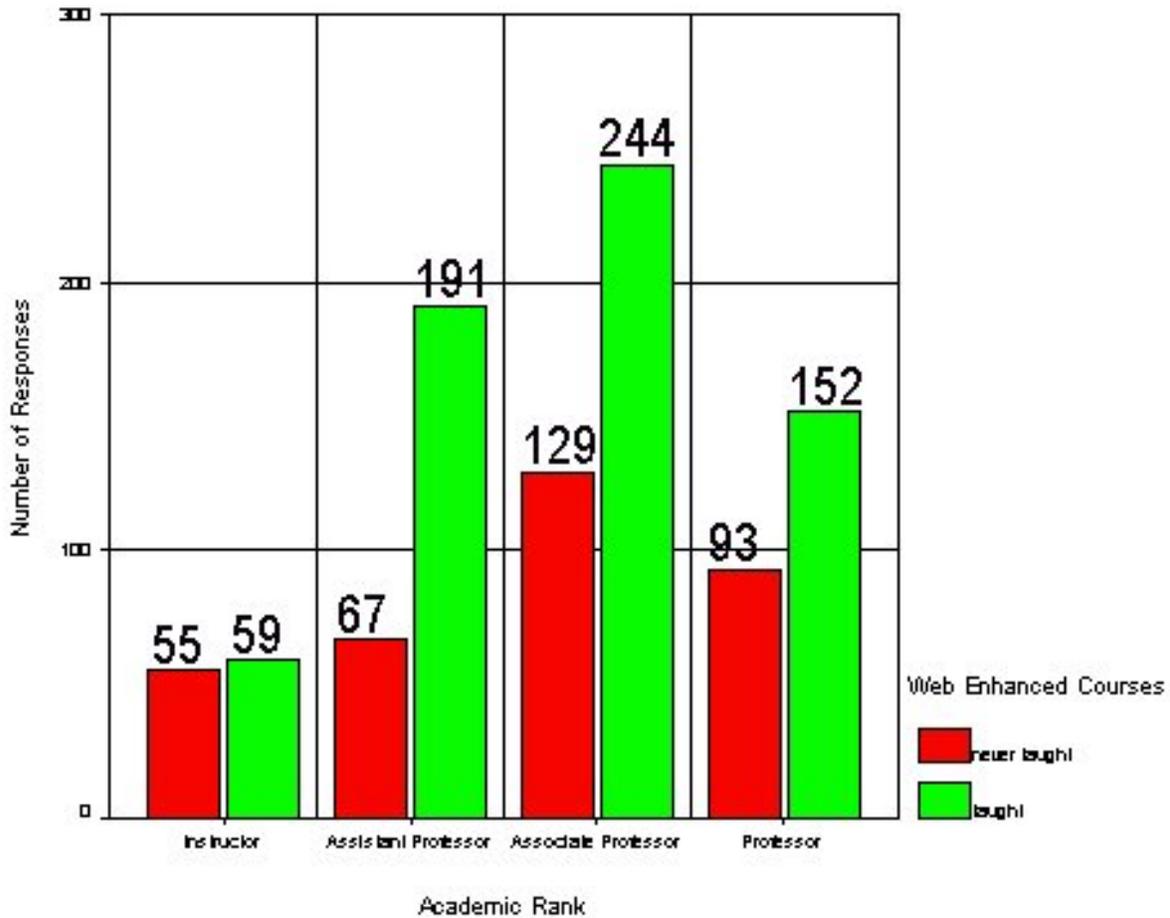
Figure 4. Web Enhancement Trend Based on Academic Rank

Null Hypothesis 5. Null Hypothesis 5 stated, "There is no association between highest
degree earned and a reluctance to develop a web-enhanced course." Due to the limited number
of responses from faculty holding other than master's and doctorate degrees, the data were
recoded into two categories, doctorate and non-doctorate. Table 6 displays the comparison of
responses of those who have taught a web-enhanced course versus those who have not as
determined by their highest degree earned (N=990).

The association between highest degree earned and web enhancement was found to be statistically significant at the .05 alpha level.

Table 6

Association between Highest Degree Earned and Web Enhancement

Highest Degree	Never Taught (Reluctant)		% of Degree Grouping	Taught (Not Reluctant)		% of Degree Grouping	Total % of Degree Grouping
	f	%		f	%		
Non-Doctorate	154	44.9%	(38.8%)	243	37.6%	(61.2%)	(100.0%)
Doctorate	189	55.1%	(31.9%)	404	62.4%	(68.1%)	(100.0%)
Total	343	100.0%		647	100.0%		

X^2=5.028, df=1, p=.025

Null Hypothesis 5 was rejected. Figure 5 illustrates that faculty holding doctorate degrees were more likely (less reluctant) to web enhance. This conclusion is suspect, however, because approximately 60% of the respondents hold doctoral degrees.
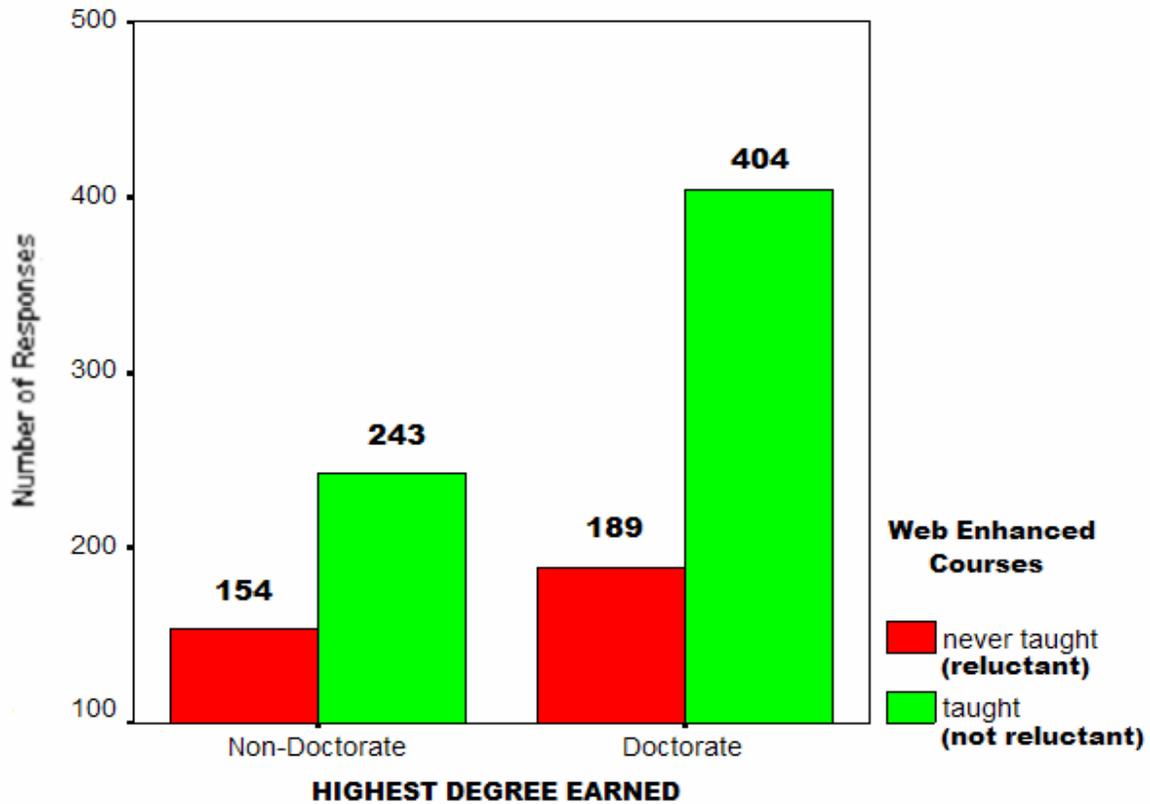
Figure 5. Web Enhancement Trend Based on Highest Degree Earned

Null Hypothesis 6. Null Hypothesis 6 stated, "There is no association between teaching discipline area and a reluctance to develop a web-enhanced courses." Table 7 displays the comparison of responses of those who have taught a web-enhanced course versus those who have not, as determined by their teaching discipline area (N=1002). The association between teaching discipline area and web enhancement was found to be statistically significant at the .05 alpha level. Table 7 displays the Chi-square results.

Table 7

Association between Teaching Discipline and Web Enhancement

Teaching Discipline	Never Taught (Reluctant)		Taught (Not Reluctant)	
	f	%	f	%
No Discipline Listed	11	3.1%	9	1.4%
Accounting	6	1.7%	19	2.9%
Agriculture	3	0.9%	1	0.2%
Animal Science	1	0.3%	2	0.3%
Art	11	3.1%	5	0.8%
Biology	17	4.8%	37	5.7%
Business Administration	20	5.7%	33	5.1%
Chemistry	9	2.6%	15	2.3%
Communication	16	4.6%	26	4.0%
Computer/Information Science	5	1.4%	55	8.4%
Developmental	7	2.0%	14	2.2%
Economics	5	1.4%	12	1.8%
Education	12	3.4%	35	5.4%
Engineering	9	2.6%	12	1.8%
English	31	8.8%	55	8.4%
Family & Consumer Science	2	0.6%	5	0.8%
Fire Science	0	0.0%	2	0.3%
Geography	2	0.6%	4	0.6%
Health	25	7.1%	31	4.8%
Hospitality	1	0.3%	3	0.5%
Humanities	1	0.3%	3	0.5%
Language	7	2.0%	13	2.0%
Law	1	0.3%	2	0.3%
Legal	3	0.9%	1	0.2%
Library Science	3	0.9%	0	0.0%
Mathematics	37	10.5%	55	8.4%
Medical Technology	7	2.0%	5	0.8%
Medicine	8	2.3%	10	1.5%
Military Science	1	0.3%	0	0.0%
Music	8	2.3%	13	2.0%
Nursing	10	2.8%	53	8.1%
Office Administration	4	1.1%	4	0.6%
Other Sciences	4	1.1%	6	0.9%
Philosophy	3	0.9%	4	0.6%
Physics	4	1.1%	9	1.4%
Political Science	2	0.6%	1	0.2%
Psychology	12	3.4%	32	4.9%
Public Administration	1	0.3%	3	0.5%

Social Work	4	1.1%		2	0.3%
Sociology	9	2.6%		17	2.6%
Special Education	0	0.0%		6	0.9%
Speech	7	2.0%		7	1.1%
Technology	13	3.7%		12	1.8%
Total	351	100.0%		651	100.0%

X^2=81.141, df=43, p=.000

Although certain disciplines are suspect due to their extremely low number of responses, there is a clear indication that some disciplines are more prone to be web enhanced than are others. Null Hypothesis 6 was rejected.

The discipline areas where the most association was indicated include accounting, biology, business administration, communication, computer science, education, English, nursing, and psychology.

Null Hypothesis 7. Null Hypothesis 7 stated, "There is no association between tenure status and a reluctance to develop a web-enhanced course." Table 8 displays the comparison of responses of those who have taught a web-enhanced course, versus those who have not, as determined by their tenure status (N=988). The association between tenure status and web enhancement was found not to be statistically significant at the .05 alpha level. Table 8 displays the Chi-square results.

Table 8

Association between Tenure Status and Web Enhancement

Tenure Status	Never Taught (Reluctant) f	%	% of Tenure Grouping	Taught (Not Reluctant) f	%	% of Tenure Grouping	Total % of Tenure Grouping
Tenured	229	67.4%	(36.4%)	400	61.7%	(63.5%)	(100.0%)
Not Tenured	111	32.6%	(30.9%)	248	38.3%	(69.1%)	(100.0%)
Total	340	100.0%		648	100.0%		

$X^2=3.050$, df=1, p=.081

Null Hypothesis 7 was retained. There is no apparent association between tenure status and web enhancement. Figure 6 graphically illustrates that the relationship between having taught a web enhanced course and not having taught a web enhanced course is almost identical whether the faculty member is tenured or not tenured.

Figure 6. Web Enhancement Trend Based on Tenure Status

Null Hypothesis 8. Null Hypothesis 8 stated, "There is no association between the type

of institution at which the faculty member worked and a reluctance to develop a web-enhanced

course." Table 9 displays the comparison of responses of those who have taught a web-

enhanced course versus those who have not as determined by the type of institution at which

they work (N=1002). The association between type of institution and web enhancement was

found to be marginally significant at the .05 alpha level.

Table 9

Association between Type of Institution and Web Enhancement

Type of Institution	Never Taught (Reluctant)		% of Institution Grouping	Taught (Not Reluctant)		% of Institution Grouping	Total % of Institution Grouping
	f	%		f	%		
Two Year College	153	43.6%	(38.7%)	242	37.2%	(61.3%)	(100.0%)
Four Year University	198	56.4%	(32.6%)	409	62.8%	(67.4%)	(100.0%)
Total	351	100.0%		651	100.0%		

X^2=3.931, df=1, p=.047

Null Hypothesis 8 was rejected. Although the association was only marginal, Figure 7 illustrates that there was an apparent tendency for four-year institutions to web enhance more often than two-year institutions.
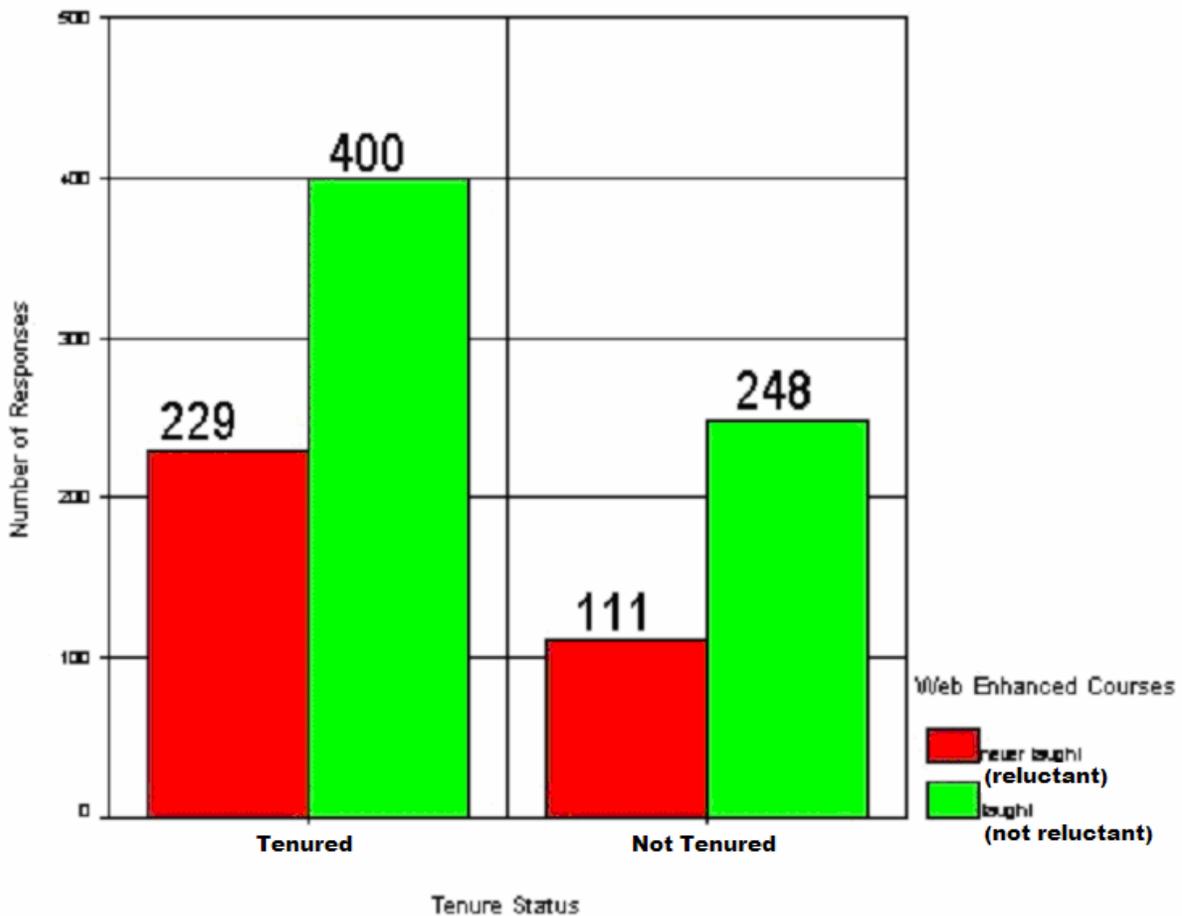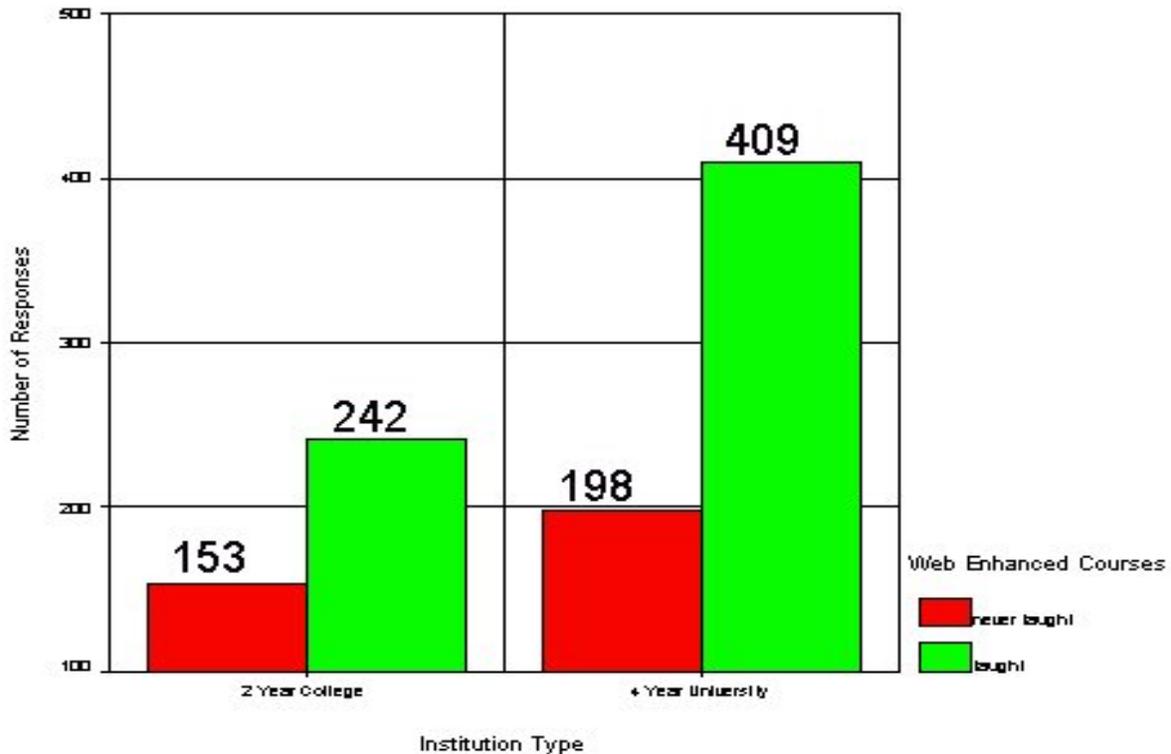

Figure 7. Web Enhancement Trend Based on Institution Type

Null Hypothesis 9. Null Hypothesis 9 stated, "There is no association between job function and a reluctance to develop a web-enhanced course." Table 10 displays the comparison of responses of those who have taught a web-enhanced course versus those who have not as determined by their job function (N=989). Due to the extremely small number of faculty responding whose job function is other than teaching, the data were recoded into two categories, teaching faculty and non-teaching faculty. The association between job function and web enhancement was found not to be statistically significant at the .05 alpha level. Table 10 displays the Chi-square results.

