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Jan Isobel Fox
West Virginia University

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Review of the Factors Influencing the Satisfaction of
Learning in Online Courses at Marshall University

Jan I. Fox

Dissertation submitted to the
College of Human Resources and Education
of West Virginia University
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Michael Cunningham, Ed.D., Chair
Dennis P. Prisk, Ed.D.
Powell Toth, Ed.D.
Ernest Goeres, Ph.D.
Robert Gillespie, Ph.D.

Department of Leadership Studies

Morgantown, West Virginia
2000

ABSTRACT

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Learning in Online Courses at Marshall University

Jan I. Fox

The purpose of this study is to determine what factors influence online course satisfaction. Additionally, the study investigates differences in demographics between traditional student populations and those students attracted to online courses. Research questions were defined for investigating relationship between student satisfaction in the online course with the of the amount of learner interaction and feedback, the reason students enrolled in the course, faculty expertise in online technologies, the course pace, the combination of instructional strategies used in the course, and the students prior experience with the online course product. Additionally, course retention data was calculated as a secondary satisfaction indicator. To achieve this purpose, the Flashlight Current Student Inventory and Flashlight Gap Analysis surveys were utilized in the study. Standard research methodology was used to collect, analyze, and report on the data. The research population for this study was 1129 Marshall University students enrolled in 50 online courses during the fall 1999 term. The responses indicate that students enrolled in online courses are more likely to be older than traditional students, and have a higher percentage of females. Overall, student satisfaction with online courses was medium to high. The data implies the student satisfaction is influenced by the amount and type of learner interaction and feedback, the reason why a student takes a course, faculty technical expertise, the pace of the course, and the type of instructional strategies employed in the course. The data did not support the notion that a student's expertise in the online course delivery product called WebCT influenced student satisfaction. The retention rates for online courses exceeded the traditional course rate.

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This dissertation is dedicated to my father. He did not live long enough to see it to completion.

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CHAPTER I

Introduction

Higher education is in a rapidly changing environment, which is increasingly based within the context of a global knowledge-based economy. Traditional universities are attempting to adapt purposes, structures, and programs, and new organizations are emerging in response. Growing demand for effective learning and student satisfaction, combined with technical advances, is creating a critical pressure point for challenging the dominant assumptions and characteristics of existing traditionally organized universities in the 21st century. The combination of demand, quality, costs, application of content, and new technologies is opening the door to emerging competitors and new organizations that will compete directly with traditional universities and with each other for student learners.

As technology becomes more affordable and widespread, many educational institutions are moving towards incorporating educational technologies in their curricula. A study done by the <u>National Center for Education Statistics</u> (NCES) in 1995 found that one-third of higher education institutions in the United States offered courses at a distance using telecommunications, while another third of the schools hoped to offer those types of courses by 1998 (Lewis, Alexander, & Farris, 1997). Building upon decades of computer networking activities, the Internet has produced phenomenal growth in the extent and scope of online education. Online education has created a new paradigm for teaching and learning satisfaction that is different from both traditional and previous computer-based instruction methods.

Background

Distance education began as correspondence education and can be referenced as early as 1879 (Tichnor, 1879). In 1889, with the Chautauqua Movement, William Rainey Harper formalized distance education. The University of Chicago Extension program was formally established by 1915 (Moore & Kearsley, 1996). By 1986, 60 universities were providing distance education learning opportunities, primarily via correspondence courses (Moore, 1986), and by 1990 noncredit programs utilizing independent study accounted for 12 percent of all enrollments, including 16,000 students from Pennsylvania State (Markowitz, 1990). In 1992, Mind Extension University, one of many providers of distance education programming, was available to 21 million households in 7,000 communities in the United States, with students in Germany, Venezuela, England, and Egypt (Sutton, 1993). By 1994, Nova University had expanded to include 76 sites in Florida and 72 sites in 22 other states and four international locations (Mizell, 1994).

Changes in demographics are influencing the way education is delivered to meet more diverse needs. Women and older adults are becoming involved in education in increasing numbers (Digest of Educational Statistics, 1998). In 1998, approximately 3.4 million adults over the age of 35 were enrolled in higher education, and older women outnumbered older men two to one (Digest of Educational Statistics, 1998). Institutions of higher education as diverse as the University of North Dakota (Watkins, 1994) and Harvard (Cirosa-Parish, 1993) are responding to these changes in demographics by implementing distance education programs as an effective means of providing more options for these non-traditional students. The Western Governors' University (WGU) is

another example of an organization that is responding to change by establishing a virtual university in the Western United States (Western Governor's Initiative). The <u>Southern Region Educational Board</u> (SREB) has created the <u>Southern Region Electronic Campus</u> (SREC), and currently enrolls more than 15,000 students (SREB, 1999). The Electronic Campus increases students' options by offering courses not previously available where a student lives or at a time that was convenient. Students in the most remote areas have access to courses and programs that have not been readily available. The Electronic Campus allows for states to streamline interstate sharing and overcome traditional barriers that have made it difficult for colleges and universities to offer courses across state boundaries.

In the past, distance education programs have included correspondence courses, audio and videotape programs, and television, all of which have served to further the formal and informal learning goals of adults (Moore & Kearsley, 1996). Currently, distance education programs include not only these traditional delivery methods but also complex systems that are more technical, more costly, and require more commitment by educational institutions to support them (Marquardt & Kearsley, 1998). Distance learning resources include print, computer conferencing, audioconferencing, audiographics, videoconferencing, satellite, video and audio streaming, and face-to-face instruction (NUCEA Summit, 1995; Office of Continuing Education and Public Service, 1996).

Distance education has become more available, more varied, and increasingly more popular, both with learners and educational organizations (Marquardt & Kearsley, 1998). An increasing amount of research has been done on various aspects of distance education. Learning more about the way distance education students perceived its

potential will help increase our understanding of how these different delivery methods influence course satisfaction and how they can be better utilized, thereby adding value to the learning process (Moore & Kearsley, 1996).

A primary goal in studying a new medium of communication for educational delivery must be the identification of its effectiveness (Hiltz, 1993). While many studies showed a significant difference on the learning outcomes, the number of studies concluding no significant difference cannot be ignored (Moore & Kearsley, 1996). Russell (1999) of North Carolina State University cited 318 research reports and papers that found no significant difference in learner outcomes from those who participated in distance education programs. These studies spanned the years from 1928 till 1999, and covered a wide range of technologies. On the other hand, a significant difference in student outcomes had been shown in many other studies. Orr (1997) claimed that more contemporary research suggests that recent powerful technologies have different characteristics and implications from the old technologies. He cited over 70 studies that concluded a significant difference in response to the list compiled by Russell. Some of the investigators of current studies, reviewing new interactive online Internet technologies, have reported improved student outcomes over some traditional class based courses (Orr, 1997).

Traditionally, in order to be a viable means of instruction, courses developed for distance education use had to be comparable in quality to courses offered in a traditional university environment (Houle, 1974). Houle believes that the methods and strategies that are utilized in the classroom are very significant since they both convey content and are "considered the heart of the educational format" (p. 153). Numerous theories exist

which applies to education facilitated in traditional higher education environments (Knowles, 1970; Rogers, 1969; Witkin, 1976). Unfortunately, since utilizing the Internet for education is so new, few theoretical frameworks have been developed primarily for application to Internet education. New theories are being developed that do not stress the traditional nature of course comparability. In several studies reviewed by Orr, student outcomes and satisfaction did not need a traditional course reference to have valid educational research value (Orr, 1997). Moore and Kearsley (1996) developed a set of variables that determined the effectiveness and satisfaction of distance education courses. Additionally, best practices tools for utilizing technology in an educational environment have been developed.

The Annenberg Flashlight Project focuses on whether faculty and students find the available technology useful (or a hindrance) when they try to implement each of seven principles of good practice in undergraduate education (Chickering & Gamson, 1987; Chickering & Ehrmann, 1996). As some scholars debate the future impact of technology on higher education, others are developing principles for practice. The "Seven Principles for Good Practice in Undergraduate Education" were published in the American Association of Higher Education Bulletin (Chickering & Ehrman, 1987). These principles summarized findings from extensive research on undergraduate education. Chickering, one of the developers of the Seven Principles, has recently reviewed the principles in light of technological developments since 1987, and has found that certain aspects of computer-mediated education have strong parallels to the original principles, strengthening the argument that computer-mediated communication should be an integral part of higher education. The principles focus on those methods that encourage contacts

between students and faculty, develop reciprocity and cooperation among students, use active learning techniques, give prompt feedback, emphasize time-on-task, communicate high expectations, and respect diverse talents and ways of learning.