Table 10

Association between Job Function and Web Enhancement

Job Function	Never Taught (Reluctant) f %		% of Job Grouping	Taught (Not Reluctant) f %		% of Job Grouping	Total % of Job Grouping
Non-teaching Faculty	58	16.9%	(40.8%)	84	13.0%	(59.2%)	(100.0%)
Teaching Faculty	285	83.1%	(33.6%)	562	87.0%	(66.4%)	(100.0%
Total	343	100.0%		646	100.0%		

X^2=2.781, df=1, p=.095

Null Hypothesis 9 was retained. What is interesting, as illustrated in Figure 8, is how many non-teaching faculty, have engaged in web enhancement when they were teaching.
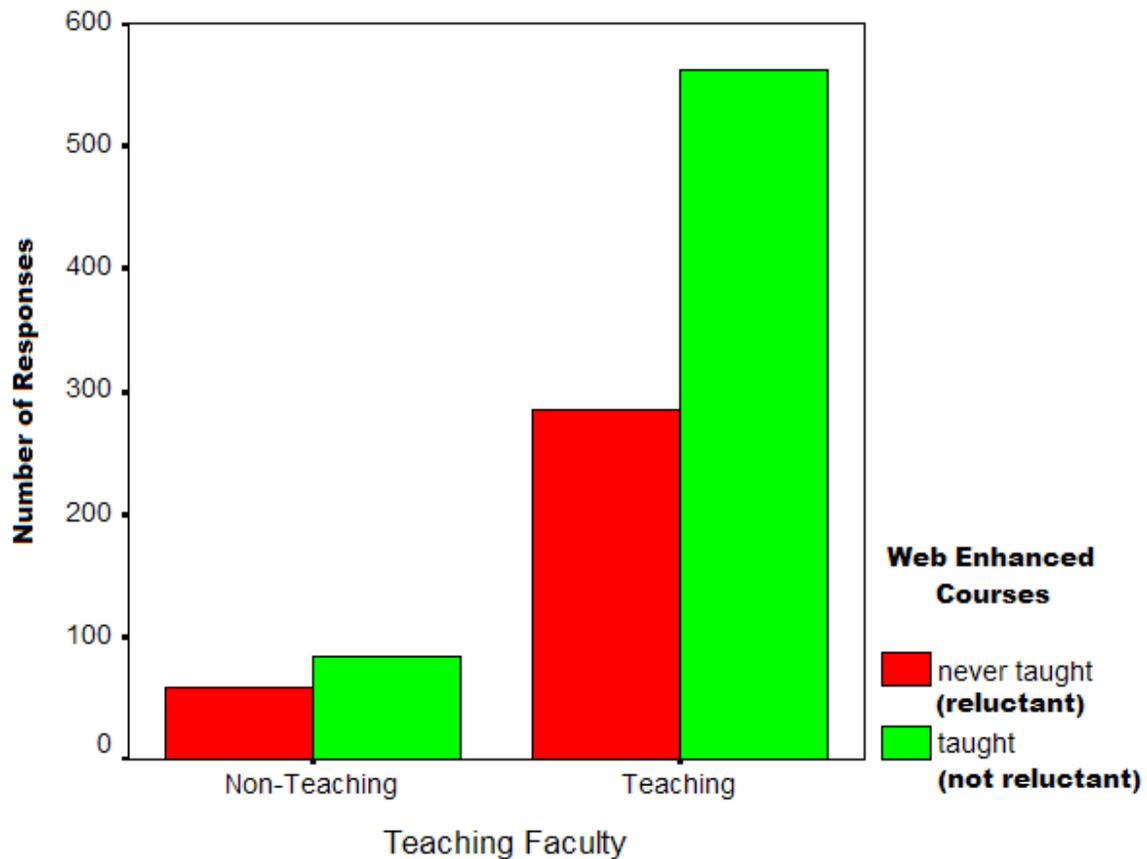
Figure 8. Web Enhancement Trend Based on Job Function

<u>Continuing Barriers</u>

This section addresses research question 4, "For faculty already using web enhancement, are there any factors that are still viewed as barriers to web enhancement"? Survey items addressing this question are 13 and 14, which indicate whether the respondent has ever taught a web enhanced course, and are used to control which responses are selected, and items 15 – 47 that indicate whether the item is considered a barrier.

Table 11 displays the mean scores of faculty members responding on a scale of 1 to 5 their opinion as to the strength as a barrier of listed items.   If all respondents said the item was

not a barrier, the mean score would be a 1.00. If all respondents said the item was a very strong

barrier, the mean score would be a 5.00. The higher the mean score, the stronger the barrier.

Numbers in parenthesis indicate the numerical ranking of the responses.

Table 11

Mean Scores of the Barrier Items – Faculty Teaching Web Enhanced Course versus Faculty Not
Teaching Web Enhanced Courses

Barrier Item	Mean web enhanced	Mean not web enhanced
Increased time commitment	3.12 (1)	3.44 (1)
Concern about faculty work load	2.83 (2)	3.06 (3)
Difficulty keeping current with technological changes	2.41 (3)	2.81 (6)
Lack of adequate technology-enhanced classrooms/labs/ infrastructure	2.36 (4)	2.78 (7)
Lack of money to implement web-enhanced courses	2.33 (5)	2.58 (11)
Lack of knowledge about enhancements	2.33 (6)	2.95 (5)
Lack of person-to person contact (i.e. lack of face-to-face Interaction with students)	2.31 (7)	3.25 (2)
Concern about faculty incentives	2.27 (8)	2.37 (20)
Information overload	2.26 (9)	2.57 (13)
Concern about faculty compensation	2.24 (10)	2.24 (23)
Lack of technical support	2.23 (11)	2.60 (10)
Lack of your own personal technological expertise	2.20 (12)	3.03 (4)
Lack of adequate student/participant access	2.19 (13)	2.68 (8)
Inability to adequately monitor the identity of the web-enhanced participants/students	2.16 (14)	2.66 (9)
Lack of training provided by the organization	2.16 (15)	2.58 (12)
Copyright/fair use issues	2.13 (16)	2.17 (25)
Organizational inertia and resistance to change	2.08 (17)	2.23 (24)
Lack of the "right" people to implement a web enhancement	2.06 (18)	2.42 (18)
Lack of encouragement	2.06 (19)	2.37 (21)
Concern for legal issues (e.g., computer crime; hackers; software piracy; computer viruses)	2.01 (20)	2.15 (26)
Lack of policy concerning intellectual property rights/ownership	1.92 (21)	2.12 (27)
Disruption of the classrooms traditional social organization	1.86 (22)	2.56 (14)
Concern that enhancement lowers the quality of student work	1.83 (23)	2.52 (16)
Lack of a champion for web enhancement in the organization	1.80 (24)	2.01 (28)
Concern about promotion and tenure consideration	1.76 (25)	1.65 (33)
Concern that enhancement lowers the quality of courses	1.76 (26)	2.52 (15)

Lack of adequate instructor access	1.73 (27)	2.41 (19)
Fear of technology	1.70 (28)	1.95 (29)
Concern that enhancement lowers learning expectations	1.67 (29)	2.36 (22)
Lack of identified need for course enhancement	1.66 (30)	2.45 (17)
Computers perceived as potential replacement for instructors' expertise and experience	1.65 (31)	1.92 (30)
Faculty feel job security is threatened	1.53 (32)	1.69 (32)
Threat to instructor sense of competence and authority	1.44 (33)	1.79 (31)

The table illustrates several interesting points. Items that have been considered as barriers for several years, i.e. job security and fear of technology, rank very low on the barrier scale. Lack of money and faculty incentives rank higher with faculty who web enhance than with those who do not web enhance. Lack of person-to-person contact ranks higher with those who do not web enhance (2) than with those who do web enhance (7) which is an indication that contact problems are overcome when enhancement is accomplished. Increased time commitment and workload concerns continue to be classed as strong barriers by both groups.

An extremely interesting point is the dispersion of the means found in this table. With a range of choices from one to five, a three is the mid-point of the choices. Only one item had a mean of three or more according to the respondents who web enhance and only four items had a mean of three or more according to the respondents who do not web enhance. Also there is little difference in the responses of both groups of respondents with regard to the barriers.

<div align="center">Adopter Categories</div>

This section addresses research question 5, "Where do individual TBR institutions currently stand in relation to Rogers' categories of adopters"? Rogers (1995, pp. 262-265), defined five categories of technology adopters. These categories were 1) innovators, 2) early adopters, 3) early majority, 4) late majority, and 5) laggards. The basis for the inclusion into the

various categories is attributed to the "s-shaped curve of adoption" which demonstrates that if the cumulative number of adopters is plotted, the result is an s-shaped curve. The data from this curve can also be represented by a bell-shaped curve (Rogers, 1983, p. 243).

The adopter categories follow the distribution of the bell-shaped curve, with the divisions into the various categories occurring at -2 standard deviations, -1 standard deviation, the mean or X-bar, and +1 standard deviation. The last category, laggards, could have been divided into an early and late laggard category, but the determination was made that this was unnecessary (Rogers, 1983, pp. 246-247).

Although the adopter categories are based on the time when an individual within an organization adopts a particular innovation, they are also based on the percentage of the population who have already adopted the innovation. It would be nearly impossible to base this classification strictly on time, as it is highly likely that some individuals in an organization will never adopt the particular innovation.

"Innovators" account for the first 2.5% of the adopter population. The next 13.5% are known as of "early adopters." The next 34% of adopters are called the "early majority." The next 34% of adopters are known as the "late majority." The last 16% to adopt were called "laggards" (Geoghegan, 1994). Using this categorization, it is possible to classify the stage of adoption into which each TBR institution would fall, based on the percentage of their full-time faculty who have adopted web enhancement.

One problem with using the original adopter categories is that the connotation of innovator and laggard is reversed when used with organizations. If an organization is in the innovator stage, it does not necessarily mean that it is an innovative organization, but rather that it is just starting to adopt the technology. The connotation that an organization is "laggard" is

that it is lagging behind, when in actuality, it means that over 84% of the organization has

adopted the innovation and they are in the latter stages of adoption. A change in the category

titles would make the categories more useful for organizational stages.

In order to determine if the responses from each institution were representative of its

portion of the TBR population, Table 12 was prepared to cross-reference the percentage of the

total TBR faculty that each institution represents. This was compared with the percentage of the

total responses that was contributed by each institution.

Table 12

Comparison of Total Full-Time TBR Faculty and Total Responses by Institution

Total TBR Full-time Faculty: 4990
Total Responses: 1002

	Percentage of Total TBR Faculty	Percentage of Total Responses
Austin Peay State University (APSU)	5.39%	7.09%
Cleveland State Community College (CLSCC)	1.26%	2.59%
Columbia State Community College (COSCC)	1.94%	2.10%
Chattanooga State Technical Community College (CSTCC)	3.45%	4.29%
Dyersburg State Community College (DSCC)	1.14%	1.60%
East Tennessee State University (ETSU)	13.71%	12.77%
Jackson State Community College (JSCC)	2.30%	2.10%
Motlow State Community College (MSCC)	1.62%	0.90%
Middle Tennessee State University (MTSU)	16.53%	14.17%
Nashville State Technical Community College (NSCC)	2.81%	2.99%
Northeast State Technical Community College (NSTCC)	1.86%	5.09%
Pellissippi State Technical Community College (PSTCC)	3.57%	2.59%
Roan State Community College (RSCC)	2.79%	2.50%
Southwest Tennessee Community College (STCC)	5.27%	4.29%
Tennessee State University (TSU)	8.12%	4.19%
Tennessee Technological University (TTU)	7.25%	8.68%
University of Memphis (UofM)	15.49%	13.77%
Volunteer State Community College (VSCC)	2.91%	3.09%
Walters State Community College (WSCC)	2.59%	5.19%

Although the percentage of responses from most institutions was consistent with the percentage of the total full-time faculty population, several institutions failed to provide a minimum of 30 responses, which, as the general rule of thumb for means, is considered to be the minimum number of observations (Rosenberg & Handler, 1998). Three institutions contributed over 100 responses, but in each of these cases, the 100+ responses equated to less than 20% of their full-time faculty. Several smaller institutions having fewer than 100 full-time faculty contributed fewer than 30 responses, but in one case, the 26 responses equated to 41.27% of their full-time faculty.

In order to set firm guidelines for inclusion of an institution in this portion of the study, it was determined that because the total responses to the study equated to 20.08% of the total TBR full-time faculty, for an institution to be considered in this research question, its total responses must have either been greater than or equal to 20% of their total full-time faculty, or it must have contributed a minimum of 30 responses to the study. This criterion eliminated four institutions from this research question. The institutions not included were Jackson State Community College (21 responses, 18.26% of its total full-time faculty), Motlow State Community College (9 responses, 11.11% of its total full-time faculty), Pellissippi State Technical Community College (26 responses, 14.61% of its total full-time faculty), and Roane State Community College (25 responses, 17.99% of its total full-time faculty).

Based on the responses from the remaining institutions, Table 13 was prepared to cross-reference the percentage of faculty at each institution who are using web enhancement in their courses. Included is the percentage of the institutions total full-time faculty who responded to the study. Items in parentheses represent the total number of faculty in each category.

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Table 13

Percentage of Full-time Faculty Who Web Enhance Their Courses By Institution – Cross-referenced with the Percentage of Full-Time Faculty Responses

Institution	Percentage of Responding Faculty who Web Enhance	Percentage of Full-Time Faculty Responding
Austin Peay State University (APSU)	67.61 (48)	26.39 (71)
Cleveland State Community College (CLSCC)	34.62 (9)	41.27 (26)
Columbia State Community College (COSCC)	52.38 (11)	21.65 (21)
Chattanooga State Technical Community College (CSTCC)	76.74 (33)	25.00 (43)
Dyersburg State Community College (DSCC)	68.75 (11)	28.07 (16)
East Tennessee State University (ETSU)	69.53 (89)	18.71 (128)
Middle Tennessee State University (MTSU)	66.90 (95)	17.21 (142)
Nashville State Technical Community College (NSCC)	40.00 (12)	21.43 (30)
Northeast State Technical Community College (NSTCC)	76.47 (39)	54.84 (51)
Southwest Tennessee Community College (STCC)	44.19 (19)	16.35 (43)
Tennessee State University (TSU)	57.14 (24)	10.37 (42)
Tennessee Technological University (TTU)	66.67 (58)	24.03 (87)
University of Memphis (UofM)	68.84 (95)	17.85 (138)
Volunteer State Community College (VSCC)	54.84 (17)	21.38 (31)
Walters State Community College (WSCC)	73.08 (38)	40.31 (52)

As indicated by the table, with the exception of Cleveland State Community College, Nashville State Technical Community College, and Southwest Tennessee Community College, over 50% of the respondents web enhance. This could be an indication that web enhancement is widely used in each institution. However, as also indicated by the table, fewer than 30% of the institutions' faculty responded, with the exception of Northeast State Technical Community College (54.84%), Cleveland State Community College (41.27%), and Walters State Community College (40.31%). Therefore, the high percentages of respondents who web enhance could also be an indication that those who responded to the study felt strongly for or against web enhancement, and the general faculty population failed to respond. Due to this uncertainty and

the limited percentage of faculty responses the data related to this research question must be considered skewed in favor of web enhancement.