Amount and Type of Learner Interaction and Feedback

Thach and Murphy (1995) conducted a survey of 103 distance education professionals to produce a list of competencies that provided for the best overall experience for the participants**.** These competencies included the importance of frequent communication at all sites, promotion of teamwork rather than competition among participants, the importance of the instructor operating from a "systems perspective," and technology to achieve a positive overall learning experience (p. 6). The study suggests that, in addition to course design and school factors, facilitator roles and performance requirements will be defined by the needs of the students themselves. Students who are high on the motivation and willingness continuum but low on the ability continuum may require facilitator support in the form of instructional assistance (if the facilitator has subject area expertise) or encouragement and assistance in using telephone tutor or other external support (if the facilitator does not have content area expertise). Students who are high on ability but low on motivation and willingness will require facilitator support to help them stay on task and participate in class activities (Hersey, Blanchard, & Johnson, 1996). Interactions include Learner-Center Interaction that describes how students interact with course materials. Learner-Instructor Interaction describes how students interact with their instructor. Learner-Learner Interaction describes how students interact with each other. These include questions concerning chat room satisfaction and social

interaction. Learner-Environment Interaction is defined as how students interact with the physical or web-based environment for learning (Moore & Kearsley 1996)

Reasons for Students Taking the Course

An online course does not always imply distance learning and virtual colleges, although those activities will reach increasing numbers of students. Many students will want the setting of a residential college where technologically enhanced and online learning are available (Hiltz, 1996). Those students come to college expecting better access to information than they had in their high schools and homes. The small residential college, as contrasted to a major university, is in a perfect position to provide excellent access to information wherever the student learns (Turoff, 1998).

The most extensive research in this area has been conducted by three institutions under the auspices of the Alfred P. Sloan Foundation (Mayadas, 1997). The Foundation provides fiscal support to colleges and universities for the development and evaluation of asynchronous learning networks (Mayadas, 1997). Currently, the Foundation supports on-campus asynchronous learning projects at seven institutions, near-campus (i.e., within commuting distance) projects at twenty institutions, and very-far-from-campus (i.e., distance learning) projects at eight institutions (Mayadas, 1997).

Technology provides new choices on how, when, and where students access learning opportunities (Harasim, Hiltz, Teles, & Turoff, 1995)**.** Therefore, technology can reduce barriers imposed by affective factors on a single time, place, and mode of learning. Learners gain access to people, information, and experiences as they choose to come to class and enjoy a traditional social experience, or select on-line learning options. Learning becomes a personal experience combining personal interaction with media

support and on-line learning and communication activities (Ehrman, 1996). Illness and personal crises no longer remove learners from the education experience. Instead, learners remain connected to peers, experts, information, and experiences through threaded conference discussions, video records, and real world data simulations in an anywhere, anytime frame of access (Mayadas, 1997).

Preparation and Experience of Instructors Teaching the Course

An article entitled "Tips for On-Line Learning" emphasizes several points that were stressed by authors Moore and Kearsley in 1995 (Milken Exchange, 1998). This article showcased telecommunications as being the most effective medium for training teachers in today's classrooms, and states, "the real role of the professor will not be to provide information but to guide and encourage students wading through deep waters of the information flood" (Milken, 1998, p. 2). Professors in this environment will thrive as mentors. Professors will use the best skills they have now to guide students through the educationally crucial tasks of information processing, such as problem solving, analysis, and synthesis of ideas. The professor will also be a critical point of contact to the world beyond the campus (Dirr, 1999).

Providing training for faculty is paramount in achieving excellence in education (Moore & Kearsley, 1996). Some faculty may find the task of transferring their curricula to telecommunications a daunting task while others eagerly adapt to technologies (Hiltz, 1993). In his survey of college faculty who do not use distance education technologies, Northrup (1997) attempted to measure the perceptions of these faculty and their resistance or acceptance of distance education. He identified faculty training and institutional support as the two largest areas of concern from the faculty. Also, in contrast

to other research, 85% of the respondents in this study felt their courses would be suitable for distance learning. In a similar study of secondary teachers, Abou-Dagga and Huba (1997) noted that teachers were more likely to utilize telecommunications when they felt it enhanced their professional role, when they were allowed to explore the technologies, when they received training in using technologies, and when that training encouraged habitual use of the technologies.

Once the institutional decision has been made to incorporate telecommunications, the faculty must be introduced and trained in these new media (Moore & Kearsley, 1996). Managers must ensure the training in the principles of technology, the function of the technology, the redesigning and planning of current lessons, and the operation of the technology (Rivard, 1995). Schools can utilize several options in delivering the training to faculty. Options include using peer trainers in a mentoring model; encouraging faculty to acquire the knowledge and skills on their own; and hiring professional staff members whose primary functions involve faculty training. Regardless of the method of instructional delivery, management must consider whether telecommunications work will occur during regular staff development times or after hours, and whether activities will take place in the computer lab at school or at an external training site (Gooden & Carlson, 1997).

A very important component of quality in any learning environment is the learner and instructor comfort level within that environment. In the case of education via the Internet, learners must feel comfortable with the computers themselves as well as with the online learning environment. According to Dolence and Norris (1995), learners have come to expect "world class service and user friendliness" in education processes (p. 46).

Thus it is clear that educators need a way to teach computer skills so that there is a minimum of learner frustration and confusion. Ellsworth (1995) presents a computer skills learning model that she has developed and has found to be successful. Ellsworth (1995) suggests that the successful integration of online work within a traditional curriculum depends upon the "utilization of tiers of developmental teaching and learning" (p. 34). In other words, "each plane of such learning requires mastery of the previous level" (p. 34). The first level deals with such issues as the objectives of the course, expectations and how online work fits into the overall course. Ellsworth states that students must "see the connection between what is being taught (the content) and the vehicles (methods and media) for that teaching" (p. 34). The second level of learning involves expertise in the use of the technologies. Ellsworth (1995) states, "These are the skills or 'how to' operational-level tasks: the rules of interaction" (p. 34). The third level builds upon the first two and entails gaining "proficiency and mastery of the tools to the extent that they become second nature" (p. 34). This third level results in "problem solving, information gathering, negotiating, and turning in assignments" (p. 34). Ellsworth makes a strong case for both the students and the instructor becoming proficient enough with the technological tools that these do not create a communications barrier.

Course Pacing

A number of online courses involve strong pacing. Students all start at once, deal with given topics in given timeframes, and are ushered on at a group-set pace (Conner, Wright, DeVries, Currys, Zeider, Wilmsmeyer, 1995). Studies of student-paced instruction (vs. instructor-paced instruction) have shown that students learn the same

amount in 20% to 50% less time than when they are instructed in the conventional manner (e.g., Kulik, Kulik, & Cohen, 1980). Computer-mediated communications allows for time and place independence, and at the same time enhances interaction among groups and individuals, unlike almost any other communications technology or instructional approach (Berge & Collins, 1995; Mason, 1990). Using personal computers and modems, learners are able to create and submit homework, receive feedback, take a self-test, interact with their instructor and others, and access software, library resources and advisory information (Moore & Kearsley, 1996).

Nature of Instructional Strategies Used

Jones and Okey (1995) discussed the concept of effective design for successful online course offerings. The design of the medium must be interactive and students should be skilled in the physical manipulation of the interface components. The technology delivering the instruction is a critical component in the student success factor. If a student spends more time "learning" to interact with the interface, valuable learning is lost in the process of manipulation. Online instructional strategies can include any combination of hands-on skills training, interactive discussion of broad topics, on-line handbook for skills remediation, extensive on-line technology glossary, planned electronic classroom (chat) sessions, daily news and announcements updates, and challenging monthly lessons using Internet search techniques and e-mail submission and feedback for any place/any time learning among the participants (Mayadas, 1997).

Within the face-to-face classroom, choices enhance collaboration, decision-making, and problem-solving activities by removing the need for turn-taking and giving everyone equal chances to perform (Hiltz, 1993). Teachers as guides, facilitators, and

coaches interact more fully with students as the technology takes on repetitive tasks (Erhman, 1996). Teachers participate in collaboration sessions, guide experiences, provide feedback, and mentor individuals while technology-supports present key concepts and basic information, link students for recorded discussions, bring experts to the students, and offer opportunities to explore databases and real world information archives (Paulsen, 1995). In the 'smart' classroom, presentation software, networked computers, simulations, models, and decision-making programs actively engage the students in a variety of activities, or simply allow them to passively explore a 'canned' presentation at their own pace (Dolence & Norris, 1995).

Participant Educational Level

Given the tremendous variation in learning and cognitive styles among individuals, it is expected that any given instructional strategy, course organization, or use of media may work for some students but not others (Gooden & Carlson, 1997). Dirr (1999), for example, noted that online students at the University of Phoenix tended to be older and less demographically diverse than regular classroom students, but tended to attain higher end-of-course achievement levels. In 1963, Ausubel addressed "meaningful learning" (p. 17) suggests that the previous experience of the students provide the basis for later learning that is meaningful (Anderson, et al., 1978).

Course Satisfaction

Childs (1995), in an educational study, concluded that the method of instructional delivery did not cause differences in student outcomes or attitudes regarding the method. Child's study determined that there was a relation between student satisfaction and the

student's level of previous education. In a study by McComb (1994), communication potential and the "richness" of the communication experience did seem to have an effect on students' attitudes and satisfaction with the course, the instructor, and their perceived learning outcome. Previous studies have shown that student learning outcomes and satisfaction in online educational environments are related to changes in the traditional instructor's role from leader to that of facilitator and moderator (Feenberg, 1987; Krendl and Lieberman, 1988; Faigley; 1990).

Hiltz (1993) found that students who make the greatest use of the online tools utilized in a course tend to have the most positive attitudes toward their experience. Hiltz (1993) in her book "The Virtual Classroom: Learning Without Limits via Computer Networks," tested many hypothesis on performance and satisfaction in the virtual classroom. Although the findings supported some aspects, such as utility of feedback and student participation, no conclusive evidence on the superiority (or inferiority) of the virtual classroom was reached. It is important to note that most of these experiments took place in the mid-eighties with limited technologies and accessibility.

Results of a study conducted by Irani (1998) indicated that communication potential, expressed as a function of information richness and system design factors, impacts student attitudes and preferences, as well as course satisfaction and outcome. Operationalizing communication potential within the context of the instructional setting improved the understanding of how to compensate for the lack of face-to-face communication in various instructional media, as well as how to utilize system design factors to augment social interaction and improve course satisfaction and learning outcome. Irani developed an eight-factor scale that assessed the information carrying

capacity related to the clarity of transmission, participation, and information transfer. Results of the study indicated that six of the eight factors correlated positively with students' satisfaction with the mediated experience, the course, and the instructor, suggesting that system design and appropriate use of information rich media does impact student attitude as to learning outcome and course satisfaction levels.

Research studies have indicated that the achievement and satisfaction of students in distance education courses is not significantly different than the achievement and satisfaction of students in traditional classrooms (Johnstone & Krauth, 1996). Distance education offers opportunities for students who cannot travel to a campus for their classes (e.g. Owston, 1997). Harasim (1993) asserted that computer networks make the world connected, and that this concept is applicable to distance education. However, past studies have not illustrated the details of students' perspectives on distance education. Moreover, research on the effect of distance education has been focused on student outcomes (Ahern & Repman, 1994), but not on the affective aspects of distance education. Johnstone and Krauth (1996) proved the efficacy of technology in distance education, but did not examine surrounding issues, such as students' isolation and effective advising from instructors.

Marshall University

Marshall University is a liberal arts institution in the state of West Virginia. Marshall University has developed a 21st century campus by developing the infrastructure, policy, training paradigm, assessments, collaborative agreements and institutional vision to create a campus that has no boundaries (Prisk, 1998). Implementation of online courses was developed with special consideration for

educational decisions based on a deepening understanding of the way in which face-to-face communications, telecommunications, and independent work can fit together for the best learning and teaching. Marshall University has developed a curriculum of fully remotely accessible E-Courses and technology enhanced T-Courses. An E-Course requires no seat time and no physical campus presence whereas a T-course integrates 20% of the course with face-to-face interaction. Students can apply for admission, register for classes, retrieve financial aid data on their own schedules and access full-text and multimedia library resources via a web browser. Online courses at Marshall University use a standard Internet course creation tool know as WebCT and a standard technology assessment tool known as Flashlight Project.

Statement of Problem and Research Questions

As various forms of online learning courses become more common at the university level, questions related to the course satisfaction become increasingly more important. Understanding what factors influence student satisfaction in an online environment at Marshall University and how to compensate for the lack of face-to-face communication in various instructional media has not been studied.

The Flashlight Project is used for developing, testing, and disseminating evaluation procedures for distance based courses and is based on the seven principles of good practice (AAHE, 1996). This approach has been taken in view of the need to provide formative information for use in future web-based course design at Marshall University and the limited resources available for assessment. The Annenberg Flashlight Project assess its evolving educational strategies, in particular those educational strategies supported by its uses of computing, video, and telecommunications.

Flashlight's focus is on issues such as support of collaborative learning, work on complex projects, use of data from the Internet, and shifts toward more learner responsibility for work. These practices have been identified by research as important for producing good outcomes in education (Chickering & Ehrmann, 1996). Flashlight also helps institutions study educational outcomes (e.g., shifts in the types of learners being served; increases in time on task; increased ability of graduates to apply what they've learned; changes in total patterns of educational costs). Flashlight is designed to help institutions learn whether technology is helping them improve practices and outcomes as defined by Chickering and define overall course satisfaction.

The purpose of the study was to review the factors influencing student satisfaction in online courses at Marshall University. This research builds upon the education literature in all forms of distance education and builds on what are best practices in deploying an online course.

The following questions were addressed:

Q1.   What relationship, if any, does the amount of learner interaction and feedback have on student satisfaction when participating in an online course offered by Marshall University?

Q2   What relationship, if any, does the reasons for students taking the course have on student satisfaction when participating in an online course offered by Marshall University?

Q3   What relationship, if any, does the preparation and experience of the instructor teaching the course have on student satisfaction when participating in an online course offered by Marshall University?

Q4   What relationship, if any, does the course pace have on student

satisfaction when participating in an online course offered by Marshall

University?

Q5   What relationship, if any, does the combination of instructional strategies

have on student satisfaction when participating in an online course offered

by Marshall University?

Q6   What relationship, if any, does the prior educational experience with the

online course tool have on student satisfaction when participating in an

online course offered by Marshall University?

Operational Definitions

Satisfaction - Student responses to the course satisfaction section of the Current Student

Inventory of the Flashlight Project .

Amount and Type of Learner Interaction and Feedback - Student responses on the

Current Student Inventory of the Flashlight Project concerning interaction and feedback.

Reasons for Taking the Course - Student response to the Academic Goals section of the

Current Student Inventory of the Flashlight Project .

Preparation and Experience of Instructor - Responses of the course faculty member

on the Faculty Gap Analysis of the Flashlight Project

Pacing - Student responses on the Current Student Inventory of the Flashlight Project to

questions referencing the student's ability to pace one-self and the actual schedule of the

course.

Type and Combination of Instructional Strategies - Student responses to the
Satisfaction with Training section in the <u>Current Student Inventory of the Flashlight
Project</u>.

Educational Background - Student response to <u>Current Student Inventory of the
Flashlight Project</u> section describing the student previous educational degrees.

<u>Significance of the Study</u>

This study will provide data useful to all levels of administration functions, such
as planning, organizing, staffing, directing, coordinating, reporting and budgeting (Gulick
& Urwick, 1937). Due to increased accountability measures of the public on higher
education, all academic administrators need to be aware of the challenges and possible
solutions that online courses offer in answering many of the current higher education
challenges. Erhman (1996) stated that access, quality and cost are the top challenges
facing higher education. Accessibility, especially how to reach and educate the full range
of adults who deserve a chance at an education, despite their location, schedules, cultural
differences, or physical disabilities, can be dramatically enhanced with online learning.
Quality, especially learning for the 21st century, will drive the success or failure of the
online market. The cost for creating, supporting and training in the online environment
must have strong fiscal management strategies.

Research recently released by the <u>International Data Corporation</u> (IDC) shows the
number of college students enrolled in distance education courses will jump from
710,000 in 1998 to 2.2 million in 2002. The IDC research predicts that 85% of two-year
colleges will develop online courses by 2002, up from 58% in 1998. Eighty-four percent
of four-year-colleges are expected to feature online learning courses in 2002, compared

to 62% in 1998 (International Data Corporation, 1998). If students are not satisfied with their educational experience, an enormous amount of university resources could be lost, as well as the students themselves.

Presidents, administrators, faculty, and particularly students are interested in the success of online courses due to the potential positive impact on access to education and educational resources. This access can have both a positive and negative impact on the institution. The networking technology for distance education is opening up all universities and colleges to competition. Students can now cross geographical barriers and take courses in any state or, for that matter, any country (McManus, 1997). A learning infrastructure based on digital technology offers more than just education as usual on the Internet. It offers a set of extraordinary new tools: self-paced, multimedia modules that deliver leading pedagogy; in-depth outcome assessments; and online interaction with fellow students and teachers that facilitates continuous feedback and improvement (Rivard, 1995).