Figure 9 displays the institutions with respect to Rogers' categories of adopters.
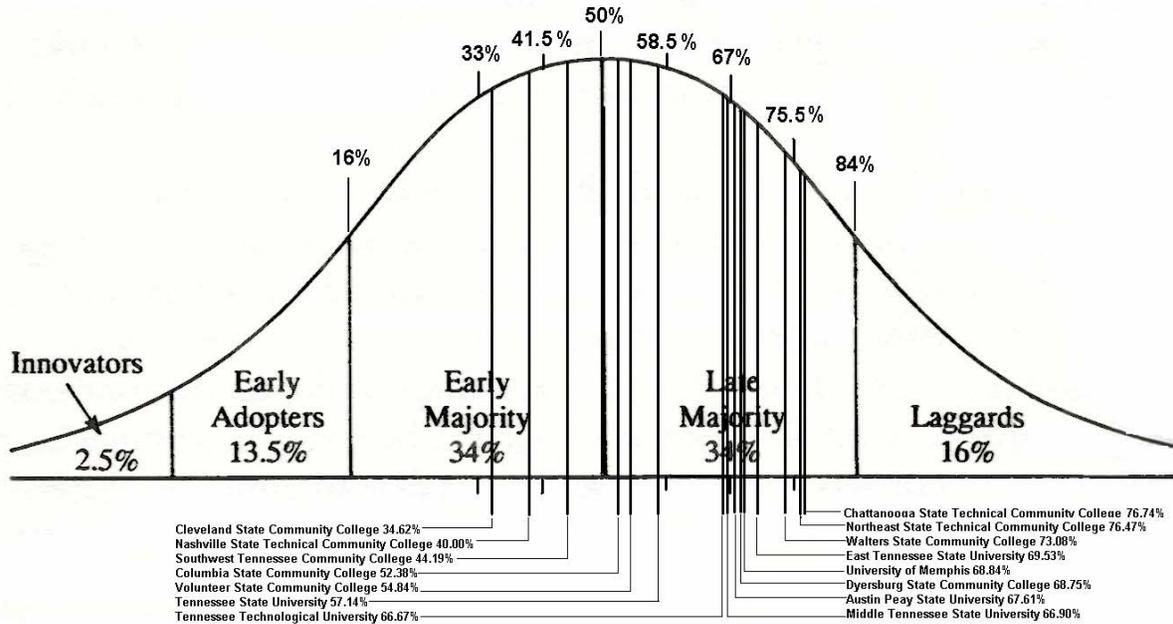
Figure 9. TBR Institution's Full-Time Faculty Use of Web Enhancement in Relation to Rogers' Categories of Adopters.

Based on the data available, the majority of the institutions in the TBR system can be considered to be in either the Early or Late Majority stages of technology adoption with regard to web enhancement of traditional courses. Due to the low percentage of responses from each institution, the percentage of web enhancement within each institution may be overstated.

At the conclusion of the survey, Survey Item #48 allowed the participants to list any other items that they considered to be a barrier to web enhancement that were not mentioned in the survey questions. Due to the extremely large number of comments provided, the entire list is contained in Appendix I.

Although this area was provided for additional barriers, many respondents used it as a general comment area as well. Many of the comments expand upon the items listed in the survey and give additional qualifying data. As this study was quantitative in nature, this qualitative data will only be mentioned briefly.

Based upon the comments received, the respondents can be classified into four major categories: those who are strongly in favor of web enhancement, those who are strongly opposed to web enhancement, those who answered strictly as a courtesy, and those who wished a forum for their views. Indications are that there were few "neutral" respondents to the study.

There were a few barrier items mentioned that faculty indicated were not covered, but upon close inspection, they were found to be essentially an expansion of items already in the survey.

CHAPTER 5

SUMMARY, CONCLUSIONS, AND RECOMMENDATIONS

Introduction

This chapter summarizes the data analysis and the results presented in Chapter 4 of this study. It provides conclusions drawn from the survey results analyzed in Chapter 4 and is organized by the five research questions posed in Chapters 1 and 3. Conclusions drawn from the overall study and suggested recommendations for areas of future research are also presented.

Summary

The purpose of this study was to examine faculty reluctance to providing students with access to course resources via the Internet. The study explored the perceptions of full-time faculty within the Tennessee Board of Regents two-year and four-year institutions with regard to perceived barriers to web enhancement of traditionally taught courses. Personal and professional demographic factors were collected such as age, years of service, gender, tenure status, highest degree earned, job function, teaching discipline, academic rank, and type of institution. This information was used to determine if any of these factors would be useful in profiling faculty who either had a propensity for or reluctance to web enhancement.

An on-line survey was developed and designed to gather information to address the research questions in the study. The survey consisted of 48 questions, including areas for comments and remarks from faculty members. E-mail addresses of all full-time faculty at the 13 community colleges and six universities within the TBR system were obtained, or a contact person at individual departments or institutions was identified who would forward the e-mail

correspondence to the faculty members. Four thousand nine hundred ninety full-time faculty were identified and contacted. Two follow-up e-mails were sent resulting in 1065 responses being placed in the Microsoft Access database. After eliminating accidental duplicates caused by double clicking the submit button, 1002 valid records were extracted, yielding a 20.08% response rate. The data were converted to Microsoft Excel and imported into SPSS 11.0.1 for statistical analysis. Descriptive statistics were used to address research questions 1, 4, and 5 in the study. Chi-square was used to investigate research questions 2 and 3 for any possible association between demographic variables and whether or not the faculty member had ever taught a web-enhanced course.

<div align="center">Summary of Findings</div>

Five research questions were stated in Chapter 1 and again in Chapter 3 to meet the purpose of the study. Survey questions were designed to address these questions. The following are the findings from the study for each research question.

Findings Related to Research Question 1:

Research Question 1 asked "Which barriers to web enhancement predominate within the TBR system"? Survey questions 15 – 47 addressed this question. Results from the survey indicated that the top 15 barriers within the system were: Increased time commitment, Concern about faculty work load, Lack of person-to person contact (i.e. lack of face-to-face interaction with students), Difficulty keeping current with technological changes, Lack of knowledge about enhancements, Lack of adequate technology-enhanced classrooms/labs/infrastructure, Lack of your own personal technological expertise, Lack of money to implement web-enhanced courses, Information overload, Lack of adequate student/participant access, Lack of technical support,

Inability to adequately monitor the identity of the web-enhanced participants/students, Lack of training provided by the organization, Concern about faculty incentives, and Concern about faculty compensation.

<u>Findings Related to Research Question 2.</u>

Research Question 2 asked, "Are there any demographic indicators that will predict reluctance to develop or a propensity for web enhancement?" The demographic indicators were years of service, age, and gender.

With regard to years of service, it was found that faculty with 15 or fewer years of service were more likely to develop web-enhanced courses that were faculty with 16 or more years of service. Age was not found to be a significant indicator of whether or not a faculty member would web enhance. All age groupings appeared to accept or reject enhancement equally.

Statistical significance was found in testing gender. It was found that although the number of male and female respondents was almost equal, females were more likely to web enhance courses than were males.

<u>Findings Related to Research Question 3.</u>

Research Question 3 asked, "Are there any particular academic indicators such as type of degree or area of study, faculty ranking or status, tenure, institution type, and job function that will predict reluctance to develop or a propensity for web enhancement"?

Statistical significance was found with regard to academic rank. It was found that faculty holding Assistant Professor, Associate Professor, or Professor rank were more likely to develop web-enhanced courses than were faculty holding Instructor rank.

Statistical significance was also found with regard to highest degree earned.   Faculty holding doctorate degrees were more likely (less reluctant) to web enhance. This conclusion is suspect, however, because approximately 60% of the respondents hold doctoral degrees.

Teaching discipline area was also found to be significant in that certain discipline areas seemed more likely to be enhanced than did others. Art and performance-based disciplines appeared to be least likely to be web enhanced. Certain disciplines are suspect due to their extremely low number of responses.

Tenure status was not found to be statistically significant with regard to web enhancement. Faculty will web enhance whether they are tenured or not.

The type of institution that a faculty member works at was found to be only of marginal significance. Faculty at four-year universities were found to be more likely to web enhance than were faculty at two-year community colleges.

Job function was found not to be statistically significant, but it was determined that this association is meaningless, however, since it is extremely doubtful that non-teaching faculty will engage in web enhancement of courses. What is interesting is how many non-teaching faculty have engaged in web enhancement when they were teaching.

Findings for Research Question 4.

Research Question 4 asked "For faculty already using web enhancement, are there any factors that are still viewed as barriers to web enhancement"? Results from the survey indicated that the top 15 barriers among those faculty already using web enhancement were: Increased time commitment, Concern about faculty work load, Difficulty keeping current with technological changes, Lack of adequate technology-enhanced classrooms/labs/infrastructure, Lack of money to implement web-enhanced courses, Lack of knowledge about enhancements,

Lack of person-to person contact (i.e. lack of face-to-face interaction with students), Concern about faculty incentives, Information overload, Concern about faculty compensation, Lack of technical support, Lack of your own personal technological expertise, Lack of adequate student/participant access, Inability to adequately monitor the identity of the web-enhanced participants/students, and Lack of training provided by the organization.

Table 11 in Chapter 4 provides a composite breakdown of mean scores for each item with regard to whether the respondent has taught a web-enhanced course or not. The same 15 barrier items were included in the top 15 barriers for the TBR as a whole and for those who have taught web-enhanced courses, which is possibly a result of the majority of respondents having taught web-enhanced courses. Some of the barrier items were not in the same order, however, which is an indication the act of teaching a web-enhanced course may change the perception of the degree of importance of a barrier. Of particular interest, however, was a comparison of the top 15 barriers of those faculty who have taught a web-enhanced course to the top 15 barriers of those faculty who have not taught a web-enhanced course. Missing from the list of barriers of those who have taught web enhancement but included in the top 15 of those who have not taught a web-enhanced course are disruption of the classrooms traditional social organization and concern that enhancement lowers the quality of courses. This would indicate that these items can be easily taken care of through careful design of the web-enhanced course.

Also of interest was how similar the responses of those who web enhance were to the responses of those who do not web enhance. The means of the responses indicate that the barriers are viewed in a similar manner irregardless of whether the respondent web enhances or does not web enhance.

<u>Findings for Research Question 5.</u>

Research Question 5 asked "Where do individual TBR institutions currently stand in relation to Rogers' categories of adopters"? Using Rogers' categories of adopters could be helpful for institutions to plan for future technology acquisitions and help them to gauge the need for future support.

Green (1996) reported that data reveal that the use of information technology in education is breaking past the innovator and early adopter stage into the ranks of the mainstream faculty. A rising minority, in excess of 16 million, of students and faculty now have some experience in technology-based learning activities.

Within the categories of adopters, Innovators accounted for the first 2.5% of the adopter population. Their most dominant characteristic was termed venturesome. They may be rash, daring, and risky. Innovators would include the "techies" who would be experimentalists who latch onto a new technology as soon as it appears (Geoghegan, 1994).

The next 13.5% (up to 16% of the population) were known as of early adopters and their most dominant characteristic was respect. They would hold a degree of opinion leadership within the organization (Rogers, 1995). Early adopters would be risk takers and not be afraid of failure. They would have an interest in technology and a concern for professional problems and tasks (Geoghegan, 1994).

The next 34% of adopters (up to 50% of the population) were called the early majority and their most dominant characteristic would be deliberate (Rogers, 1995). The early majority would be "pragmatists" and makeup the half of the mainstream to first embrace technology. Their focus was more on teaching and research rather than on the tools but they would not afraid of technology (Geoghegan, 1994).

The next 34% (up to 84% of the population) of adopters were known as the late majority. Their most dominant characteristic would be skepticism. Peer pressure would be necessary for them to adopt change (Rogers, 1995). The late majority were more conservative or "skeptical" then the early majority. They were similar in many respects to the early majority though less comfortable with technology. They would normally accept change late in the game after it has already been established among the majority (Geoghegan, 1994).

 The last 16% to adopt were called laggards. Their most dominant characteristic was called traditional. They tended to be suspicious of innovations and change agents (Rogers, 1995). They were the most likely never to adopt change (Geoghegan, 1994).

Rogers (1995) also suggested that a new idea is adopted because of discussions between potential users. The first person to adopt a new technology discusses this with peers who in turn adopt the technology and discuss it further.

It is essential that we recognize mainstream faculty as a distinct and definite grouping within the academic community. As such, the concept of technology enhancement must be "sold" to them differently than to other groups (Geoghegan, 1994).

If Geoghegan and Rogers are correct, as the percentage of adopters increases, the adoption rate starts to slow. This is attributed to the "s-shaped curve of adoption" that demonstrates if the cumulative number of adopters is plotted, the result is an s-shaped curve. The data from this curve can also be represented by a bell-shaped curve (Rogers, 1983, p. 243). The adoption rate starts slowly, at the beginning, speeds up in the middle, then starts to slow again at the end. By knowing where each institution resides on this scale, administrators can predict the possibility of future enhancements.

Four schools, Jackson State Community College, Motlow State Community College, Pellissippi State Technical Community College, and Roane State Community College were excluded from this analysis due to an insufficient number of responses being received. Of the remaining schools, only Cleveland State Community College, Northeast State Technical Community College, and Walters State Community College responded with over 30% of their full-time faculty population.

Owing to the small total percentage of respondents and to the fact that survey-wide 66% of the respondents have taught web-enhanced courses, the values reported for this research question may be positively skewed. This could indicate a higher percentage of adopters than is accurate.

Based on the responses submitted, all of the institutions are in either the Early or Late Majority categories (See Figure 9 in Chapter 4). Chattanooga State Technical Community College (76.74%), Northeast State Technical Community College (76.47%), and Walters State Community College (73.08%) lead the institutions in web enhancement. Only Southwest Tennessee Community College (44.19%), Nashville State Technical Community College (40.00%), and Cleveland State Community College (34.62%) are still in the Early Majority category.

Conclusions

The purpose of this study was to examine faculty reluctance to providing students with access to course resources via the Internet. The study explored the perceptions of full-time faculty within the Tennessee Board of Regents two-year and four-year institutions with regard to

perceived barriers to web enhancement of traditionally taught courses. It also explored where the TBR institutions fall within Roger's categories of adopters.

Conclusion 1: Time, workload related issues, compensation, and recognition issues predominate as barriers to web enhancement.

According to the findings, the barriers that predominate within the TBR system and which may prevent the use of web enhancement fall within the categories of time and workload, compensation and recognition, concern over instructional quality, problems with technology, lack of support, lack of access, and fear of technology. These are the same areas reported by Bers (1999), Wedman et al. (2001), Cross (1981), Michaels (1996), Kruger (2000), and Vilberg (2001). Although the time involved in the initial setup of the web enhancement can be extensive, many faculty do find that the time factors in subsequent offerings of the course shift from preparation to student interaction.

Concerns over time and workload will always be present as long as new innovation is required to coincide with existing methods of production. As budgetary constraints cause personnel rosters to be kept to a minimum, faculty will see little relief from sometimes doing "double duty" or performing tasks that they feel are not their responsibility.

Concerns over compensation and recognition will also continue as long as administration and governing bodies fail to recognize innovation as a viable criterion for promotion and merit. Several comments, (See Appendix I) allude to the lack of recognition for innovation. Unless an institution is geared to recognize verifiable and sustainable innovation on the same basis as publication, there will be little incentive to innovate.

Concerns over instructional quality can be dealt with by establishing concrete standards for content and communication. According to Taylor and Eustis (1999), an attitudinal change

has been necessary when institutions of higher education have used technology for training. For the better part of a century "synchronous" teaching, or both teachers and students meeting in a specific place and a specific time, has been the norm. Also, decisions regarding what and how students learn should be the result of collaboration between faculty, instructional designers, students, and college and university administrators as they were within the context of the demands of the institution. A change from "instructor centered" to "student centered" learning may be necessary.

Conclusion 2: Problems with technology, lack of support, lack of access, and fear of technology need to be approached from the standpoint of education for instructional personnel.

Several comments (See Appendix I) allude to inadequate training and instruction of faculty in the use of technology. The number of these comments are, however, fewer than expected. Conversely, several comments also indicate an extreme satisfaction with the technical support received at specific institutions.

Training of faculty needs to be conducted in a different manner than has been the norm. This training is best done by peers who have already embraced the technology and have already accomplished many of the activities that are needed. Traditional training sessions designed for faculty are of little use as the faculty member may not get around to using the training for several months. By that time, any skills acquired from the training have been lost. Training sessions of this sort need to be informational only. Support needs to be available when the faculty member needs it, i.e. when the task is being performed. This is when the real learning takes place, when the need is identified to accomplish a specific task. By having peers available to assist with a problem when it arises, faculty will feel more inclined to embrace new technologies.

Conclusion 3: Female faculty were more likely to web enhance than are male faculty.

Based on the results of this study, female faculty members are more likely to use web enhancement than are male faculty members (See Figure 3). The gender grouping of respondents into male and female were essentially equal as to the number of respondents, yet females were decidedly in the majority when it comes to web enhancement.

Conclusion 4: Newer faculty (fewer years of service) are more likely to web enhance than are faculty with more years of service.