Planning is a critical component of all campus administrators involved in the implementation of a successful online delivery program. A change process must occur by designing and evolving the technical infrastructure, providing administrative support and leadership, providing systematic faculty development, and assessing performance for continuous improvement of course delivery and services (Dirr 1999). Academic and finance officers could utilize these findings for planning university resources and coordinating strategic planning in the area of technology, reporting results to external and internal interested constituents, and providing the appropriate budget for a successful online program.

Organizing, staffing, directing and coordinating resources in the online environment poses special challenges to academic offices, deans, faculty, and support staff in providing administrative student support services to online students. The satisfaction in these services can influence the decision of a student entering into an online course (Porter 1997). Online learning programs cannot succeed unless significant efforts are made to provide comprehensive services to the distributed student population, in keeping with services provided to campus-based students. On a physical campus, functional departments are usually separated by the geography of facilities, with the library in one building, admissions and records in another, and the bookstore in yet another. The online student however is disadvantaged by this separation. Connecting students to the university means that systems and services need to appear seamless. This might mean bringing all online learning services under one department or college, creating new positions to link communication between services, or by connecting disparate services through available technology. Some universities have developed an entire separate administrative structure or spin-off corporation for the delivery and management of online courses (Porter, 1997).

University presidents and chancellors are now being required to report online student retention, satisfaction and overall success in the online course environment to Board of Trustees and legislative members (ITPE, 1999). Technology creates a window of opportunity for regulatory reform. The competitive environment brought about through global digital networks will transform both educational methods and institutional roles (National Education Association, 1999). Higher education administrators need student satisfaction and retention information of online courses for its influence on how

public policy makers approach such issues as institutional role and mission policies; program approval and review processes; service area boundaries; regulation of out-of-state providers; and admissions, residency, and transfer of credit policies (Lewis, Alexander, & Farris 1997). However, a critical question should be posed in the process of how national and state public policy makers respond to and facilitate needed changes in regulatory policies and procedures if online courses are successful. In 1999, the Southern Regional Education Board approved the establishment of the SREB Distance Learning Policy Laboratory. Building upon the work of the Educational Technology Cooperative and the *Electronic Campus*, the Policy Laboratory will seek to reduce or eliminate existing or potential policy barriers to distance learning activities in the areas access, cost and quality.

University presidents, chancellors, and administrative budget officers are continually concerned about the current growing cost of higher education, and the trend of cutbacks of public support in the U.S. is forcing many students to put costs first in seeking an education and to act as consumers in a market economy (Hiltz, 1993). Questions, such as whether two accredited programs are the same when one costs more than the other, will employers fund education on a part-time basis and the effective comparison of campus verses online courses are now being raised (Hiltz & Wellman, 1997). In February 1997, the Middle States Association of Colleges and Schools issued, via the Commission on Higher Education, a policy statement on Distance Learning. "Educational programs conducted off campus, or special programs offered on-campus, must meet standards comparable to those of all other institutional offerings (Characteristics of Excellence in Higher Education, p. 14)." They emphasize that an

institution's programs holding specialized accreditation meet the same requirements when offered electronically. Clearly this means there should be no distinction between inputs or outputs associated with either program, and that integration is one desirable approach to accomplishing this.

Financial officers can benefit from this information to better focus limited resources to successful online educational strategies. Higher education today is faced with many challenges. These include dealing with increased competition from other institutions and businesses, increasing demands from accreditation agencies, diminishing resource availability, the ever-increasing advances in technology, and responding to the increasing demands for effectiveness from our customers (Cox, 1994). Academic institutions are investing enormous amounts of scarce dollars in computing, video, telecommunications and faculty development (Conner, 1995). In addition, students are paying higher tuitions for these services (Boettcher, 1995). One major reason for this investment is to implement changes in educational strategies. A failure in the online course education strategy could have far reaching implications on an institution's viability.

Many educators, learners, and benefactors urgently need to know whether their investments in technology are actually supporting changes in their strategies, and, if so, whether these changed educational strategies are achieving the desired results (NEA, 1999). Because global statements about "what works" are of limited utility and validity, and because the local situation changes on a regular basis, there is no substitute for self evaluation (Erhmann, 1996).

Limitations/Assumptions

This study is limited by the normal problems associated with a one-shot case study design. Response bias may be a limitation due to the limited sample size (Campbell & Stanley, 1966). The findings of the study are limited to the reliability and validity of the survey (Kerlinger, 1986). Additionally, a students response to course satisfaction may change overtime (Erhmann, 1996). They many not immediately realize the true benefit of a course or are inexperienced in higher education courses.

Summary

Phenomenal education advances are revolutionizing our nation's college and university campuses, and online courses are becoming part of the educational experience. Learning has moved beyond the college classroom walls and traditional campus boundaries, as technology allows students and faculty to participate in worldwide intellectual conversations. Higher education uses technology to prepare students for the increasingly technology-enabled workforce and to provide them with the skills for lifelong learning. This media of learning presents both challenges and incredible opportunities to universities. Implementation of online courses requires a review of educational and administrative decisions based on deeper understanding of the way in which face-to-face communications, telecommunications, and independent work can fit together for the best learning and teaching. Good teaching and real learning may have never been more important or more apparent than in an age of knowledge. Adaptive, transformative pedagogy may be the greatest challenge and true future of higher education, and the learner will be at the core. This study reviews whether the Seven Principles of Good Practice have been used at Marshall University when courses are

delivered using new communication and information technologies to enhance teaching

and learning.

CHAPTER II

Review of the Literature

Education has experienced a surge in research on distance education over the past 25 years. Some very respected practitioners and researchers say that much of this research has been over simplified and incomplete (Shulman, 1987; Porter & Brophy, 1988). Others believe outcomes of research are conclusive enough to alter policy and procedure to better enhance student learning (Thompson, 1998). Others say it is difficult to quantify an art form that contains tremendous complexity, resulting from the large number of relevant variables and the interactions among those variables (Gage, 1985). Eraut (1994) calls this interaction of the variables "hot action" and stresses the importance of developing effective habits and routines in order to effectively cope with the demands of teaching. Educational researchers face many difficulties in trying to conduct controlled studies in any learning setting because threats to validity and reliability are often beyond the influence of the investigator. As a result, a number of people who are interested in the application of technology to teaching have abandoned traditional research models, opting instead for "proof in practice."

The best known broad perspective guides offering faculty general strategies for efficient and effective teaching in higher education include McKeachie's *Teaching Tips* (1986), and Chickering and Gamson's *Seven Principles For Good Practice in Undergraduate Education* (1987) and *Applying the Seven Principles of Good Practice in Undergraduate Education* (1991). A recent AAHE Bulletin (1996) addressed the expansion of Chickering and Gamson's seven principles to twelve quality attributes in a report issued by the Educational Commission of the States. These guides are typically

pragmatic and formulaic approaches designed to enhance teacher organization and to assist them in their work.

The attitudes and satisfaction of students using distance learning also are characterized as generally positive. Thomas Russell, in his 1999 annotated bibliography entitled *The No Significant Difference Phenomenon,* lists hundreds of sources that seem to bolster these arguments. However, a closer look at the evidence suggests a more cautious view of the effectiveness of distance education. It is important to emphasize that, despite the large volume of written material concentrating on distance learning, there is a relative paucity of true, original research dedicated to explaining or predicting phenomena related to distance learning. From this more limited group of original research, three broad measures of the effectiveness of distance education are usually examined. These include student outcomes, student attitudes about learning through distance education, and overall student satisfaction toward distance learning.

A quick analysis of the brief research summaries in Russell's database indicates that roughly eighty percent of the reports and papers were published prior to 1990. Even more significantly, nearly 60% of the reports were published 15 or more years ago. And the vast majority of the cited reports deal with video delivery of education. Even the reports published during the 1990s have a decided video slant, with nearly 50% of the citations referring to studies of video based education. One might question the applicability of such studies to computer-mediated education, which has had its most significant gains during the 1990s.

Schutte's paper (1997) "Virtual Teaching in Higher Education: The New Intellectual Superhighway or Just Another Traffic Jam?" has generated a lot of interest

and stirred a great deal of discussion in the educational community, despite its many apparent flaws. This experiment was carried out during the Fall 1996 in which 33 students in Social Statistics courses at California State University were randomly divided into two groups, one taught in a traditional classroom and the other taught virtually on the World Wide Web. The study reported that the virtual class scored an average of 20% higher on the traditional class on the examinations. Furthermore, post-test results indicated that the virtual class had significantly higher perceived peer contact, more flexibility, and greater affect toward learning than did the traditional class. However, time spent on class work was higher in the virtual class. The sample size was very small in this study. It appears that many extraneous factors, such as the learning model employed, and the lack of standardized teaching procedure and exams for both groups, were not accounted for. Thus, the findings must be regarded with some caution.

Most of distance education studies conclude that, regardless of the technology used, distance-learning courses compare favorably with classroom-based instruction and enjoy high student satisfaction. Many experimental studies indicate that students participating in distance learning courses, for example, perform as well as their counterparts in a traditional classroom setting. These studies suggest that the distance-learning students have similar grades or test scores, or have the same attitudes toward the course. The descriptive analysis and case studies focus on student and faculty attitudes and perceptions of distance learning. The purpose of many of these types of research is to develop recommendations to improve distance learning. These studies typically conclude that students and faculty have a positive view toward distance learning.

In the last decade, providing education at a distance has changed significantly as the use of computer-mediated learning, two-way interactive, and online courses continue to become more pervasive. It is necessary to append several reservations to this optimistic conclusion. The sheer weight of opinion in the literature should not be taken as conclusive of itself, since most of it is based on anecdotal evidence offered by persons and institutions with vested interests in the techniques being evaluated, or in the very programs they are evaluating (NEA, 1999). In those studies where some attempt has been made to gather empirical data, schoolteachers or university faculty with extremely limited resources have undertaken the research. As a result, the methodology of many of the research designs is weak with regard to such factors as the populations being compared or otherwise studied, the treatments being given, the statistical techniques being applied, and the validity, reliability, and generalizability of the data on which the conclusions are based (NEA, 1999).

Successful Programs

The George Mason University graduate course "Taming the Electronic Frontier" was cited by Cahoon (1996) as an effective course taught via Internet and cable TV. A noncredit example of a project utilizing distance education technologies is "Frontier-Talk," a listserve designed for developers and users of the Frontier software, a specialized web-based application (Cahoon, 1996.). The examples cited by Cahoon (1996) emphasize the collective nature of distance technology as opposed to an individualized, anomic approach. He stresses the value of problem-solving that can arise from "the shared goals and constraints of the work group" (Cahoon, p. 64).

The University of Illinois at Urbana-Champaign (UIUC) offers one of the more extensive rosters of online courses (SCALE, 1998). During the first year of the program (1995/1996) UIUC offered ninety online courses. During the 1996-97 current academic year, UIUC offered 110 courses from 42 different academic departments. In a 1996 post-course student survey of online classes (Ory, Bullock, & Burnaska), the results showed that 89% of the students found online courses somewhat easy or very easy to use, 49% found online courses to be an above average educational experience (compared with only 18% who found it to be below average), 71% would be likely to take another online course, 39% said the online courses increased the quantity of interaction with other students (while only 2% said it decreased interaction), 31% said the online course increased the quality of interaction with other students (while only 3% said quality was lessened) , 56% said the online course increased the quantity of interaction with instructors (while only 3% said it decreased interaction),and 59% stated that online courses increased the amount of learning (with only 1% reporting a decreased amount of learning).

These successful programs share certain characteristics. They provide increased access for students, provide interactions in ways not available in face-to face settings, and provide students with more control over the learning activities. These online programs give more insight into what constitutes best practice in the field of distance education. In addition to the many examples of successful programs, there were also studies identifying problems with distance education.

<u>Teaching and Learning</u>

Teachers need to provide clear expectations if their students are to be successful distance learners. (Gibson, 1994, p. 75). They need to plan lessons more carefully, force interaction when necessary, involve all learners, and articulate the class goals and expectations more clearly (Barker & Patrick, 1989). Teachers can do this, according to Gibson (1994), by providing examples of exemplary assignments and clear syllabi. Several studies have suggested that distance-learning technologies actually enhance learning by fostering learner independence. (Figueroa, 1994). According to a study by Dillon, Hayes, and Price (1990), more peer teaching and student contact happens in distance classes than in on-site classrooms.

While these studies indicate that distance education can provide a higher degree of learner control, others suggest potential problems as well. Gibson (1994) suggested "there is a variation in the willingness of learners to assume this control" (Gibson, 1994, p. 74), and Grange (1987) stressed the importance of improving student learning skills and capacities to deal with the autonomy that distance education demands. Riddle (1990) found that distance-learning techniques requires affective changes by the learners, although Moore (1987) found that the potential for "intellectual surrender" can be reduced in distance classrooms (p. 66).

Many studies have been conducted relating to learning styles, with mixed results. Gee (1990) found that learning styles may affect academic achievement. Students who took a more structured approach to learning were found to have a more positive attitude to distance learning in a study by Smith and McNelis, (1993). A study by Nadel (1988) found age-related differences among learners as well. Other studies found that the

method of delivery had no affect on learning at all (Gunawardena & Boverie, 1992, Dillon, Hayes & Price, 1990).

Several studies mentioned that students did need to have clear expectations and information as well as an orientation to the process in order to be successful distance learners (Stone, 1987; Gibson, 1994). "Students need extra support to accomplish high--tech behavior" according to Nahl (1993, p. 206), and often need to adopt new learning strategies in distance education settings (Grange, 1987; Mizell, et al., 1993; Nahl, 1993; Gibson, 1994). Nadel (1988) found that these support needs might vary by age. Studies addressing "meaningful learning" as proposed by Ausubel (1963) suggest that the previous experience of the students provides the basis for later learning that is meaningful (Anderson, et al., 1978 & Rakow, 1992). Cahoon (1996) indicates that distance education as a delivery method can facilitate meaningful learning, and Anderson et al., (1978) says a student's existing schemata will provide the "ideational scaffolding" for this meaningful learning to occur (p. 438).

Cahoon (1996) refers to the need for socializing students to new learning environments, as do Lave and Wenger (1991). Their theory of legitimate peripheral participation (1991) provides "a descriptor of engagement in social practice that entails learning as an integral constituent" (Lave & Wenger, 1991, p. 35). It is intended to provide a "conceptual bridge" (p.55) connecting the body of knowledge with the communities of practice and is intended to provide a means for initiating the novice into the professional world. For this to occur, Lave and Wenger note, several conditions must exist. Learners must have access to resources for learning, they must understand the language of the professional group, they must be socialized to the group, there needs to

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be a community of learners, and the learning must be situated so as to be meaningfully connected to the social world to which the learners aspire. The learning described by Lave and Wenger could occur as either preparatory or continuing education and could certainly include learning at a distance. Closely associated with this concept of peripheral participation is Bandura's (1986) social cognitive theory that describes a "model of triadic reciprocality" of behavioral, personal, and environmental factors that work together to influence outcomes (p. 18). One of the primary tenants of social cognitive theory is that people can learn vicariously as well as by direct experience. "Through symbols people process and transform transient experiences into internal models that serve as guides for future action" (p. 18).

<u>Instructional Strategies</u>

Much of the literature on distance learning focuses on one technology and either describes its effectiveness and/or compares it to the conventional classroom experience. Practitioners in the field are learning that most technologies are multifunctional and can be adapted to address a wide range of learning outcomes. Using a combination of technologies is now being labeled the "third generation" of distance learning systems (the first and second being correspondence courses and the current use of single mediums, respectively). For instance, combining two-way interactive video with computer-mediated learning could prove to be a very powerful tool for learning, particularly higher order thinking skills. The third generation models often use a combination of print, videotape, audiotape, fax, audio conferencing, voice mail, chat rooms and videoconferencing. Combining these technologies with computer-mediated learning enhances interaction between student and student, and student and teacher.

Unfortunately, there are few studies that examine more than one technology—and the synergistic effects of certain technologies—in addressing specific educational outcomes and satisfaction in particular student groups. The few studies that are available do not provide sufficient grounds for generalization because of a range of limitations, including small sample sizes and lack of sufficient explanation of the instructional treatment.

<u>Faculty Roles</u>

It seems clear that technology cannot replace the human factor in higher education. As William Massy notes:

> "The faculty role will change from being mainly a content expert ('the professor's job is to profess') to a combination of content expert, learning process design expert, and process implementation manager. Faculty also will be motivators and mentors, interpreters (especially of non-codified knowledge), and, as a colleague recently put it, 'expert learners'—people who lead the learning process by breaking the trail and setting the right personal example. Technology can leverage faculty time, but it cannot replace most human contact without significant quality losses"
> (Thompson, 1998).

Lauzon and Moore (1991) talk about the need for faculty members to be aware of the beliefs that underlie instructional design practice. Cahoon (1996) and Phipps and Merisotis (1999), suggest that to best accommodate new delivery methods, faculty members will need to move to adopt a facilitator role. Cahoon (1996) further suggests that the role of teacher as coach takes on more importance in distance learning settings.