Faculty with 15 or fewer years of service (See Table 2, Figure 1) show a decidedly higher rate of web enhancement than do faculty with 16 or more years of service. This is possibly due to the influence of the Internet, which is 16 years old in 2004 (Lennertz, 1999, p. 3). Many of the faculty with 16 or more years of service were never influenced by the Internet in their own education. Having taught for many years without using this resource, they may not see its need at this time.

Conclusion 5: Disciplines predominantly involved with tactile manipulations or that are predominantly performance-based (performing arts, sports, engineering technologies, natural sciences) are less likely to be web enhanced than are other disciplines.

Exceptions to this conclusion appear to be biology and nursing which showed strong enhancement according to the data submitted for this study. The disciplines which were most likely to be enhanced were biology, business administration, communication, computer science, education, English, nursing and psychology.

There is indication from the data gathered that disciplines involving tactile manipulations or are dependent on physical activity are less likely to be candidates for web enhancement than

are other disciplines. This could, however, be a result of a misconception that web-enhanced courses are predominantly Internet-based with little or no classroom contact.

Conclusion 6: Due to the limited number of responses from individual institutions, categorization of institutions according to Rogers' Categories of Adopters is not possible with complete accuracy at this time.

Results of this study were inconclusive for this item. Indications are that TBR institutions are well on their way to saturation with this innovation, but numbers of responses tended to be less than 20% for many of the larger institutions and greater than 35% for only three institutions. Also, because 66% of the respondents indicated that they had already web enhanced, it is possible that only those faculty who either felt strongly for web enhancement, or felt strongly against it were the only ones who responded. This would mean that to make a definitive statement as to the current status of the all institutions at this time would be premature.

Recommendations

Recommendations were derived from personal experience, the literature review, and the findings in this study. Suggested recommendations will take two parts: 1) general recommendations for institutions and the TBR system, and 2) recommendations for future research.

Recommendations for Institutions and the TBR System.

Recommendation 1:   Recognize and reward innovation in teaching in the same way that publication is recognized.

Although promotion and tenure concerns were not recognized as a major barrier, several comment allude to the amount of work involved in keep current with technologies for which no recognition is given. While it is a major concern professionally for faculty to publish and be considered experts in their fields, it is often forgotten by institutions that instruction is also the faculty's field of expertise. Innovation in instructional delivery needs to be encouraged if institutions are not to become extinct in the 21st century.

Recommendation 2:   Provide incentives for peer mentors of technology innovation.

This should become your first line technical support. Peer mentors who are readily accessible to faculty when a problem arises will be the catalyst that fosters innovation at the departmental level. Faculty will be more than willing to attempt innovation if there is someone who can readily "hold their hand" the first few times until they acquire a comfort zone. Departmental peers are less likely to be viewed as a "techie" who will look down their noses at the faculty member's first attempts at technology use.

Recommendation 3:   Recognize that a change in culture requires a change in standards. First-line administration has to demand a change in methods and provide the incentives to make those changes.

Technology use will either have to be mandated or it will take a generation for the change to come about naturally. Either way, the use of technology will have to bring about institutional cultural change. Just as the need to take work home for grading and preparation brought about the acceptance of a reduced week with regard to hours in the office, so will the use of technology and the need to contact students from home via e-mail and to conduct mentoring sessions with students from home, require a change in academic standards for those faculty who are willing to engage in innovation.

Recommendation 4:   Educate all faculty in the benefits of partial web enhancement, including grade distribution, secure e-mail, and document distribution.

Results of the study indicate that many faculty do not recognize the difference in web enhancement and a web course. Web enhancement allows for many of the normal tasks of teaching to be automated and relieve the faculty member of the performance of repetitive tasks. Many comments obtained by the study indicate that a large percentage of faculty have embraced and enjoy the benefits of web enhancement and, having reached their comfort zone, would not want to change back to their old methods.

Recommendation 5:   Identify and publish on each institution's website a contact person who can distribute requests for survey participation to all or partial groups of full-time and adjunct faculty and various administrators.

As a result of attempting to gain access to faculty contact information for this study, it was discovered that many institutions have chosen not to provide faculty contact information. In many cases this has been prompted by the increase in SPAM e-mail and programs that will "harvest" e-mail addresses from websites. There is, however, a need to contact institutions for studies of this nature, and having a designated contact person who will be responsible for distributing the requests would alleviate the problem.

Recommendation 6:   Require online publication of telephone numbers to all administrative and academic departments.

During the attempt to gain access to the faculty contact information for this study, it was discovered that several institutions do not have any contact information for their academic departments. One institution only listed a single telephone number for the campus, and it appeared to be unmanned for several hours a day. As TBR institutions are "public" institutions

and receive public funding, it gives the very real impression of not wanting to be bothered with outside contacts if the public cannot get access to the institutions or their departments.

Recommendation 7:   Provide release time for faculty to develop their first web-enhanced course.

As time is the major barrier identified by this study, it is recommended that if no other incentive can be given to encourage web enhancement, release time to develop the first enhanced course should be considered. Guidelines for what constitutes a web enhanced course would need to be developed and the results could be gauged against those guidelines.

Recommendations for Future Research

Recommendation 1:   Complete this study on an institutional basis.

This study was attempted on a system-wide basis. As a result, the responses from individual institutions were not considered to be adequate to view each institution separately. The same study could be conducted at each institution and the results could then be compared against this study.

Recommendation 2:   Study the need for "revamping" the concept of "office hours" when used in connection with online courses.

Online courses, as opposed to web enhanced courses, require faculty to provide services to students in a different manner than are provided to students who attend a class on-site. As a result, many of the services provided during office hours must be duplicated at times when faculty would normally not be considered to be in their office. A policy change may be required to allow for equity in this matter.

Recommendation 3:   A qualitative study on the pros and cons of web enhancement.

The plethora of comments garnered by this study indicates that this is a topic that could easily be used in a qualitative study. Further indications are that this topic is one that has little neutrality. Faculty appear to either be very much in favor of web enhancement or very much against it.

Recommendation 4:   A time study comparison of students who complete a low level online course the take a higher level on-site course.

Although not considered to be a strong barrier by this study, Concern that web enhancement lowers the quality of student work is still listed as a concern by faculty. This is reinforced by several comments found in this study (See Appendix I). A study that tracks student progress from online courses to a higher level on-site courses and compares their progress against students who take courses totally on-site might do much to either alleviate or reinforce these concerns.

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APPENDICES

Appendix A: Permission to Use Barriers Survey

Return-path: <berge@umbc.edu>
Received: from mx2out.umbc.edu (mx2out.umbc.edu [130.85.25.11])
 by NORTHEASTSTATE.EDU (PMDF V5.2-31 #31107)
 with SMTP id <01KY0NLVZFYM00S3DQ@NORTHEASTSTATE.EDU> for
 tbwallace@NORTHEASTSTATE.EDU (ORCPT rfc822;tbwallace@NortheastState.edu); Tue,
 8 Jul 2003 13:37:21 EDT
Received: from umbc7.umbc.edu (guest@umbc7.umbc.edu [130.85.6.7])
 by mx2out.umbc.edu (8.12.8/8.12.8/UMBC-Central 1.11 mxout 1.2.2.3 $)
 with ESMTP id h68HbI1D016095   for <tbwallace@NortheastState.edu>; Tue,
 08 Jul 2003 13:37:19 -0400 (EDT)
Received: from localhost (berge@localhost)   by umbc7.umbc.edu (8.12.8/8.12.8)
 with ESMTP id h68HbIBJ1912067 for <tbwallace@NortheastState.edu>; Tue,
 08 Jul 2003 13:37:18 -0400 (EDT)
Date: Tue, 08 Jul 2003 13:37:18 -0400
From: "Zane L. Berge, Ph.D." <berge@umbc.edu>
Subject: Re: Request for use of resources
In-reply-to: <5.2.0.9.1.20030708125852.01a44070@NortheastState.Edu>
To: Tom Wallace <tbwallace@NortheastState.edu>
Message-id: <Pine.SGI.4.44L.01.0307081335460.1986394-100000@umbc7.umbc.edu>
MIME-version: 1.0
Content-type: TEXT/PLAIN; charset=US-ASCII
X-AvMilter-Key: 1057686140:d758c6a775ed502305c76ba1fb81212a
X-Avmilter: Message Skipped, too small
X-Processed-By: MilterMonkey Version 0.9 -- http://www.membrain.com/miltermonkey
X-Authentication-warning: umbc7.umbc.edu: berge owned process doing -bs
Original-recipient: rfc822;tbwallace@NortheastState.edu

Dear Tom,

You have my permission to use the survey, in whole or in part, as
described below.

I assume you have seen the publications that came out of that
research.... www.emoderators.com, and select "The Barriers
Research.

Good luck!

Regards,
Zane

Zane Berge, Ph.D.
Associate Professor
berge@umbc.edu
www.emoderators.com

On Tue, 8 Jul 2003, Tom Wallace wrote:

> Dr. Berge,
>
> My name is Tom Wallace and I am a Doctoral Student at East Tennessee State
> University. I am preparing a prospectus to present to my committee for my
> dissertation entitled, "Barriers to Web-Enhancement of Courses by Full-time
> Faculty in Tennessee Board of Regents Institutions." I came across your
> Barriers to Distance Education Survey Instrument (Version June 20, 1999) on
> the Internet and would like your permission to use all or part of that
> instrument, with or without modification of the questions, as part of my
> research instrument. I will be more than happy to give appropriate
> citational credit to you for the items used.
>
> While there are some questions in the instrument that are not applicable to
> my study, there are several that would work nicely. I will also be happy
> to send you an electronic copy of my dissertation when I am completed.
>
> Thank you very much for your consideration.
>

Appendix B: Barriers to Web Enhancement of On-site Courses Survey

NOTE: This instrument has been adapted with permission from Zane Berge, Ph.D.

Please provide the following demographic information. This information is for use solely for the purpose of verifying the validity of the data captured, or for groupings during the data analysis. No individual response record will be given to anyone. Please click on the "Submit Survey" button as the end of the survey to complete the process and send your information. Please click the "Submit Survey" button only one time. If you are using a dial-up line, the confirmation from your submission may take several seconds. Thank you for your participation.

Demographic Data

1. E-mail address: [   ] (Optional)

2. Home institution: [   ]

3. Academic rank: [Click Here ▼]

4. Highest degree earned: [Click Here ▼]

5. Discipline area (please type in your teaching discipline area): [   ]

6. Are you tenured? ☐ Yes ☐ No

7. Years of service: ☐ 1-5 ☐ 6-10 ☐ 11-15 ☐ 16-20 ☐ 21-25 ☐ 26-30 ☐ Over 30

8. Age: ☐ Below 25 ☐ 26-35 ☐ 36-45 ☐ 46-55 ☐ 56-65 ☐ Over 65

9. Gender: ☐ Male ☐ Female

10. I work in a
☐ four-year university ☐ two-year community college ☐ Other: Please specify
[   ]

11. My current job function is
☐ support staff ☐ teaching faculty ☐ manager/director/department chair ☐ higher administration

12. Including the current semester, have you taught a course within the last year? ☐ Yes
☐ No

Please use the following definition of a web-enhanced course in answering the remainder of the questions.

A web-enhanced course is a course that is taught primarily on site but includes at least one component other than e-mail that is accessed via the internet. Examples of additional components include but are not limited to: course materials/handouts, course syllabus, course calendar, online discussion, online chat, online quizzes or tests, online assignments and/or assignment submission other than as e-mail attachments .

13. Including the current semester, I have taught a web-enhanced course within the last year.
☐ Yes ☐ No

14. If you answered "No" to the previous question, have you ever taught a web-enhanced course? ☐ Yes ☐ No

I consider the following numbered items as a barrier to web-enhancement. Please use the following key:
     (No Barrier = Item is not/was not considered a barrier)
     (Weak Barrier = Barrier that usually does not prevent enhancement but causes difficulty)
     (Moderate Barrier = Barrier that may or may not prevent enhancement)
     (Strong Barrier = Barrier that usually prevents enhancement)
     (Very Strong Barrier = Barrier that always prevents enhancement)

     If you answer "No Barrier" please consider the selection "Has This Ever Been a Barrier" and answer accordingly.

15. Lack of identified need for course enhancement

☐ No Barrier   Has This Ever Been a Barrier? ☐ Yes ☐ No
☐ Weak Barrier
☐ Moderate Barrier
☐ Strong Barrier
☐ Very Strong Barrier

16. Lack of technical support

☐ No Barrier   Has This Ever Been a Barrier? ☐ Yes   ☐ No

☐ Weak Barrier

☐ Moderate Barrier

☐ Strong Barrier

☐ Very Strong Barrier

17. Concern about faculty compensation

☐ No Barrier   Has This Ever Been a Barrier? ☐ Yes   ☐ No

☐ Weak Barrier

☐ Moderate Barrier

☐ Strong Barrier

☐ Very Strong Barrier

18. Concern about faculty incentives

☐ No Barrier   Has This Ever Been a Barrier? ☐ Yes   ☐ No

☐ Weak Barrier

☐ Moderate Barrier

☐ Strong Barrier

☐ Very Strong Barrier

19. Concern about faculty work load

☐ No Barrier   Has This Ever Been a Barrier? ☐ Yes   ☐ No

☐ Weak Barrier

☐ Moderate Barrier

☐ Strong Barrier

☐ Very Strong Barrier

20. Concern about promotion and tenure consideration

☐ No Barrier   Has This Ever Been a Barrier? ☐ Yes   ☐ No

☐ Weak Barrier

☐ Moderate Barrier

☐ Strong Barrier

☐ Very Strong Barrier

21. Increased time commitment

☐ No Barrier   Has This Ever Been a Barrier? ☐ Yes   ☐ No

☐ Weak Barrier

☐ Moderate Barrier

☐ Strong Barrier

☐ Very Strong Barrier

22. Concern that enhancement lowers the quality of courses

☐ No Barrier   Has This Ever Been a Barrier? ☐ Yes   ☐ No

☐ Weak Barrier

☐ Moderate Barrier

☐ Strong Barrier

☐ Very Strong Barrier

23. Concern that enhancement lowers the quality of student work

☐ No Barrier   Has This Ever Been a Barrier? ☐ Yes   ☐ No

☐ Weak Barrier

☐ Moderate Barrier

☐ Strong Barrier

☐ Very Strong Barrier

24. Concern that enhancement lowers learning expectations

☐ No Barrier   Has This Ever Been a Barrier? ☐ Yes   ☐ No
☐ Weak Barrier
☐ Moderate Barrier
☐ Strong Barrier
☐ Very Strong Barrier

25. Lack of knowledge about enhancements

☐ No Barrier   Has This Ever Been a Barrier? ☐ Yes   ☐ No
☐ Weak Barrier
☐ Moderate Barrier
☐ Strong Barrier
☐ Very Strong Barrier

26. Lack of encouragement

☐ No Barrier   Has This Ever Been a Barrier? ☐ Yes   ☐ No
☐ Weak Barrier
☐ Moderate Barrier
☐ Strong Barrier
☐ Very Strong Barrier

27. Lack of training provided by the organization

☐ No Barrier   Has This Ever Been a Barrier? ☐ Yes   ☐ No
☐ Weak Barrier
☐ Moderate Barrier
☐ Strong Barrier
☐ Very Strong Barrier

28. Copyright/fair use issues

☐ No Barrier   Has This Ever Been a Barrier? ☐ Yes ☐ No

☐ Weak Barrier

☐ Moderate Barrier

☐ Strong Barrier

☐ Very Strong Barrier

29. Lack of your own personal technological expertise

☐ No Barrier   Has This Ever Been a Barrier? ☐ Yes ☐ No

☐ Weak Barrier

☐ Moderate Barrier

☐ Strong Barrier

☐ Very Strong Barrier

30. Lack of person-to person contact (i.e. lack of face-to-face interaction with students)

☐ No Barrier   Has This Ever Been a Barrier? ☐ Yes ☐ No

☐ Weak Barrier

☐ Moderate Barrier

☐ Strong Barrier

☐ Very Strong Barrier

31. Lack of adequate technology-enhanced classrooms/labs/infrastructure

☐ No Barrier   Has This Ever Been a Barrier? ☐ Yes ☐ No

☐ Weak Barrier

☐ Moderate Barrier

☐ Strong Barrier

☐ Very Strong Barrier

32. Disruption of the classrooms traditional social organization

☐ No Barrier   Has This Ever Been a Barrier? ☐ Yes   ☐ No

☐ Weak Barrier

☐ Moderate Barrier

☐ Strong Barrier

☐ Very Strong Barrier

33. Lack of adequate student/participant access

☐ No Barrier   Has This Ever Been a Barrier? ☐ Yes   ☐ No

☐ Weak Barrier

☐ Moderate Barrier

☐ Strong Barrier

☐ Very Strong Barrier

34. Lack of adequate instructor access

☐ No Barrier   Has This Ever Been a Barrier? ☐ Yes   ☐ No

☐ Weak Barrier

☐ Moderate Barrier

☐ Strong Barrier

☐ Very Strong Barrier

35. Threat to instructor sense of competence and authority

☐ No Barrier   Has This Ever Been a Barrier? ☐ Yes   ☐ No

☐ Weak Barrier

☐ Moderate Barrier

☐ Strong Barrier

☐ Very Strong Barrier

36. Organizational inertia and resistance to change

☐ No Barrier   Has This Ever Been a Barrier? ☐ Yes   ☐ No
☐ Weak Barrier
☐ Moderate Barrier
☐ Strong Barrier
☐ Very Strong Barrier