The study by Beitz (1987) suggests that the advisor of distant students has five primary roles: information source; departmental socializer; advocate; role model; and occupational socializer. Several studies have noted that faculty members need to be prepared to use the technology, work on their presentation skills, use small groups in the class, and give frequent feedback (Egan, 1990; Riddle 1990; Nahl, 1993). They also need to interact with more support staff than do face-to-face instructors (Nahl, 1993).

Learner Characteristics

Similar to the relationship of course content and technology, understanding of how the learner, the learning task, and a particular technology interact is limited. Learner characteristics are a major factor in the achievement and satisfaction levels of the distance learner. Information regarding a student's preferred learning style will influence how the course is designed and the type of technology to be used. The development of software could be enhanced from a better understanding of the properties of technology (such as interactive and passive characteristics), with factors such as complexities of tasks, and cognitive, affective, and psychomotor skills (Thompson, 1998). Additional research could result in more information regarding why different technologies might be better suited for specific learning tasks.

Interactions

A fundamental aspect of learning is the social and communicative interactions between student and teacher, and student and student. This is true in face-to-face as well as online learning activities (Ruberg, Taylor, & Moore, 1996). The ability to ask a question, to share an opinion with a fellow student, or to disagree with the point of view

in a reading assignment is critical to student learning. Several aspects of asynchronous learning require adjustments on the part of students and teachers for successful interactions to occur. Ruberg, Taylor, and Moore observed that students must adjust to the non-linear nature of online learning that is not typical in face-to-face situations which tend to be linear focusing on a single discussion thread. Online learning sessions can have multiple threads with several discussions and interactions progressing. Students can be responding to the teacher but also to other students depending on their interest and point of view. Students can initiate a new discussion as easily as the teacher. In this respect, asynchronous learning can empower students and allow them to participate on an equal basis with the teacher in establishing and pursuing discussion topics.

In a study conducted by Thach and Murphy (1995), interaction was found to be an important factor in successful distance education delivery. Surveying 103 distance educators, the researchers found that behaviors such as praising students, calling students by name, and providing individual feedback were thought by these educators to be important factors in educational delivery. Respondents also believed that engaging learners in the educational process, maintaining interaction, and being familiar with and adapting to the technology were also key to distance education delivery. Furthermore, this study revealed these educators felt they needed more training in how to foster interaction and effectively use the technology to maximize educational benefits.

Several researchers (as cited in Mahesh, 1997) have stressed the importance of research in regard to interaction as it relates to all forms of distance education. In respect to online education, four specific forms of interaction have been identified (Mahesh,

1997) which include learner-learner interaction, learner-content interaction, learner-instructor interaction and learner-interface interaction (pertaining to how the learner interfaces with the technology). All these types of interactions will have an impact on student success and satisfaction with the learning experience.

Student Satisfaction

In a study of 52 high school students enrolled in five difference placement language courses, Tiene (1997) concluded that interaction between instructor and student at remote sites played a role in student satisfaction. Tiene notes that there are distinct advantages in being in the same classroom with the instructor, but these problems can be minimized by the use of effective interaction techniques. In an study conducted by Fulford and Zhang (1993) it was found that the critical predictor of student satisfaction with courses delivered by instructional television was not the actual amount of personal interaction that took place, but the perception of overall interaction.

Problems in Distance Education

Studies comparing distance education and face-to-face instruction inevitably showed deficits in the distance education programs, primarily relating to lack of contact with the instructor (Hales & Felt, 1986; Huffman, 1987; Stone, 1987; Olejnik & Wang, 1993; Miller et al. 1993). Several studies cited problems with distance education programs relating to the use of technology and group interaction. Lack of cohesiveness of the course and lack of group connection was found in a professional development program for educators (Schrum, 1992). A lack of stimulating visuals was seen as a problem in the Barker and Patrick study (1989) of a graduate statistics class. Smith and

McNelis (1993) found that the technology can be distracting for students, while Lacina and Book (1989) found that televised instruction can be passive, and that distance education needs to provide a variety of ways for interaction among students and with the instructor to be effective. A report on Nova University's Extramural graduate program summed up the problems associated with distance education delivery mechanisms, indicating that "delivering graduate education at distance . . . is more than simply getting information from the university to the student. It involves providing students stimulus materials and information in a variety of formats . . . " (Mizell et al. 1993, p. 1)

The studies that reported problems with distance education programming show the reverse of best practice. Programs are unsuccessful when they fail to build in interaction, when the materials or instructions are not clear, when communities are not established, and when students and teachers do not have the necessary training to be successful. There were also many studies that offered suggestions for improving distance education programs. These suggestions also provide examples of what constitutes best practice in the field and suggest models for the future as well.

<u>Retention</u>

In a number of studies, there was evidence that a higher percentage of students participating in a distance learning course tended to drop out before the course was completed compared to students in a conventional classroom (Duderstadt, 1997). For instance, in one study, while the mean pass mark was 81 percent, only 40 percent of the students successfully completed the course (Thompson, 1998). In another study, one-third of the students in a videoconferencing class received the grade of "I" (incomplete), compared to only 15 percent in an on-campus course (Smith 1991). In another study

comparing an engineering course taught in a conventional classroom to one taught

through computer-mediated learning, 95 percent of the resident students finished the

course, compared to 64 percent of the computer-mediated learning students (Keegan,

1996). One other study found that students participating in computer-mediated learning

had significantly higher incompletion rates (32 percent) than the on-campus students (4

percent) (Oakley, 1997).

Another aspect of interaction and communication that can lead to student

dissatisfaction in an online environment is the loss of visual clues during a discussion.

Body language is important in a face-to-face classroom discussion. The teacher, as a sign

of understanding, interprets a smile on a students face; a student nervously looking at his

wristwatch is interpreted as boredom or lack of patience. On the other hand, a teacher

motivates or provides emphasis with inflection or hand movement. However, while these

visual signs may be helpful, if misinterpreted, they may also be detrimental (Sproull &

Kiesler, 1991). Regardless, they exist and duplicating visual clues in an on-line

discussion is not that simple. Other clues may be identifiable by closely reading wording

or the turn of a phrase in an e-mail message or posting.

Students taking their first online course may have a preconceived notion that the

online course may not be as demanding as the course being taught in a traditional format.

The student may also have some technical limitations, both skills and resources. It is

important that an online orientation session provide high course expectations and tips for

succeeding in an online environment. (Cahoon, 1998). Some school administrators

believe the attrition rates in distance learning can be attributed to the fact that students

who enroll for online courses tend to be older and have responsibilities such as families

and jobs that detract from the courses. Some experts believe that retention rates for online courses will improve as technologies mature and instructors gain more experience working in an online environment. Although statistics range widely at different institutions, administrators agree that completion rates for distance education courses are generally 10 to 30 percentage points lower than in traditional courses (Smith, 2000).

Learning Environment

Developing a community of inquiry is not without potential problems. Students in this environment need to understand their responsibility for being active contributors to instruction. They cannot assume that others, either teachers or students, will simply carry the instructional load. This favors a more mature student who is self-directed and willing to take on responsibility for learning. To a degree, this supports findings that mature, motivated students are typically better suited for asynchronous and distance learning activities (Moore & Kearsley, 1996)**.**

Specific strategies and approaches to enhance online teaching efficiency and student satisfaction typically have a theoretical foundation, and as such, a variety of potential directions. Most research on specific teaching strategies is descriptive in nature and primarily includes comparative accounts on the effectiveness of one form of instruction versus another. The variety of strategies and approaches to teaching and learning is evident in the literature regarding research efforts in this area. Bonwell and Eison (1991) address the potentiality of active learning strategies and the impact as experienced by students and faculty.

Although the literature tends to deal with distance education applications of technology and traditional classroom applications of technology separately, many of the goals, techniques, and actual uses of technology overlap across the two domains and will probably do so to an even greater extent in the near future. As students within both traditional and virtual 'classrooms' make greater use of the interactive power of computers (e.g. computer mediated communications, video communications and other information technologies) the boundaries between traditional education and distance education are becoming blurred. Concepts such as "learning without limits" and "computer networks to extend educational opportunities and communications opportunities for people of all ages" (Hiltz, 1993) apply to all online learners, wherever they are situated.

Despite the presence of technology in the learning environment, sound teaching practices remain the basis for effective instruction. Gagne and Driscoll (1988) point out that instruction may differ with the introduction of technology, but learning outcomes should be the same. As part of the Innovations in Distance Education (IDE) project, launched in 1995, Ragan (1998) concluded that principles and practices identified as necessary for distance education delivery were much the same as those required for effective teaching in the traditional classroom. Ragan states that faculty involved in this project all shared the view that "good teaching is good teaching," and the development of a set of guiding principles and practices were more about sound teaching than distance.