37. Difficulty keeping current with technological changes

☐ No Barrier   Has This Ever Been a Barrier? ☐ Yes   ☐ No
☐ Weak Barrier
☐ Moderate Barrier
☐ Strong Barrier
☐ Very Strong Barrier

38. Fear of technology

☐ No Barrier   Has This Ever Been a Barrier? ☐ Yes   ☐ No
☐ Weak Barrier
☐ Moderate Barrier
☐ Strong Barrier
☐ Very Strong Barrier

39. Computers perceived as potential replacement for instructors' expertise and experience

☐ No Barrier   Has This Ever Been a Barrier? ☐ Yes   ☐ No
☐ Weak Barrier
☐ Moderate Barrier
☐ Strong Barrier
☐ Very Strong Barrier

40. Concern for legal issues (e.g., computer crime; hackers; software piracy; computer viruses)

☐ No Barrier   Has This Ever Been a Barrier? ☐ Yes   ☐ No

☐ Weak Barrier

☐ Moderate Barrier

☐ Strong Barrier

☐ Very Strong Barrier

41. Faculty feel job security is threatened

☐ No Barrier   Has This Ever Been a Barrier? ☐ Yes   ☐ No

☐ Weak Barrier

☐ Moderate Barrier

☐ Strong Barrier

☐ Very Strong Barrier

42. Lack of a champion for web-enhancement in the organization

☐ No Barrier   Has This Ever Been a Barrier? ☐ Yes   ☐ No

☐ Weak Barrier

☐ Moderate Barrier

☐ Strong Barrier

☐ Very Strong Barrier

43. Information overload

☐ No Barrier   Has This Ever Been a Barrier? ☐ Yes   ☐ No

☐ Weak Barrier

☐ Moderate Barrier

☐ Strong Barrier

☐ Very Strong Barrier

44. Lack of policy concerning intellectual property rights/ownership

☐ No Barrier   Has This Ever Been a Barrier? ☐ Yes   ☐ No

☐ Weak Barrier

☐ Moderate Barrier

☐ Strong Barrier

☐ Very Strong Barrier

45. Lack of money to implement web-enhanced courses

☐ No Barrier   Has This Ever Been a Barrier? ☐ Yes   ☐ No

☐ Weak Barrier

☐ Moderate Barrier

☐ Strong Barrier

☐ Very Strong Barrier

46. Lack of the "right" people to implement a web-enhancement

☐ No Barrier   Has This Ever Been a Barrier? ☐ Yes   ☐ No

☐ Weak Barrier

☐ Moderate Barrier

☐ Strong Barrier

☐ Very Strong Barrier

47. Inability to adequately monitor the identity of the web-enhanced participants/students

☐ No Barrier   Has This Ever Been a Barrier? ☐ Yes   ☐ No

☐ Weak Barrier

☐ Moderate Barrier

☐ Strong Barrier

☐ Very Strong Barrier

48. Please list any other items that you do/did consider to be a barrier to web-enhancement, that was not mentioned in the above questions.

Please click the "Submit Survey" button below to complete the survey. Please click the "Submit Survey" button only one time. If you are using a dial-up line, the confirmation from your submission may take several seconds.

Submit Survey   Reset

THANK YOU FOR YOUR TIME.

If you would like a copy of the results of this survey, please be sure that your e-mail address is included in the demographic information at the beginning of the survey.

NOTE: This instrument has been adapted with permission from Zane Berge, Ph.D.

Appendix C: Request for Review of Survey Instrument

I am sending this e-mail as a request for you to be a member of a test group for a survey that I have prepared to go along with my prospectus for a dissertation. As a member of this test group I ask that you click on the URL below, or type it in a web browser and take the survey. Please do the following. Please keep track of how long it takes to complete the survey. After completing the questions but before you submit it, please record the number of any question that needs to be removed or modified. Also make a note of anything that needs to be included that has not been included.

Please e-mail the information you collect to me at tbwallace@northeaststate.edu. I appreciate your help in this very much.

You have been selected because you either have, or have not produced a course that is web-enhanced. Please let me know of any other modifications that you think would make the survey better.

Thanks again.

http://courses.northeaststate.edu:85/myweb2/dissertationsurvey.asp

Appendix D: Request for Information from TBR

To: pshort@tbr.state.tn.us
Subject: e-mail addresses for dissertation

Dr. Short,

I very much enjoyed meeting you at the RODP meeting on June 4. As per our conversation at that time, I indicated that the topic for my dissertation will be Barriers to the Web-Enhancement of Courses by Full-Time Tennessee Board of Regents Faculty. In order to collect the data for my study, I am requesting the e-mail addresses of all full-time TBR faculty for next Spring Semester.

As I am sure that this will need to travel through various channels, I am sending my request to you at this time as per our conversation.

> Thank you very much for your assistance in this endeavor. I will be more than happy to send a copy of the completed study to the TBR.

Appendix E: Survey Comparison Matrix

Original Barrier Survey / New Barrier Survey Comparison Matrix			
Berge Survey	Wallace Survey	Action	Reason
1. I work in (check only one): □ community college □ higher education other than a community college □ elementary education □ middle or secondary education □ non-profit organization □ business/corporate organization □ government	10. I work in a □ four-year university □ two-year community college □ Other:	Modified for compatibility	
2. The job function matching mine most closely is (check only one): □ support staff (e.g., graphics; computer support; curriculum development) □ teaching faculty/trainer □ manager/director/department chair/ principal, □ higher administrator (VP; provost; dean, superintendent) □ researcher □ undergraduate student □ graduate student	11. My current job function is □ support staff □ teaching faculty □ manager/director/department chair □ higher administration	Modified for compatibility	
3. Realizing your organization probably uses more than one of the systems listed below for		Deleted	Not Applicable for new survey

the delivery of education or training at a distance, (or possibly your organization is not involved in distance education at this time), please check the one delivery system below that you find most prevalent in your thinking as you complete this survey: ☐ Audiotape/Videotape ☐ CD-ROM/Multimedia (other than internet-/intranet-based) ☐ Computer Conferencing (Internet-/Intranet-based/Web-based) ☐ EPSS (electronic performance support system) ☐ Videoconferencing/Desktop videoconferencing ☐ Audioconferencing/Audiographics ☐ Radio ☐ ITV ☐ Print-based			
4. I would characterize myself regarding distance learning most closely as (check only one): ☐ I don't know very much about distance learning (DL), nor do I use DL technology very much myself in my work.		Deleted	

☐ I use the internet and such DL technologies as email and mailing lists for my own personal productivity. ☐ I am learning about distance learning. Still, I have not used technology myself for DL or encouraged others I supervise or consult with to use distance learning. ☐ I have added DL technology to my existing teaching methods and strategies or I have helped/encouraged/sup ported colleagues/clients in doing so. ☐ I have been using, or encouraging those I supervise or consult with to use, some or all of the following methods in the DL classroom: project-based learning, team teaching or learning, and modeling advanced uses of technology.			
5. I would characterize the stage that my organization is at with regard to distance learning most closely as (check only one): ☐ We have not attempted to use distance learning in		Deleted	

my organization.			
☐ Separate or sporadic distance learning events have occurred.			
☐ My organization's technological capability can support distance learning events. When DL events occur, they are replicated through an interdisciplinary team which responds to staff and management inquiries and recommendations regarding distance learning.			
☐ My organization has established a distance learning policy and planning. This means a stable and predictable process is in place to facilitate the identification and selection of technology to deliver distance training.			
☐ Distance learning has been institutionalized at my organization. Policy, communication, and practice are all aligned so that business objectives are being addressed. We have established a distance learning identity and conduct systematic assessment of distance training events with an organizational perspective.			
6. In which one of the following areas would you say you primarily work (choose one only):	5. Discipline area (please type in your teaching discipline area)	Modified for compatibility	Original did not contain enough choices

☐ Fine Arts ☐ Physical Sciences ☐ Behavioral Sciences ☐ Humanities ☐ Health Sciences ☐ Engineering ☐ Education ☐ Business ☐ Other			
1. Accreditation issues		Deleted	Not an issue with Web enhanced courses
2. Lack of identified need (perceived or real) for DL courses/program	15. Lack of identified need for course enhancement	Modified for clarity	
3. Lack of technical support	16. Lack of technical support	Same as original	
4. Concern about faculty compensation, incentives, workload, promotion and tenure, recognition, or awards	17. Concern about faculty compensation 18. Concern about faculty incentives 19. Concern about faculty work load 20. Concern about promotion and tenure consideration	Split into multiple questions	To allow for more statistical detail
5. Increased time commitment (e.g., for exploration of new materials; course development; training; release time needed)	21. Increased time commitment	Modified for clarity	
6. Lack of grants for DL		Deleted	Not Applicable
7. Concern that DL lowers	22. Concern that	Split into	To allow for

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the quality of courses/programs, students that are admitted, or expectations for student learning	enhancement lowers the quality of courses 23. Concern that enhancement lowers the quality of student work 24. Concern that enhancement lowers learning expectations	multiple questions	more statistical detail
8. Lack of research supporting effectiveness of distance learning		Deleted	Not Applicable
9. Lack of knowledge about DL, blanket negative comments made by, or lack of support or encouragement from administrators	26. Lack of encouragement	Modified for clarity	Broadened to avoid confusion
10. Lack of knowledge about DL, blanket negative comments about DL made by, or lack of support or encouragement from, departmental colleagues	25. Lack of knowledge about enhancements 26. Lack of encouragement	Split into multiple questions	To allow for more statistical detail
11. Lack of distance learning training provided by the organization	27. Lack of training provided by the organization	Same as original	
12. Lack of effective evaluation for courses/program		Deleted	Not Applicable
13. Copyright/fair use issues in DL	28. Copyright/fair use issues	Same as original	
14. Lack of professional prestige for DL		Deleted	Not Applicable
15. Lack of your own personal technological expertise	29. Lack of your own personal technological expertise	Same as original	
16. Lack of person-to-person contact (i.e., lack of face-to-face interaction with students; difficulty building rapport with participants at a distance)	30. Lack of person-to person contact (i.e. lack of face-to-face interaction with students)	Same as original	

17. Lack of support staff to help in course development		Deleted	Not Applicable
18. Lack of adequate technology-enhanced classrooms/labs/infrastructure	31. Lack of adequate technology-enhanced classrooms/labs/infrastructure	Same as original	
19. Competition with on-campus course offerings, or competition for existing students		Deleted	Not Applicable
20. Concerns about evaluation, testing, assessment, and outcomes of student's/participant's work		Deleted	Not Applicable
21. Disruption of the classroom's traditional social organization	32. Disruption of the classrooms traditional social organization	Same as original	
22. Lack of adequate student/participant access, or equal access to DL	33. Lack of adequate student/participant access	Same as original	
23.Lack of adequate instructor access, or equal access to DL	34. Lack of adequate instructor access	Same as original	
24.Threat to instructors' sense of competence and authority	35. Threat to instructor sense of competence and authority	Same as original	
25. Lack of shared vision for the role of DL in the organization		Deleted	Not Applicable
26. Organizational inertia and resistance to change	36. Organizational inertia and resistance to change	Same as original	
27. Isolation felt by instructors		Deleted	Not Applicable
28. Difficulty keeping current with technological changes	37. Difficulty keeping current with technological changes	Same as original	
29. Lack of parental involvement		Deleted	Not Applicable

30. Fear of technology	38. Fear of technology	Same as original	
31. Difficult to convince stakeholders that DL is a benefit		Deleted	Not Applicable
32. Computers perceived as potential replacement for instructors' expertise and experience	39. Computers perceived as potential replacement for instructors' expertise and experience	Same as original	
33. Concern for legal issues (e.g., computer crime; hackers; software piracy; computer viruses)	40. Concern for legal issues (e.g., computer crime; hackers; software piracy; computer viruses)	Same as original	
34. Cultural issues (e.g., hidden cultural bias; lack of bias-neutral technology)		Deleted	Not Applicable
35. Lack of student services support (e.g., admissions; financial aid; library services; technical training)		Deleted	Not Applicable
36. Difficulty managing DL classrooms		Deleted	Not Applicable
37. Lack of Acceptable Use Policy (AUP)		Deleted	Not Applicable
38. Faculty feel job security is threatened	41. Faculty feel job security is threatened	Same as original	
39. Slow pace of implementation		Deleted	Not Applicable
40. Lack of a champion for DL in the organization	42. Lack of a champion for web-enhancement in the organization	Same as original	
41. Information overload	43. Information overload	Same as original	
42. Language barriers across cultures		Deleted	Not Applicable
43. Lack of policy concerning intellectual property rights/ownership	44. Lack of policy concerning intellectual property rights/ownership	Same as original	
44. Revenue sharing with		Deleted	Not

departments or business units			Applicable
45. Difficulty competing with new DL business models (i.e., increased competition)		Deleted	Not Applicable
46. Lack of ongoing credibility of the program with the public, lawmakers, or community		Deleted	Not Applicable
47. Lack of money to implement DL programs	45. Lack of money to implement web-enhanced courses	Same as original	
48. Traditional academic calendar/schedule hinders DL		Deleted	Not Applicable
49. Lack of transferability of credits		Deleted	Not Applicable
50. Ethical issues		Deleted	Not Applicable
51. Tuition rate		Deleted	Not Applicable
52. Existing union contracts		Deleted	Not Applicable
53. Technology fee		Deleted	Not Applicable
54. Full-time equivalency (FTE) issues (i.e., who gets to count the students/participants)		Deleted	Not Applicable
55. Lack of partnerships or consortia agreements		Deleted	Not Applicable
56. Local, state or federal regulations		Deleted	Not Applicable
57. Lack of the "right" people to implement DL	46. Lack of the "right" people to implement a web-enhancement	Same as original	
58. Service area limitations or restrictions for telecommunication or programs		Deleted	Not Applicable

59. Problems with vast geographical distances or teaching across different time zones		Deleted	Not Applicable
60. Lack of strategic planning for DL		Deleted	Not Applicable
61. Lack of advisement/counseling support for DL students/participants		Deleted	Not Applicable
62. Lack of library access or materials services delivery		Deleted	Not Applicable
63. Difficulty recruiting faculty or participants/students		Deleted	Not Applicable
64. Inability to adequately monitor the identity of the DL participants/students	47. Inability to adequately monitor the identity of the web-enhanced participants/students	Same as original	
	1. E-mail address:	Additional demographics	
	2. Home institution:	Additional demographics	
	3. Academic rank:	Additional demographics	
	4. Degree earned:	Additional demographics	
	6. Are you tenured?	Additional demographics	
	7. Years of service:	Additional demographics	
	8. Age:	Additional demographics	
	9. Gender:	Additional demographics	
	12. Including the current semester, have you taught a course within the last year?	Additional demographics	

	13. Including the current semester, I have taught a web-enhanced course within the last year.	Additional demographics	
	14. If you answered "No" to the previous question, have you ever taught a web-enhanced course?	Additional demographics	
	48. Please list any other items that you do/did consider to be a barrier to web-enhancement, that was not mentioned in the above questions.	Additional information	

Appendix F: Relationship Matrix between Research Questions, Hypotheses, and Survey Questions

Research Question / Hypothesis	Survey Question	Statistic	Rationale
1. Which barriers to web-enhancement predominate within the TBR system?	Questions 15 - 47	Frequency Table	To show which barriers are chosen most frequently by faculty.
2. Is there a demographic indicator(s) that will predict reluctance to develop, or a propensity for, web-enhancement?	Questions 2 , 8–11 Questions 13-14	Chi-Square	To determine statistical significance
3. Is there any particular academic indicator(s) such as type of degree or area of study, faculty ranking or status, etc. which will predict reluctance to develop, or a propensity for web-enhancement?	Questions 3 – 7 Questions 13 - 14	Chi-Square	To determine statistical significance
4. For faculty already using web-enhancement, which factors are still viewed as barriers to web-enhancement?	Questions 15–47 Question 13	Frequency Table	Question 13 used to separate users into groups
5. Where do individual TBR institutions currently stand in relation to Everett Rogers' categories of adopters?	Question 2 Question 13-14		
Hypotheses			
1. H_0: There is no association between years of service and a reluctance to develop a web-enhanced course.		Chi-Square	Research Question 2
2. H_0: There is no association between age and a reluctance to develop a web-enhanced course.		Chi-Square	Research Question 2
3. H_0: There is no association between gender and a reluctance		Chi-Square	Research Question 2

to develop a web-enhanced course.			
4. H_0: There is no association between academic rank and a reluctance to develop a web-enhanced course.		Chi-Square	Research Question 3
5. H_0: There is no association between highest degree earned and a reluctance to develop a web-enhanced course.		Chi-Square	Research Question 3
6. H_0: there is no association between teaching discipline area and a reluctance to develop a web-enhanced courses.		Chi-Square	Research Question 3
7. H_0: there is no association between Tenure Status and a reluctance to develop a web-enhanced course.		Chi-Square	Research Question 3
8. H_0: There is no association between the type of institution at which the faculty member worked and a reluctance to develop a web-enhanced course.		Chi-Square	Research Question 3
9. H_0: There is no association between Job Function and a reluctance to develop a web-enhanced course.		Chi-Square	Research Question 3

Appendix G: E-Mail Requests for Study Participation

E-mail to individual instructors

First, let me say that this is not spam nor am I trying to sell anything. My name is Tom Wallace and I am a Doctoral Candidate at East Tennessee State University. I am requesting that you forward this e-mail to all full-time faculty in your department/division. I am requesting that all full-time faculty members of a Tennessee Board of Regents two-year or four-year institution, take approximately 10 minutes and complete a short questionnaire.