CHAPTER III

Methodology

In this chapter, the research model and proposition are outlined, followed by a description of the experimental design. A necessary goal in the study of new mediums of communication for educational delivery is the demonstration of its overall satisfaction (Hiltz, 1993). Guided by the theoretical foundation established in the previous chapters, and given the research needs articulated by several studies, the object of this research is to investigate student satisfaction of online courses when employing all or part of the seven principles of best practice.

Many research projects in education are said to be descriptive in nature instead of being true experimental research (Campbell & Stanley, 1963; Kerlinger, 1986). While the purpose can be the same for both descriptive and true experimental research, the amount of control over the selection of subjects and the amount of randomization of the treatment differ between the two research methods. Descriptive research designs lack control and require repetition and cross-validation under other conditions and with other populations to be theoretically interpreted with confidence (Campbell & Stanley, 1963).

__Design__

Hiltz (1993) argues that it is unpractical and unfair to randomly select students to participate in online courses. All students in this study selected the online course delivery mode without knowledge of this research project. The research design utilized in this study is a descriptive research design, one-shot case study (Campbell and Stanley, 1963). Descriptive research in education is defined as "a type of quantitative research that

involves making careful descriptions of educational phenomena" (Gall, Borg, & Gall 1996, p. 374). The present study quantitatively describes the level of student satisfaction present in courses delivered via online WebCT courses using the Flashlight Project for assessment. WebCT is a purchased online course development and delivery product. The study includes a description of the online course, the subjects, the manipulation of the independent variables, and the measurement of the dependent variable. Demographic data was correlated via pre-established student information data that is stored in Marshall's SCT Banner Student Information System and is linked via the course reference number. In measuring student satisfaction, this investigation builds upon previous work using variables that are established in the education research community and it is used as the dependent variable. The questionnaire asked students about their teaching and learning practices, experiences with instructional technology, satisfaction with the course, satisfaction with technology training, course outcomes, and demographic information. Independent variables are based on the Seven Principles of Best Practice and are described in Figure 1. In this study the dependent variable "student satisfaction" is considered for the purpose of testing each of the independent variables and their cumulative quantitative effect on satisfaction. Student satisfaction is calculated as a mean value to responses on a series of questions on the Current Student Inventory (CSI).

This study is a field experiment that was conducted in an online setting with undergraduate and graduate students participating. Students must meet basic criteria to participate in an online course, such as access to a computer, Internet connectivity, and the installation of an appropriate Internet browser. No other special technical criteria were established to admit students in the sections under consideration. True field

experiments are more vulnerable to extraneous factors that present a threat to internal

validity (Cook & Campbell, 1976). As it is difficult to eliminate all threat to validity, the

following design features will be utilized as a best effort to control for extraneous factors:

1. The students in these sections did not have prior knowledge that their classes are
   the subjects of a research study.

2. Instructors did not select their students or their sections. The department assigned
   them to these sections during the preparation of the class schedule with no prior
   knowledge that those particular sections would be the subject of a research study.

3. The duration of the experiment was one full semester, compared to a single-day or
   single session, as is the case in many other studies. This allowed a reasonable
   time for the implementation and the establishment of the characteristics of
   different learning environment and models.

4. To further reduce the impact of any potential bias in the measurements, all data
   was collected and analyzed electronically and automatically.

Figure 1. <u>Data Source for the Study</u>

Independent Variable & Description	Instrument
Amount of learner interaction and feedback - Frequent student-faculty contact both in and out of class is a important factor in student motivation and involvement. Faculty concern helps students get through problem times and keep on working.	CSI Questions 15-21
Reasons for students talking the course - This describes why a student selected this type of course delivery.	CSI Question 7

Preparation and experience of the instructors teaching the course - Faculty training in using the proposed technology including e-mail, World Wide Web and WebCT can influence student satisfaction.	FGA
Course pacing. Learning to use one's time well is critical for students and professionals alike. Allocating realistic amounts of time means effective learning for students and effective teaching for faculty	CSI Question 5
Nature of Instructional Strategies. The combination of interactive strategies (i.e. chat rooms, bulletin boards, the addition of multimedia can influence a students satisfaction.)	CSI Questions 8-14
Participant's Educational Level - This is a reflection of the student's previous experience using online course tools, such as WebCT.	CSI Question 3

Population

The population for this study consisted of faculty and students who participated in online courses at Marshall University during the fall semester of 1999 (course N = 50 and student N = 1129). Marshall University has developed a curriculum of fully remotely accessible undergraduate E-Courses (course N=32 and student N=714) and technology enhanced graduate T-Courses (course N=18 and student N=415). An E-course requires no seat time and no physical campus presence, while a T-Course integrates 20% of the course with face-to-face interaction. The entire population was surveyed and all used

WebCT for the delivery of the online course. The completion of the Flashlight Current Student Inventory (CSI) is a requirement of the Marshall University E-course Policy, but not a requirement of all T-Courses. The survey may be completed at any time, but is normally completed at the end of the course. The Flashlight Faculty Gap Analysis (FGA) survey is given to each online faculty member at the end of the semester. These instruments are part of the normal procedure for surveying online courses at Marshall University.

Instrumentation

The Flashlight Current Student Inventory (CSI) and Flashlight Faculty Gap Analysis (FGA) are designed to help individuals and teams develop triads and the study designs that can rest on them. The first published component of the tool kit is the Current Student Inventory, which includes almost 500 items that can be used when surveying or interviewing currently enrolled students. The Current Student Inventory (CSI) has already been site licensed by 130 colleges, universities, schools, hospitals, and training programs around the world. The Flashlight Faculty Gap Analysis Inventory (FGA) includes similar questions from the faculty perspective. The Flashlight Project started with the assumption that very different types of educational organizations want to know similar things about the use of technology in instruction, which resulted in a model for evaluating the impact of information technology on teaching and learning. Copies of the selected questions chosen for the Marshall University Online courses deliver are available in Appendix A. All students utilizing online course delivery via WebCT are encouraged to complete the Flashlight Project Current Student Inventory.

Validation of Instrument

The value of any questionnaire or survey is limited by how it can measure what it purports to measure and whether the results stay the same when the reality stays the same. The Flashlight Current Student Inventory is subject to content validity testing: an 18 month series of focus groups culminated in meetings with students, faculty and administrators from five disparate institutions. Because the validity of a questionnaire is affected by the exact wording of the items, their order, and the context in which it is administered, the validity of the Marshall University version cannot be compared to these institutions. Other institutions are encouraged to use a common inventory selection for future comparative studies. A panel of experts reviewed the Marshall version of both the CSI and FGA for readability and usability.

Considerable effort was exerted to eliminate any selection biases and extraneous factors. However, in behavioral studies, it is difficult to account for all possible extraneous factors. For example, students might have their own reasons for being in one section or another. The researcher may not know such reasons. Similarly, online course satisfaction might have been affected by some cognitive or personal factors that are not accounted for in this research (e.g. student personal problems, other demanding courses on the student schedule). The threats to validity are reasonable reduced and the finding of this research might be generalized to future online courses at Marshall University.

Data Collection

The entire Marshall University Flashlight CSI is available online and is used as a footer in all WebCT courses. The Flashlight Faculty Gap Analysis Survey was posted as an interactive web survey. Faculty teaching an online course during the fall 1999

semester were emailed at the end of the course and requested to complete the survey.

Both Flashlight databases were then exported directly to the Statistical Product Service

Solutions (SPSS), Base 10.0 system for statistical analysis of the data. All student

demographic data was exported from the SCT Banner Student Information System and

imported directly into the SPSS program. For those students who failed to complete the

CSI as part of their course requirement, an electronic distribution list consisting of all

Email address for Marshall University online students was created. Students were sent an

Email with the web address of the CSI survey and encouraged to complete the survey.

Data Analysis

Basic descriptive statistics for all demographic data were performed. These

means and frequency distributions for students participating in an online course were then

compared to Marshall University standard university demographic data. Several methods

of statistical methods were performed to examine the data. Multiple regressions allow the

carrying out of the linear regression analysis when there exist more than one causal

variable (Bhattacharyya & Johnson, 1977). In this study the research questions one, three,

and six attempted to investigate the relationship between one dependent variable and

multiple categories of the independent variable. Therefore, multiple regression analyses

were conducted. While regression methods are appropriate when determining the effects

of an independent variable on a dependent variable, relationships between two variables

are not always casual. Correlation analysis determines the relationship rather than the

dependency between two variables. The correlation coefficient measures the strength of

the relationship. The positive value of the coefficient indicates the same direction

whereas the negative values indicate the reverse direction of the relationship

(Bhattacharyya & Johnson, 1977). Therefore, correlation analysis was appropriate for answering research questions two, four, and five in which the purpose was to examine the relationship between these variables. Variables were compared for relationships. Correlation ranges from -1 to +1 where the numerical value measure the strength and the sign indicates the direction of the relationship. T-value and F-ratios were calculated to determine if the correlation was statistically significant.