The title of my research is:

        Perceived Barriers to the Implementation of Web-Enhancement of Courses
By Full-Time Tennessee Board of Regents Faculty

The data to be gathered is completely voluntary, and no information that can link any faculty member to a particular response will be retained after the duration of the study. Your e-mail address is requested if you desire a copy of the completed research, but will not be included in the research itself.

To proceed to the survey, either click on, or place the link below in a web browser.

http://courses.northeaststate.edu:85/wallacesurvey/dissertationsurvey.asp

If you have difficulty in connecting to the above address, please e-mail me at tbwallace@northeaststate.edu and I will be happy to send you a copy of the survey by e-mail attachment or the U.S. Post office. Please include the method you would like for the survey to be sent.

Let me thank you in advance for your participation in this research.

E-mail to departments

First, let me say that this is not spam nor am I trying to sell anything. My name is Tom Wallace and I am a Doctoral Candidate at East Tennessee State University. I am requesting that you forward this e-mail to all full-time faculty in your department/division. I am requesting that all full-time faculty members of a Tennessee Board of Regents two-year or four-year institution, take approximately 10 minutes and complete a short questionnaire.

The title of my research is:

Perceived Barriers to the Implementation of Web-Enhancement of Courses
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The data to be gathered is completely voluntary, and no information that can link any faculty member to a particular response will be retained after the duration of the study. Your e-mail address is requested if you desire a copy of the completed research, but will not be included in the research itself.

To proceed to the survey, either click on, or place the link below in a web browser.

http://courses.northeaststate.edu:85/wallacesurvey/dissertationsurvey.asp

If you have difficulty in connecting to the above address, please e-mail me at tbwallace@northeaststate.edu and I will be happy to send you a copy of the survey by e-mail attachment or the U.S. Post office. Please include the method you would like for the survey to be sent.

Let me thank you in advance for your participation in this research.

E-mail to institutions

First, let me say that this is not spam nor am I trying to sell anything. My name is Tom Wallace and I am a Doctoral Candidate at East Tennessee State University. I am requesting that you forward this e-mail to all full-time faculty at your institution. I am requesting that all full-time faculty members of a Tennessee Board of Regents two-year or four-year institution, take approximately 10 minutes and complete a short questionnaire.

The title of my research is:

Perceived Barriers to the Implementation of Web-Enhancement of Courses
By Full-Time Tennessee Board of Regents Faculty

The data to be gathered is completely voluntary, and no information that can link any faculty member to a particular response will be retained after the duration of the study. Your e-mail address is requested if you desire a copy of the completed research, but will not be included in

the research itself.

To proceed to the survey, either click on, or place the link below in a web browser.

http://courses.northeaststate.edu:85/wallacesurvey/dissertationsurvey.asp

If you have difficulty in connecting to the above address, please e-mail me at tbwallace@northeaststate.edu and I will be happy to send you a copy of the survey by e-mail attachment or the U.S. Post office. Please include the method you would like for the survey to be sent.

Let me thank you in advance for your participation in this research.

Appendix H: Hypotheses 1 – 9 and Chi-Square Test Results

1.   There is no association between years of service and a reluctance to develop a web-

enhanced course. (Chi-square =17.832, df =6, p=.007) ** p <= .05

2.   There is no association between age and a reluctance to develop a web-enhanced course. .

(Chi-square =8.126, df =5, p=.149)

3.   There is no association between gender and a reluctance to develop a web-enhanced

course. . (Chi-square =10.444, df =1, p=.001) ** p <= .05

4.   There is no association between academic rank and a reluctance to develop a web-

enhanced course. (Chi-square =19.048, df =3, p=.000) ** p <= .05

5.   There is no association between highest degree earned and a reluctance to develop a web-

Enhanced course. (Chi-square =5.028, df =1, p=.025 ** p <= .05

6.   There is no association between teaching discipline area and a reluctance to develop a

web-enhanced courses. (Chi-square =81.141, df =43, p=.000) ** p <= .05

7.   There is no association between Tenure Status and a reluctance to develop a web-

enhanced course. (Chi-square =3.050, df =1, p=.081)

8.   There is no association between the type of institution at which the faculty member

worked and a reluctance to develop a web-enhanced course. (Chi-square =3.931, df =1,

p=.047) ** p <= .05

9.   There is no association between Job Function and a reluctance to develop a web-

enhanced course. (Chi-square =2.781, df =1, p=.095)

Appendix I: Additional Barriers and Other Comments

(Comments in this section are presented exactly as they were submitted without editing, except

as noted)

"Career studies do not translate well into an on-line class. The "technical" classes are mainly
hands on and this is a very large barrier to on-line instruction for career and technical studies."

"Lack of good text-specific and easily customizable online instructional materials."

"Since I was unclear about whether my answers were supposed to be my own experience,
perceived experiences of colleagues, or institutional perspective I went with "perceived
experiences of colleagues.""

"Administrations demand to implement these enhancements, while providing minimal resources
and no additional time to faculty asked learn and develop QUALITY resources."

"In my case, I was forbidden to require students to download syllabi from the website, and
required to provide all documents on paper because "some students might not have internet
access or might not know how to use a computer.""

"I would like to create a web-enhanced course. However, the teaching loads that we have are too
much o allow the appropriaaaate time to keep up with technology and to actually do this. If
coonditions weere otherwise i would create a web-enhanced course and eventually put the
modules together to cfreate a complete on-liine course. Success rates and quality of student work
in such a course in mathematics are "unkn own" as far as i am concerned."

"academic dishonesty"

"Lack of technological training."

"The greatest impediment to web enhanced instruction is that we use the "Blackboard." It is a
very poor tool"

"Primary reason: Counseling courses not as effectively taught on-line"

"None"

"Our Theatre Appreciation course REQUIRES viewing a live production (or two), which the
instructor must also see (and approve), thus ruling out a performance which might be
geographically convenient to the student but not the instructor. Also, TBR performance funding

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is tied to our giving a uniform Final Exam in ALL sections, and to protect the questions, this exam should NEVER be posted or transmitted electronically."

"Web-enhancement is fairly quick and easy. It's the courses that are conducted totally online that are really time-consuming. "

"Lack of credentialed personnell to fill the ITD roles. For example, the ITD Director is a Master's prepared nurse. She had no credentials in this specialty. She is self-taught."

"web "enhancement" is great; but I do have a concern for the "enhancement" replacing the all-important aspect of hands-on experience in laboratory activities"

"YOU SHOULD HAVE INCLUDED A NO OPINION RESPONSE CATEGORY IN YOUR QUESTIONNAIRE ALSO I AM NOT SURE WHAT YOU MEAN IN Q.43 (INFO LOAD) IN THIS CONTEXT"

"The inabliltiy to motivate students to take advantage of the web-enhanced component of the course. "

"I have arthritis really bad in my hands (I also have it in my neck and wrists). Since I have spent a lot of time at my computer working on articles for publication (and creating PowerPoint presentations for classes) I don't want to "lock" myself into doing a bunch more on the computer."

"I have a problem with question 44."

"These answers are from my personal position. If I were answering based on comments I have heard from other faculty, my answers would have been different."

"I always place information for my students on the web -- even when a class is not web-enhanced, students seem to like having this extra information/way to get information."

"Lack of motivation by students to access material."

"No additions but your questions seemed to be addressed web-based courses in some questions. Example: #30 No student to faculty interaction (face to face). That is true with web-based course but there is actually more interaction between students and faculty with online courses."

"One problem is that faculty who, like me, are already competent and already have web-based courses don't get extra financial incentives. I've seen faculty who have no skills given extra money, even reassigned time to develop this--and even though I have done this of my own time and energy I got 0 reward (except the reward of knowing this improves the classroom experience for students)."

"technology infrastructure of school, also student access at home since many commute and they don't have machines at home to handle many of the web enhancements. "

"Non-technology faculty consider online/web-enhanced as a way to get out of holding classes. Also, their non-belief of the large amount of extra time involved in creating & maintaining websites, etc."

"using web based enhancements other than for course materials; reading assignments, handouts etc. is not practical for Video/Film production courses where partisipation and team work is nesc. I think teaching editing and production techniques is possible but would require a higher cost and degree of technology that the system now has."

"Why are web only courses excluded from this study?"

"Occasional disruptions of network service, especially during class times"

"A weak barrier to web enhanced courses is the tremendous number of hours it takes to convert all my handouts, syllabus, and other material to FrontPage, and then load it into WebCT or My Blackboard so that students can find it. It simply takes lots of time, but I have done it for years and now don't know what I'd do without the web enhancement for my courses. Another weak barrier (sometimes a moderate barrier) is that students complain about having to actually find the web site and print assignment guidelines, etc. They want me to hand everything to them so they don't have to work so hard."

"You are assuming a barrier is existent... the phrasology is not very condusive to a positive response. This is a very poorly constructed survey and I found it difficult to respond.. Should he a DOES NOT APPLY response. From NO BARRIER as a choice to several weak, moderate barriers---- where is the null hypothesis that this is a postive effect.... instead of barrier why not help great help , etc... "

"Time--simply time to do it."

"Control and Ownership by tenured course coordinators in a team teaching approach. Some are very resistant to explore expanded avenues of the blackboard technology."

"It's hard to teach old dogs new tricks; and some faculty are just too lazy."

"Limited class size for online courses."

"Student attitudes can be a strong barrier -- very few take full advantage of the enhancements. A strong facilitator is reduction of copying costs, our department budgets are getting cut and we can avoid photocopying by posting everything to a web page."

"None that I can think of. As soon as I found out about the opportunitiy to do web-enhancement, I started immediately and never looked back. I love having my courses web-enhanced!"

"Just to clarify... I have taught web-enhanced courses, but also have taught online courses for the past five years. I answered this based on the here and now and teaching an online course, but also thought back to the days of web-enhanced and early beginnings of online teaching."

"Promotion has increasingly become based upon research publications and grants received, not classroom activities. This, coupled with high clinical demands, a lack of release time to study and prepare lessons based on this technology results in a futile, frustrating exercise. "

"In courses where web-enhancement is only one component of the course (with regular class meeting being another component) students are more likely to "cut" classes since they can get the information from the web. A positive element is the posting of study guides, exam reviews, syllabi, etc. I do not have to distribute such items in class. And, if students lose such items, they can go to the web and get another one."

"This item has a grammatical error. There aren't any barriers that can't be overcome. Faculty need to stop whining and just drag themselves into the 21st century."

"I cant think of anything else."

"Getting all faculty on board for team taught causes (most medical school courses are team taught) that are web enhanced to use web enhancement continues to be a major problem"

"Lack of security for online assessment and lack of a secure testing center"

"A major barrier to web-enhancement for us has been getting the initial instructors (in a team-taught course) to participate. Once the concept of internet course enhancement is demonstrated, the major barrier shifts to knowledge/skill issues (for those not trained) and time restraints (for those who are trained). My impression is that most instructors are limited in their use of internet enhancement by the limited number role model or mentor faculty who demonstrate successful course enhancement in their own teaching and are willing to help others use the technology successfully. "

"The learning curve for this seems daunting"

"After taking this questionaire I see my limitations are my own. My desire to use this technologby is limited by my time, enhanced by the occasional frustration with my technology limitations"

"I answered the questions in terms of the barriers I have/have not encountered, and not in terms of my observations of others in my organization, although I was not sure if this is the intended perspective. Other barriers have to do with student reluctance to invest time in learning the technology, student inertia, student's lack of discipline in keeping up with work."

"In an urban two-year college environment, there is a significant number of students who are technology illiterate/inexperienced - teaching computer skills takes away from course work."

"I have web pages for all my courses and seminars because it helps to keep information and material accesible to students. Students can do electronic submission of their work too. I would not do that if I knew that most of my students don't have access to computers. I think that the two main barriers are:
a) Having to teach too many different courses in the same semester, because it takes time to keep the web page updated.
b) In the case of colleagues who do not do this I think is mainly due to 2 reasons:
1) they lack the knowledge to use the technology, there are courses available but they decide not to use that opportunity
2) they lack the time to do it because of our other many duties (research etc.) or they refuse to put extra time to do it."

"The main barrier is time: time to learn how to Web-enhance, and time to implement Web-enhancement."

"My background strongly influenced my answer choices. Someone without as aggressive a background would answer the questions very differently. "

"While training is available, the training is usually offered at times when our workload is very high. My experience with individual training is that the traners are often not well trained."

"I teach acting classes. You can't do that online."

"difficulty of uploading multiple files quickly to Blackboard--too many key clicks, etc. Support for drag-and-drop modification of content would be nice, though I understand why this would be hard to implement."

"Having an additional email account to maintain can be a pain, but this is a minor issue."

"Most Old Timers are not willing to change. So any new ways of delievering the content of the course is not conisdered valuable. There has a concerted effort at the top of the administration to do that. "

"My own time commitment."

"The main barrier is lack of a few free hours to sit down and get the web enhancements set up. Maybe one day I will get it done."

"Actually, I have become quite good at overcoming barriers--but it can be tough. So my barrier answers were for the most part Past experiences. I am the first person in my area to have extensive web enhanced courses. When I started we did not have adequate computers (I had to buy my own on low pay), the training was totally inadequate for Newbies--assumed knowledge,

considered questions a distraction, and did not address the needs of people in visual fields (like art). I spent litterally 20 hours a day preparing my material and web site, only to be told on my faculty evaluation that I had not done enough. Although I have been told that I am the person who uses multimedia classrooms and web enhancement "the most," I received no recognition from university. Ironically, this helped me win a regional teaching award in my area--but administration has not even acknowledged this achievement. Biggest barriers are money for technology (computer, software, scanners)--especially for a field that needs high quality visual images, lack of support staff (I had to do alone and from my own pocket what the Univ of TN Art Dept did with a staff that included two tech people and a $6000 budget many years ago). I was asked to teach a web-based course which seemed like a good idea until I learned that it would be an extra class but no extra pay (besides a little start up money). I do web enhanced classes because I think it is the right thing to do; it helps the students. But I surely could use a pat on the back or even better release time or extra pay. The money (salary and upgrades) goes to the "rich" departments and faculty who are already in technology-related fields. Those in humanities and arts are expected to do the same without funds, help, encouragement, etc. But i remember what one student told me: "Other professors have web sites, but your web site helps the student." Isn't that the purpose? "

"Uncertainty regarding copyright restrictions -- difficulty in getting answers to copyright questions. Concern that a major computer virus episode on campus would cause course materials to be unavailable for several days."

"Even though it may appear that I just checked "No Barrier" automatically, that is not the case. As a CIS instructor and a strong believer in using the web in classes, any lack of technical support or any other barriers mentioned were never really a consideration. All of my classes are now either web taught or web enhanced."

"In my experience web-enhancements are exactly that, and I use everything I can find time to create and mount and that my students can and will use. However, the biggest problem, much to my surprise, has been student ability to access web materials; they either lack adequate hardware and software or don't know how to navigate the system. I also wish I had access to a master classroom so I could use some of the material I have on the web in class rather than as outside assignments."

"One critical barrier is that of curriculum development. All too often there are instructors who lack curriculum background, but who are very technologically literate. We must always consider the fact that there may be very effective instructors who are not curriculum developers. The two issues are extremely different and the difference is sometimes very apparent in online course delivery and development. Note: it was not clear to me if the questions were asking if a particular item was a barrier to me personally or was a barrier at my institution or department in general. I answered regarding myself only."

"Majority of courses in ex. sci. are laboratory equipment intensive and require hands on work by students. This is not possible through web-based courses and therefore, an inappropriate medium for the majority of ex. sci. coursework."

"Time to teach students how to utilize the web-enhancement tools."

"Missed class. (High absentee rate) Lack of computers in the homes of our students. Some can't afford books."

"I am quite involved with web course development--both as a complete class option and as a supplement. We have tremendous support on this campus but many faculty do not become involved from fear of technology or the time involved. My biggest barrier is simply time--it takes a lot of time to develop a course and to maintain it. "

"The greatest barrier is our inertia in classroom education. Developing tools for web enhancement takes time away from the normal classroom procedures (preparing, grading). It also takes focus. Lack of release time for development of course materials is a strong barrier as well as territory grabbing and the tendency of administration to envision online courses taught by an army of underqualified (and lower paid) adjunct faculty and to see online classes as requiring less teaching time when they actually require more. Publishers are developing the tools instead of educational institutions, so the tools tend to be technologically better than colleges are developing but educationally inferior to what colleges could produce if they were willing to invest the time, expertise, energy, and money that successful online instruction is really going to require."

"personal inertia, we are busy bees as it is you miss the point, we are strongly encouraged to develop these classes. Dr. XXXXXX (name omitted by researcher to prevent identification) is a web champion"

"Ability to do hands on laboratory assignments. Most of the the Engineering Technology courses has labs and the students need to develop skills."

"Did not understand question 46."

"We are put in a situation where web enhancement would be a benefit, but our classroom space is limited which ,in turn, limits space for the computer hardware."

"Web based courses just add another course section or an entirely new course when the faculty are already overloaded with traditional courses, research, service, committees.....etc. I have not been able to determine how we could add these new webbased sections unless we an already over-loaded group find grant money to pay for the teaching faculty. "

"Clarification: Compensation for adding web enhancements is not an issue for me. The amount of time it takes to provide information daily on webct is a real issue for me. I am currently deciding which features   I have time to upkeep and which features I would like to keep - but don't feel I can update in a timely fashion. "

"#1 Personal barrier -- complete lack of professional recognition or workload support for the endeavor
#1 time barrier -- I am basically on a two year rotation with my courses -- All work I do is for one semester only this is a counterproductive time-sink for anything other than the basics
#1 technical barrier -- lack of easy, quick way to transfer handwritten mathematics to web pages

If I were not fully promoted and tenured, I would have to think long and hard about doing anything other than answering email and posting syllabi. Even now they do not always stay as up to date as I want."

"Lack of networking with other institutions that use web enhanced classes effectively, espically outside the TBR system. We seem to be trying to reinvent the wheel at each school when we could look at wheels used effectively by other instuitions."

"Time certain courses need person skills (ie) education method courses"

"None"

"I don't know what is beuing asked by questions 33 and 34; access to what? Also, You should not try to enumerate all possible dgrees, since you left out (among others) MFA, MM and DMA."

"I answered the questions with reference to my own personal experience with "web enhancement" in my courses, which included posting syllabi, assignments, reading schedules, hand-outs and hot-links."

"One barrier which students face, related to item 33, is that even when course materials are available electronically to students (handouts, articles, etc.) they tend to PRINT everything out multiple times and in the least advantageous formats (e.g., text-only for electronic articles also available as PDF)."

"test security is a big issue, so we are not able to use the online test features."

"I can only think of *advantages* to a web-enhanced course. I have successfully used WebCT as a course enhancement for the past year and a half that I have been at TTU, and I can't imagine doing without it now. The students love it too, especially the online grading tool. But most of the above objections are objections I hear from my colleagues. (I think I am the only one in my department using WebCT as a course enhancement, although one person does have a completely online course.) Please note: I am not sure whether I was to answer only for myself (as most of the first 35 questions seemed to be) or for my department as a whole, as some other questions (e.g. # 36) seemed to be aimed at. I answered primarily for myself as an individual. A final note: I will say that I would consider it a moderate barrier at this point to have to learn a different system, such as Blackboard, now that I have invested time in learning and using WebCT. But I would do it, because I LOVE WEbCT and I've heard that Blackboard is even better."

"I have zero background in technolgy, but I like to teach and web-enhanced classes have been great. I have taught totally online courses and currently enhance my "live " classes. I found that it was a lot of work to load the classes and to initally figure out how to do it all, but now I am ok with it and it is so nice to have it there so that "live" classes can be fre to do live things like interactive group activites, etc."

"We do not have barrriers, on-line is the way to go."

"I answered the questions based on my experience and perception, not on how others might perceive web-enhancement. I see an important place for web enhancements in many courses, and I am even not opposed to a FEW web-based courses in a curriculum. But I am very much opposed to the TBR's RODP. In that case I do see a severe decline in quality and in other categories you have listed. Good luck."

"Development not taken into consideration when allocating course load. "

"I have put my syllabus and homework on line for several semesters; I think it is a wonderful timesavings device, saves paper, too. I don't have to listen to excuses: I wasn't here last time, I didn't know what the assignment is. Any changes I make, students can know, if they care to look. I find some of your questions a little to short, because i am guessing what you mean. I find that often people put things on the computer, where space is really is not a problem and make what they say so short, that it is almost unintelligeable."

"Possible changes or disappearance of web sites from beginning of semester to end that are used in the syllabus."

"The biggest barrier is limitted faculty time. This can be interpreted as financial, when viewed as the willingness of the institution to recognize time spent in this endeavor as "release time" from other obligations (or as additional compensation ... professors like dollars too!)"

"I consider this just another survey that really means nothing. If you want real answers to real questions take me out to lunch someday. I realize that you want a PhD and you need to do something that looks as if you are doiing something. Good Luck. "

"Our students are so lazy and focused on grades that they aren't sufficiently motivated to make use of the web enhancement that we attempt."

"The institution dictating the sotware used for such classes. The instructor should be able to choose."

"none"

"I am "high-tech" professor and professional with advanced computer knowledge evidenced by eight advanced professional certifications from Microsoft. Despite my stong technological leanings, I find that most web-enhancement distracts students from learning.

Students are lulled by the web based activities into thinking that they are progressing in the course subject matter, when instead valuable time is being taken from their main job of studying. There are some minor benefits from web enhancement such as centralized distribution of information. Web testing is frought with control issues and is mainly beneficial to the professor. I have extensively tried advanced classroom web enhancement and now believe that it can be easily overused and when it is, it is very detrimental to student learning. The issue is not barriers to web-enhancement but barriers to learning from misuse of the web. Their is no panaceia for good study habits. In five years we should be able to see the issues and benfits of the web in instruction in better perspective. role of this technology will be clearer "

"We're forced to use WebCT, one of the worst programs I've ever worked with. It requires a huge amount of upfront expertise/work to set up a course, is not user friendly, and for any professor who is not really into computers it's a MAJOR barrier. If we keep being forced to use this thing TBR is going to have to wake up and provide some more technical support with people to design the basic courses pages and act as techs for professors. You almost have to be a web designer to use any but the most basic functions with WebCT. I use it for quizzes, and the first time you do that you better have a week or more to screw around with it. No wonder we're having trouble getting faculty to do more web enhancement. After a person deals with WebCT the first time, the run like a scared rabbit the next time it's mentioned to them. Can't say I blame 'em. I complained, and a senior administrator said, "That's our platform; live with it." Uh huh. And that's the heart of the problem. Why don't you look at the number of people who've taught RODP courses, and how long it takes them to bag it. Turnover is significant. Techie types like all this stuff, everyone else is thinking, "I earned a Ph.D. to be an expert in my field and now I'm supposed to be a web designer/programmer just to get a quiz to work on the dang thing???"

"I am concerned with the use of the word "enhancement" in the survery . . . it implies improvement and therefore begs the research question. For future research I'd suggest you consider a more value neutral word."

"Being somewhat "age enhanced." it took me a little time to get up to speed. Once this was accomplished, there were few problems, and they were easily solved. However, this will always be an ongoing learning process. When it quits being that, then it is time for me to retire!"

"lack of peer support group with whom to bounce around ideas, compare issues, and share things=Weak barrier"

"Web enhanced courses add tremendous opportunity for students to learn--I have had positive experience with this feature."

"Several questions touched on this but I believe the key barrier is the embedded organizational culture of the faculty."

"faculty apathy. I have had no trouble incorporating web-enhancement but have not been able to motivate other faculty to do so. Grants have provided support but faculty still will not make the effort."

"I have attended Web-CT workshops and had considered incorporating certain web components into my classes, but as the only art historian at XXXXX (omitted by researcher to prevent identification) , I rotate teach too many different classes - some once a year and others once every 2 years. Because of the work involved in incorporating technology into each class, copywrite issues, and because the room I teach in is not set up for anything but slides, I have decided not to do it at this time. If I taught the same class more than once a year, I might reconsider. Another issue is that many of my students (mostly art majors) resist using computers. They don't even read their email. At this point, it is a challenge for me just to keep up with the constantly changing book editions for each class."

"I'm not sure if this is helpful but I mostly teach clinical practicum and we only use internet for daily and monthly reports. The one class I teach per year is the opportunity I see for web enhancement and have not used it for the reasons above. It is largely a discussion class. "

"threat of quick changes in the technology provider after all materials for a course are developed"

"I am quite concerned about the question of cheating within a web course. I had one student who obviously cut and pasted material as her own. I worry about the integrity of student exams taken online. "

"student reaction to computers"

"My responses refer only to the use of posting worksheets and other information on the web, which drastically lowered student attendance. "

"The support provided by the IT department in the past has been nonexistent. Until two years ago (when a former faculty member became the director of Instruction Technology), the only technology that was truly supported was computer availability in open labs. "

"I feel that technology is important, and students value the use of web enhancements. I am something of a Luddite, though, and it is a barrier that we have few people to help faculty design and implement these enhancements."

"A comment: You have defined "computer-enhanced" so loosely as to be meaningless. I use a web site to give assignments, provide a syllabus, and provide reading materials for a literature course. I am not sure why that is supposed to be "web-enhancement"; I'm just using a web page instead of a blackboard or handout. If you had restricted the term to "on-line courses" of the sort being pushed by the Board of Regents, my answers would have been very different. In language courses, such as those I most often teach, on-line intereaction is totally inappropriate, too time-consuming, and would assuredly not be rewarded."

"XXXXXX (omitted by researcher to prevent identification) is on the cutting edge with use of technology and complete on-line vs on groud education. If you would like to access other very

recent quotes and opinions concerning a new V-class software used just the previous semester, you may want to get a copy of the most recent Visions publication from XXXXXX (omitted by researcher to prevent identification). Look at the article Virtual U. You may use any information and quotes you feel necessary that add to your dissertation study. I would be giving you permission for the article and only quotes from XXXXXX (omitted by researcher to prevent identification). You may want to contact XXXXXX (omitted by researcher to prevent identification) if you choode to use his information. We use Web CT as web enhanced on on-line and Virtual Classroom and both as well. If you have other questions and your study involves a qualitative component with your chair... you may want to contact again or call. Good study that needs to be completed. I want a copy of the results."

"I believe that web-based courses are more appropriate for some departments and programs than others. In African American Studies, face to face contact is crucial because of the subject manner. We need to see the students' reactions(nonverbal communications) I believe that it can be very appropriate for certain courses, especially math and science!"

"There is currently a huge push toward putting whole courses online, whether or not this is the best educational method. The RODP ensures little control over content, and the attitude that technology is GOOD prevails. Money can easily be obtained for web-enhancement, and the tone of this survey does not suggest that we examine the usefulness of web-enhancement, more that we fix "barriers."   Also, on a more petty level, there is a great deal of push to save money by having course materials (i.e. syllabus and handouts) online; it can be very handy to let students go print off copies when they lose theirs, but it seems a poor reason for using the web vs. making copies. Finally, note two proofing errors in survey, fyi: q. 32: need an apostrophe in "classrooms" and this question (48): verb should be "were" not "was." couldn't resist :)"

"Faculty need time to learn about and implement "

"I don't think there is any barrier at all."

"Lack of personal contact with the students, lack of classroom interaction, lack of face-to-face contact when giving exams/quizzes, lack of knowledge about who the student really is. Also, time spent by teacher is increased for questionable gains. There have been horror stories about student who "passed" Calculus I and then showed up in person for Calculus II with NO knowledge."

"Students home computers that are not up to date."

"I worked distance learning twice. It may be fine for Accounting 101 but it was awful for a cousneling course. Technology was terrible withconstant breakdowns. Couldn't hear or see students half the time and techical support was nonexistant. It was an academic scam and a sham"

"Mostly a lack of knowlege as to what the purpose would be, aside from letting students take a class at their home. I guess I just don't know what it could do for them or for me."

"Failure ot administration to understand the use of technology other than listening to key people "BS"ing them by using buzz words. Rather than being faculty driven, it is driven by "Provost pets" with limited knowledge of all the options that technology offers. "

"I do not feel that I have ever had any resistance from the institution for implementation of web enhancements. I think some of the items you list may be barriers for fully online courses and issues there are not at all adequately resolved within TBR, in my estimation. Web enhancements, just like any other resources utilized in class are the responsibility of the instructor. If you are comfortable with doing it then it can be done and fairly easily. Our department has pushed for up to date computers and internet connections in the classroom early on. Some of the items that you list may be perceived as more substantial barriers by others, however, my experience with online instruction leads me to believe that many of these barriers are not different than those that exist in onground instruction."

"Technical instruction for faculty has been perfunctory at best. Workshops were often canceled for "petered out" for lack of facilitator commitment. If I were as non-performing with my classes as the workshop instructors are about their work, I would be terminated. TBR and University support staff have been unprofessional, making my time commitment to participating in workshops a waste of limited time."

"None"

"In order to go to a more web based approach, it is necessary for an organization to have a facility for testing that makes it possible to monitor the taking of tests with positive identification. Also, all organizations that are developing web material should have stated policies about the use of the material that includes the right of the individual preparing them to remove them from the system. The whole idea of continuing to re-use class material to teach a class with an inadequate teacher is silly. Supervision of this problem will become the defining difficulty of web based learning, if correct policies are not put in place at the begining. It is not fair to students to subject them to automated learning not backed by sufficient qualified supervision. The issue is about the review of student work. In most technical fields only a qualified person can do this."

"I did require econmics students in Fall 2003 to acess the author's web site for some limited use. I didn't consider the requirements enough to consider it an enchanced course. "

"I am answering the "yes" questions as my view of some administrators (especially my department head), who know nothing about how to use the current technology, and are totally nonsupportive of online science courses. I am allowed to use web enhanced information, but my department head expects every student to be in class the full time every day. When over half of my students work (or are in the military) that is impossible. I expect them to know the material, whether they get it from me in class or over the Internet. I would like a copy of your study when it is completed. Best of luck to you to implement change. "

"Disregard for faculty role in development and decision making-more imposed from above. Stated otherwise, if the dinosaurs don't get it, we will cram it down their throats. While web enhancement is a great tool, it is too often used as bells and whistles with little regard for scholarly content."

"At my institution, the administration can interfere in Web-enhanced courses in ways that threaten to spread to more conventional courses. Consequently, I no longer teach Web-based or Web-enhanced courses. "

"WE have faculty that are willing but the time needed to get things ready for an online course is substantial.   When faculty must teach and publish the added time to develop and or convert courses on line to onlien is a barrier. The faculty member gets no credit towards tenure for doing these things. "

"Lack of software suited to the unusual needs of we-enhanced one-on-one music instruction."

"Web enhanced courses or using technology in the course is a not considered well for tenure. Technology fellowship programs should be established and faculty interested should be nominated. Financial investment to the candidates for it is still limited in the universities. Students are not aware of technology use. They are annoyed with the new techniques sometmes. It has to be a smooth transition."

"No incentive and no organized, structured learning of methods"

"I see a difference between web-enhancement, which has few if any problems, and web-delivered courses. Your questions actually dealt more with web-delivered courses but used the term web-enhanced. The problem we have with web-delivered courses is not being able to evaluate the courses through a student evaluation system. It can be done; it has not been developed."

"Overwhelming work load and no time left to work on web-enancement. Time is probably the greatest barrier. Released time to work on web-enhanced courses would help. "

"Some of these issues would be answered differently if we were talking about totally web-based, although I am a supporter of that as well. I actually find web-enhanced courses to be better than those that aren't. I think more student learning can take place in those situations when constructed correctly."

"I am not convinced "web-teaching" is an effective and efficient method of learning. Most of my collegues who have tried it spend more time than a normal class and I have never seen any research comparing the effectiveness of the two methods."

"I teach all classes completely online, so I fear my input may skew your results. My classes are no longer "enhanced" and I see students only one time per semester in a face-to-face orientation. All the items you mention are problems to first time online instructors. It is a slow and uphill

journey to online teaching after professors begin "enhancing" via the web. However, the greatest barriers, in my experience, are professor technical experitise and institutional inertia. Administrators wonder how they can "supervise" online teaching. And, if they have not taught online, that is a legitimate concern. They, too, learn as they grow more comfortable with the technolgoy and with the results of online instruction."

"Only select courses really lend themselves to completely online presence. Web enhancement has really improved the communication and information my students have between them and myself. Web enhancement through the use of WebCT has become part of my daily routine as a faculty member. Good luck!"

"students who are unprepared to be in a web class"

"XXXXXX (omitted by researcher to prevent identification) is a very supportive environment for web activities and classes, with much technical expertise and up-to-date hardware and software. Our training folks are absolutely the best, and administrators (including department heads, such as myself) encourage use of technology. I have taught both web-enhanced and on-line sections of ENGL1010. I have answered your questions as best I could, but I'm just not connecting with some of them. Perhaps I did not read the earlier instructions carefully enough. Some questions seem to be ambiguous with regard to who might find various items a barrier, and in some cases I don't understand how the item mentioned could be conceived by anyone to be a barrier. "

"In performing arts classes web enhancement is not applicable except to email me written homework, which they do anyway. I am worried that some administrator, who has no idea about what the performing and visual arts are about, thinks that faculty can be replaced with video tape. It's already happening in Comm 100 and 103 courses, which I consider to be performance based."

"Lack of one-on one training for my specific needs."

"(1) CHANGING technology. As soon as I learn one method, I have had to learn something new.
(2) Lack of communication. Our IT folks have been very helpful, but sometimes they forget to inform faculty of problems. "

"I took WEB CT training for a week during my summer vacation and attempted to implement in my existing courses. I found WEB CT to be unsatisfactory and felt that I could do as well by using my own web page and email. I think that the TBR should really investigate alternatives to WEB CT."

"Our specific population does not lend itself to web-enhanced courses. Immigrants, especially refugees are usually computer-shy, and often computer illiterate. Plus, the need for face to face interaction to help them adapt to new cultural norms is critical. If I taught a different population or subject, I'd be "all over" web enhanced courses."

"I don't have any thing to add that would be a barrier, other than resistance to change by faculty. We use WebCT and it is very good course management software. I teach online and in person classes and enhance the in person classes by using quizzes/tests and homework assignments as much as possible."

"One of my biggest concerns, if not the biggest (after my own lack of technological competency), is implicit assumption that all students are web enhanced, something that is absolutely necessary for participation in a web enhanced class. I have found significant percentages of students in all my classes who either are not on the Internet, or lack the most basic skills necessary even to a proficiency in email, much less the kinds of web navigation and competency needed for a web enhanced college course. If there is even ONE student in a class who feels left out because of a lack of "web enhancement", then that student is left behind, feeling as though he or she cannot perform to the level necessary to be successful in the class. This problem, I believe, is in conflict with the basic idea of a "community" college, and the population it serves, especially at a rural extension site like the one where I teach."

"lack of "friendly" equipment and software"

"Time factor in putting the course on the web"

"I do not want to do an on-line course. I do want to put my study guides, text required readings and assignments in a Web Ct format. I would also like to do some power point to enhance content and create more interest. My student worker is helping me with this project. She is very adept in computer use. I told her I would not even think of beginning this project if she were not returning as my worker next year. She thinks she can use this project to meet the demands of an assignment in one of her computer classes. I have had student workers proficient in computer use for the past 10 years (I list it as one of my requirements). I learn much from their one-on-one tutorials."

"Our school has been VERY supportive to all instructors. We have an excellent tech support."

"Our University is very anxious for faculty to use technology in the classroom. Our Dean is very supportive so I did not really have a problem with introducing technology, using best practices in the class."

"Training and release time for all faculty; "

"territorialism of tech staff (at previous institution, not in Tennessee)"

"The web is a distinctly poor communication device between students and teachers. I hope this type of instruction does not develop any further."

"Re # 38. "Fear of tchnology" is a stong barrier to some students. I answered the question as addressed to me personally."

"Lack of release time to develop web enhancements."

"Enhancement appeals to me, but the technology learning curve and time for reorganization of course methods is a major barrier. There is not enough time in the day. Release time or summer semester compensation would be an incentive."

"Lack of information given to the students regarding expectations, computer requirements, time requirements, etc. "

"Takes too much time and effort to trapse across campus to learn how to do it."

"Based on my responses to the above questions, I do not feel that the definition of a "web based course"
"as given above is adequate. My class is taught entirely in a classroom with contact with students every class period. There is a minimum of web related material used, but it is not a "web" course."

"Would reiterate the problem of course quality. I have yet to observe a web course which was as rigorous as an on-site course. Lab courses pose particular problems. In the sciences, no amount of computer simulation can replace the actual experience of a laboratory. This is especially true for majors who need the exposure to lab methods for upper level courses."

"Difficulty in getting math symbols to html."

"Until the time arrives that patients are examined by their physicians through the web, this survey is insufficient for addressing the teaching and training of Medical students, Residents and Medical researchers."

"none"

"This is not an answer to #48, but a comment about the survey. It was not clear whether you wanted to the responses to focus only on the courses I've taught in a Web-enhanced environment, or whether the questions related to Web enhancement in general. My answers would be quite different if I were answering in a general way."

"should anyone that can be replaced by computer be replaced? i don't think so."

"this took more than 10 minutes to complete. I believe there are many teachers not qualitified or instructed to teach, teaching on RODP at this time... they are not doing their jobs. This is a huge barrier to success of any program."

"As you've doubtless heard from other faculty members at TBR schools, many of us are not happy with the software choices being made -- particularly WebCT. Lack of control over these issues is a major barrier to web enhancement for many of us."

"Our facility encourages web enhancements, has computer expertise available to aid faculty in the implementation, has continuing faculty development courses available. I would like to see the faculty computers upgraded, but due to state budgetary restraints that is not realistic to expect that all faculty will have their computers upgraded."

"Student lack of familiarity with computer use is a profound barrier at community colleges. "

"The single greatest barrier is the technology's lack of reliability which requires the professor to come up with alternative lessons and schedules in the event the technology fails. Last semester there were huge issues with viruses that made access to the technology (WebCT) difficult and unreliable. I ended up having to accept both hard copy and electronic submissions and re-write the syllabus midterm, multiplying the work and the confusion enormously. I finally gave up entirely on deadlines. Also I didn't understand question 43 "Information overload"

"I have not noticed any barriers to web-enhancement in my career at TTU or elsewhere."

"Probably the fact that, we are expected to develop on-line courses while we are carrying a full teaching load along with expected research and community service. So there times our plates get pretty full."

"Two words: Snake Oil."

"The immaturity of students to work independently and to take responsibility for completing the work assigned."

"Students Readiness"

"Lack of student-to-student interactions which is a major learning method for many students."

"This survey strikes me as biased in favor of uncovering various kinds of barriers and some questions were ambiguous."

"Textbook materials change requiring constant revision of WebCT enhanced materials on line."

"Students' inability to use computer technology. Student fear of computer technology."

"I only use Blackboard. I started using it after I went to the training sessions."

"Student's lack of web-availability. Many students here do not have guaranteed web access at home."

"This university wants to use web-enhancement but does not appreciate the workload for the faculty and the type of students the university serves - some of whom can't even access email and

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still submit homework in handwritten form. If students do not feel comfortable with computers this makes learning content even more overwhelming to them."

"I love using web-enhacement from my years at Vanderbilt. Still working to make this happen at APSU more."

"The fact that the institution charges out of state tuition and renders my classes unaffordable outside the state of Tennesseee."

"Mathematics is a language. Writing it into a computer is much more laborious than simply writing one's thoughts/solution on a paper using a pen/pencil. Grading the amount of understanding/knowledge a student has acquired is more indepth than simply checking his/her number of correct answers. For the success of testing/quiz-taking via the internet, this problem must be overcome first."

"Small number of students succeeding in mathematics."

"University and college goals are not integrated. Too much fragmentation. Little to no reward except intrinsic."

"Cannot teach laboratory techniques via the Internet."

"On questions 13-14, I may have answered incorrectly and the survey does not let me change. I have designed and taught WebCT classes for 3 years and am currently teaching 3. I read the definition to mean use of computers in the classroom--onsite. I teach these courses for my college, not for RODP, so if my survey needs to be adjusted, please let me know. "

"I prefer the blended approach which includes both online and in-class components. This mix is under continuous shift toward more online and less direct classroom contact, but only as methods of delivery are continuously improved. I also hold "on-line" sychronous office hours for students but am limited to a one-on-one due to limited institution support and lack of a type of "broadcast" server. I have no problems with intellectual property rights, feel this is like publishing any other research. Refinement is enhanced through sharing without obligation."

"The only problems I have had with web-enhanced courses are students not showing up for the live class. "

"Some of the technology needs to be improved. For example, I use WebCT. When I set quiz results to be available once the availability period has ended, I have to manually release the results. WebCT won't release the results automatically even though I set it to release the results at the end of the availability period."

"Mostly the observed isolation interpersonally of mnay of today's tech oriented students. Further isolation of interaction with students. "

"Available time to learn and develop confidence with it is a factor. All other issues covered above."

"Lack of student skill in using technology"

"To be very honest, if someone required me to attend a workshop on this, I would attend and benefit. Because I am not required, I have only created a website and posted materials and created links to other online material because my husband bought me a domain and set it up for me. I have done nothing through the university because I am intimidated. My husband is sweet and does not judge me!"

"I feel that a course that is completely web-based is a poor substitute for a course in which students interact face to face with the professor and other students. However, web enhancements to a face-to-face course can be very helpful. Would that I only had the technical competence to implement them."

"I don't have an issue with web-enhancement, but I really hate it that people are able to get away with this kind of research at the doctoral level. Why not come up with a way to tell if there's a gain in learning from web-enhancement, and if so whether its worth the effort and cost? Why not explore the impact of the internet on the sociology of knowledge or the role of the unversity?"

"The administration at XXXXXX (omitted by researcher to prevent identification) actually discourages innovation, unfortunately. We have the faculty and the talent, but the department fogeys disapprove of all these "newfangled" computers. That's the largest barrier -- the departmental administrators. "

"Student advising for web-enhancement; technical support for students; appropriate technologies for pedagogy;"

"Lack of consultation with users as to the appropriate software to support"

"Issue of possible undesirable collaboration between students/participants in doing assignments"

"Note: I only use BlackBoard to distribute documents and assignments. I've found no difficulty using it to that limited extent. Were I trying to give exams, that might be different."

"Student system - home usage product sets not matching our environment"

"Students in Technology)and I am speaking mostly of electronics, a\cannot possibly compete in the real world with no hands on experience."

"changes in administrative support and access to adequate software"

"In regards to the questions about class load & tenure..Do web classes pay less, the same? Do the count as class load in terms of qualifications in going from full time faculty to tenured faculty? "

"Time necessary to set up a course that is web based is not compensated for. "

"Hey! I don't type! How do you draw and do math on the web? Labs?? Demos??"

"You have asked aoubt the univesity side. The bigger problem for me is that students don't have the equipment and expertise to complete online courses. This is especially true with courses using WebCT."

"My biggest concern is on-line testing--How do we know who is really completing these tests?"

"Some of the above questions seemed more appropos to web-only courses instead of web-enhanced courses."

"Student accessibility Impact on student participation and expectations Impact on the class dynamics (have been completely ignored)"

"Information overload and over-extended teaching loads are main barriers at the present time. The University of Memphis and our ICL Department needs to get with it; to provide online programs immediately to keep up with competition. Students are seeking it."

"Doing science laboratories on line is difficult. For example, you could show pictures of rocks but that is quite different from first-hand examination of the rocks."

"In general, there is a problem with web-based courses in lower level design courses due to the need of immediate instructor feedback with hands-on experimentation and design"

"I consider online instruction to be singularly ineffective. I have taught these "enhanced" courses and I have also taken them. As a student I found them to be irredeemably deficient. In my course, I was part of a three student "team." One member of the team did absolutely nothing. In my opinion, the TBR is selling a product instead of providing an education. We talk about "marketing" and FTE and other terms more suited to the sale of soap than to educating our citizens for the future. I think online education is a pernicious fraud. We will reap a whirlwind in the coming years when students "educated" primarily online enter the job market, government and even academia. I predict large scale failures on the part of "students" who bought a degree online."

"none I can think of but I was unsure of the frame for the quesions as in do we think it would be a barrier if it did not exist or is a barrier in our current system."

"Lack of way to monitor hands-on experiences needed by students in my field."

"Are the students doing their own work, or is someone else doing it for the student. With todays technology it is possible that students can obtain answers to test questions via chat or instant messaging."

"More Faculty development is needed. Salary needs to be competitive"

"Web-enhancement is used in my class slightly because what I teach is substantially hands-on material. Recertification classes can greatly benefit from web-enhancement."

"Time "

"Convincing faculty that cheating and dishonesty can be managed adequately. Incompatability of student's home computer systems to the institutional computer system Lack of training for students to learn how to use WebCT."

"PLEASE NOTE THAT MY ANSWERS TO THE ABOVE QUESTIONS WOULD BE SIGNIFICANTLY DIFFERENT IF YOU REFERENCED WEB-ONLY (I.E., COMPLETELY ON-LINE) COURSES."

"Not all students entering a four year institution are competent in the basic uses of the needed technologies. Unfortunately, the process itself makes an assumption contrary to that fact. We might find the process works better after we have established student competencies."

"Possible supplantation of spoken work with written. Possible increase in student absences."

"1. Process is frequently "sold" to students as working at your own pace, own time schedule, so long as you get it done and keep up... not true"

"Time to learn and expertise to use specialized software in order to develop materials; lack of technical support to learn specialized Web development software"

"Teaching mainly physical activity classes, it has not been a priority but I do feel that web-enhancement would be valuable even if just as a supplement to students with interest."

"Lack of "release-time" to develop a well structured set of materials for a course (have to do everything in our spare time)."

"Some of the answers are so broad based that I think it would have helped to see the reasons for some of them--i.e., on items 23 and 30, I believe, my concerns arise due to my hesitation of being able to facilitate student writing improvement when the online version of the course minimizes the one-to-one interaction so often important to students attempting to improve their writing. Also, some of the monitoring aspects of composition courses are still a problem to my mind."

"This is just a comment about your survey. First, in creative writing, theater, and studio arts, the terminal degree is an MFA, and that should be included as a degree option in your survey. Second, web-enhanced courses really do not apply to studio art, and your survey isn't really written to accommodate that possiblity. "

"I wasn't sure what if you wanted me to answer only from my experience with web-enhanced courses or what I heard or knew from others. There were a few of the items that did not appear to apply to web enhanced courses."

"Web formats, like web CT do not always function as promised, leaving instructors holding the bag for errors in the system."

"Some students have old computer equipment that does not always work. They may not have internet access from home. Websites may be accessable when the teacher previews it but then not accessable when the student trys to use it."

"this is a hybrid class that includes classroom and clinical experiences for the student and faculty"

"It's not that we don't have qualified tech folk and champions for web-enhanced courses, but they are stretched thin as it is, and this becomes the lower priority, especially with as many web courses as we have and have in development. I look forward to using web-enhancement in all my ground classes in the fall."

"The primary factor that has kept me from using web enhancement in at least some of my classes is lack of time to learn the software. This summer I am teaching a web class, partly to learn how to enhance other classes."

"You need an "I don't know category"

"# 15 is confusing "Lack of..." No barrier Is that a double negative? "

"I did not understand the side question: "Has this ever been a barrier?" Does this mean for me personally? I answered as if it did. No one in my department has ever had a positive experience. It has been one disaster after another. With my own misgivings, there is little likelihood that I will undertake an online course. I will add some online features to my professional class in the fall, if possible."

"Institution lacked appropriate software/expertise; students sometimes ill-equipped or ill-prepared to undertake web-based or web-enhanced course. A few students take disproportionate share of prof's time."

"Fear that the class will become web-only, eliminating the face-to-face student contact and discussion in the classroom."

"I am a librarian and I help a lot of student navigate their web-enhanced classes. Instructors do not have the technological skills do integrate technology in an effective way and students are very confused about what to do and where to find things. Instuctors don't lay out all the elements in a logical and integrated way and don't give the students enough instruction on what is expected of them. Students also sometimes don't have the technological skills to navigate all the electronic content. Technology sometimes ends up being an impediment rather than an aid. "

"Brief pressure from a former VP re:requiring extra office hours for Web instructors-strongly opposed by our Fac Council and Faculty won that battle."

"no barriers...although there is a relatively steep learning curve, (learning dreamweaver..or other software) the benifits to using web-based info and total web-based classes are entirely worth it. I created and teach an on-line course for the RODP, teach by digital slides, and keep study sheets, syllabi, etc on my web site. Technology makes teaching more effective."

"Lack of thinking of it as an enhancement to my current courses."

"A LARGE barrier: the refusal of the administration to recognize that teaching web-enhanced and totally online courses requires "office hours" that do not correspond to the "normal" 8-4:30 workday and that do not necessarily require my physical presence in an office on the XXXXXXX (omitted by researcher to prevent identification) Campus. Students who take online courses do so because they are not able to be physically on campus during "normal" hours and they need faculty teaching those courses to be available to them outside those hours. It is unreasonable to expect me to do this kind of thing as part of my "off campus" time when I need to be doing work on/for other classes as well. The 'time card' mentality of the adminstration is a HUGE barrier."

"No time set aside from normal faculty overload to learn something new."

"Recognition among administration and peers of how labor intensive this can be to do and do well seems a persistant feature of this issue. Often, this seems like a thankless task. Sometimes we are resented by some peers for taking up the new work or our work may be taken for granted by those that administrate."

"I think they are all there. I was not clear if I was supposed to answer which were barriers for me or whcih I've seen in my faculty expereience. I have past experience as director of a distance ed masters program that transitioned from a full classroom to 50-50 classroom -=distance courses. My responses in the survey are based on what I've seen as facutly member over the years, not on what is specific to me personally tring to do a web enhanced course."

"The courses taught are clinical in nature and not conducive to web-enhancement."

"Nothing new, but I would emphasize the time web enhancement takes!! That has been the number 1 barrier for me."

"Student access to web and "modern" computer with proper software installed for classes"

"I feel that a barrier to web-enhancement is my own feeling of inadequacy with technology. There are wonderful trainers here, but I don't feel that I can actually learn WEBCT. However, there are other older faculty members that have done it, so I don't know why I am so reluctant to try. I really see the benefits of web enhancement. I have tried a web page using HTML and had moderate success, but WEBCT is the rage here and I just haven't had the courage to work with it."

"Lack of simple to use equation editors for the students."

"We take tests and quizzes online. At times, I wonder if through my own ignorance of the technology and others savy expertise with technology if exam security is what I wish it to be."

"Type of courses I teach require hands on lab exposure."

"Choral music cannot be taught on-line, but students may be directed to various sites for rehearsal notes and research."

"Lack of funding to update or modify web-based courses (especially important when teaching computer technologies and applications which experience frequent upgrades). Lack of full-time instructors to teach courses (if an instructor teaches a web course then he or she teaches one less classroom-based course; we keep adding web courses but don't add faculty). Lack of time (set up your web course like flash cards or lecture and it requires almost no time to teach but provides an inferior learning experience -- set up your web course to require dialog with students and it becomes similar to having 25 independent study students). Some fellow instructors have expressed fear about communicating with students via email and discussion boards (they prefer oral communication)."

"Too much stick and no carrot. Some of the wrong administrative people are still in place to make faculty want to commit to online development. Inconsistencies regarding incentives. Implied threats regarding promotion and tenure if one is not seeking to develop online offereings. No clear and consistent policy, nor incentive at the institution. Lack of truthfulness, follow-through and integrity."

VITA

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Wallace, Thomas B. (2003). Utilizing the Tegrity© WebLearner for Classroom Presentation Capture and Streaming. <u>Proceedings of the 36th Annual Conference of The Association of Small Computer Users in Education</u>, 270-274.

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