CHAPTER IV

Presentation and Analysis of the Data

This chapter begins with the descriptive demographic statistics of students enrolled in Marshall University online courses compared to the standard Marshall University student data for all courses that is supplied to the Integrated Postsecondary Education Data System (IPEDS). This provides the basis for comparison with the research subjects. The analysis of the data for the research questions compares differences between student satisfaction ratings in online courses and any differences between known variables that influence student course satisfaction (i.e. interaction and feedback, reason for taking the course, instructor expertise, course pace, teaching strategies and students familiarity with the course delivery product).

Population and Sample

The population for this study consisted of students taking online courses at Marshall University during the 1999 fall term. Table 1 summarizes the distribution of subjects on the demographic attributes of traditional and online courses. The research data was drawn from a participant pool of 1129 students who were enrolled in 50 online courses. These are defined as either an undergraduate or graduate online course in the fall 1999 term, including 714 students enrolled in 32 undergraduate courses and 415 students enrolled in 18 graduate courses. Courses from the Community and Technical College, the College of Business, the College of Liberal Arts, and the College of Science were represented in the undergraduate online courses. Graduate online courses were

from the College of Human Resources and Education. Further details are described in Appendix B.

The data for the research questions were collected from students and faculty responding to the Flashlight Current Student Inventory (CSI) and Faculty Gap Analysis (FGA). A total population of 154 students completed the CSI with 34 instructors completing the FGA.

Demographic Data

As for the undergraduate online course participants, Table 1 shows 80 % were West Virginia residents. This compared to a higher percentage of 85 % West Virginia residents for traditionally delivered Marshall University courses.   The out of state student percentage of 21 % was greater for online course students, compared to 15 % out of state students for traditionally taught courses. Detailed tables for the demographic data may be found in Appendix B.

Table 1. Geographic Distribution of Undergraduate Students

Location	Undergrad. Course Students	Undergrad. Course %	MU Number Undergrad.	MU % Undergrad.
In State (WV)	568	79 %	9,904	86 %
Out of State	147	21 %	1,784	15 %
Total	714	100%	11,688	100%

Age

Student age distribution for standard Marshall University courses, undergraduate courses, and graduate courses are listed in Appendix B.   The mean undergraduate age for

Marshall University students was 24 years with a mean age of 35 for graduate students. This compared to a higher mean age of 27 for undergraduate online courses and 36 for graduate online courses. The overall range of ages for all online courses was 17 to 64 years. The age range for undergraduate courses was 17 to 64 years. This compared to a graduate course range of 22 to 64 years.

The greatest differences in the undergraduate online distribution are that 9 % of students are in the 35-39 year old age range and 12.6% of students are in the 40-49 age ranges. A total of 41.6% of the undergraduate online students were older than 24 years old. The largest graduate online course age range was 28.4% of the student population in the 40-45 year old range.

Gender

The ratio of male to female students in online courses was 37% males and 63% females. This differs from the traditional Marshall University student population of 46% males to 54% females. The largest difference occurred in the female graduate online course population. Female students were much more likely to be enrolled in online courses than their male counterparts.

Race

"Non-resident alien" in the traditional course listing comprises 12.6% of the traditional student population. Normally these students do not elect to enter a race code and would follow normal race distributions. The race distribution was similar between traditional and online students in all other categories.

Educational Background

The percentage of Regents Board Associates (RBA) students in the undergraduate population is higher than in a traditional undergraduate population. These students receive higher education credit for lifetime experiences. In the online graduate courses 10.36 % of the students were pursuing a doctorate degree.

Satisfaction

A satisfaction rate mean figure was calculated from selected questions relating to satisfaction in the Flashlight Current Student Inventory. An overall satisfaction rate of 3.31 calculated from all courses responding to the CSI (Table 2). The range of responses was 2 to 4 based on a scale with 4 being the very satisfied as the highest possible response. The highest mean satisfaction average was 3.4 in reference to the usage of multimedia materials.

Table 2. Flashlight (CSI) Questions for Determining Online Course Satisfaction

Satisfaction Questions	Mean
I would recommend a course that …	
Uses electronic communication, such as electronic mail , chat rooms, Bulletin Boards and/or computer conferencing	3.39
Uses WebCT	3.38
Uses materials (course modules, multimedia texts, etc.) on the World Wide Web Internet	3.44
Overall I have been ….With this course	3.26
Overall Mean for Satisfaction	3.31

Statistical Methods

Several statistical methods were applied to examine the data. Descriptive statistics were used for the demographic and ancillary data. Multiple regressions allow carrying out of the linear regression analysis when more than one causal variable exists (Bhattacharyya & Johnson, 1977). In this study, the research questions one, three, and six investigated the relationship between one dependent variable and multiple categories of the independent variable. While regression methods are appropriate when determining the effects of an independent variable on a dependent variable, relationships between two variables are not always casual. For each value of the independent variable, the distribution of the dependent variable (student satisfaction) is normal. The variance of the distribution of the dependent variable (student satisfaction) is constant for all values of the independent variable. The relationship between the dependent variable and each independent variable is linear, and all observations are independent.

Correlation analysis for questions two, four, and five was used to determine the relationship rather than the dependency between two variables. The correlation coefficient measures the strength of the relationship. The positive value of the coefficient indicates variance in the same direction whereas the negative values indicate the reverse direction of the relationship (Bhattacharyya & Johnson, 1977). Kendall's tau-b was used due to the nonparametric measure of association for ordinal or ranked variables. The sign of the coefficient indicates the direction of the relationship, and its absolute value indicates the strength, with larger absolute values indicating stronger relationships. Possible values range from -1 to 1, but a value of -1 or +1 can only be obtained from

square tables. T-value and F-ratio was calculated to determine if the correlation was statistically significant.

Research Questions

Q1.   What relationship, if any, does the amount of learner interaction and feedback have on student satisfaction when participating in an online course offered by Marshall University?

Survey items addressing learner interaction and feedback included questions relating to whether the course was stimulating, whether students participated in discussions, the emphasis of working in groups, whether instructor comments were received back quickly, and if the instructor gives useful comments. The data, as portrayed in Table 3, is based on a scaled response (1= strongly disagree to 4=strongly agree). "Instructors returns assignments quickly" was the highest mean value (3.71) and the comment "received useful comments from instructors" provided a mean of 3.48. The lowest mean value (2.66) corresponded to being comfortable as a participant in online discussions. To address question one, the course satisfaction score was compared to the learner interaction and feedback scores for each category.

To answer question one, multiple regression analysis was conducted to investigate multiple components of interaction and feedback responses and their impact on student satisfaction. Significant findings are reported at the level of 0.05. The dependent variable for this analysis is the student satisfaction score. As listed in Table 3, all independent interaction and feedback variables were significant predictors of satisfaction ($R^2 = .36$, p < .01). The dominant variable having the highest relationship with course satisfaction is whether assignments were stimulating. The influence of the variable is positive which

means that as the level at which the students indicated assignments were stimulating

increased, the level of reported student satisfaction increased. Other variables that most

relate to course satisfaction are a positive relationship with the comfort level in online

discussions and receiving feedback quickly.

Table 3. Summary of Regression Analysis for Interaction and Feedback and Satisfaction (N = 148)

Variable	$\underline{B}$	$\underline{SE}\ \underline{B}$	β
Assignments were stimulating	1.950	0.426	2.452 *
Comfortable in Discussions	1.383	0.729	1.471 *
Working in Groups	-0.420	0.422	-0.600 *
Work on Team Project	-0.555	0.463	-0.866 *
Received Feedback Quickly	0.972	0.499	1.658 *
Returns Assignments Quickly	0.816	0.514	1.050 *
Instructor Give Useful Comments	-0.430	0.569	-0.538 *

Note. $R^2 = .36$ ($\underline{p}$s $< .05$)

*$\underline{p} < .05$.

Q2. What relationship, if any, does the reasons for students taking the course have on student satisfaction when participating in an online course offered by Marshall University?

Research question two asks whether there is any association between reasons for

students taking a class and student satisfaction. Courses being offered in an online

format was the predominant (36.4%) reason for students taking the course (Table 4.). The

general education requirement category (20.8 %) was the second most frequent response.

The correlation between the courses being offered in an online format, course being

required as a general education requirement and education requirement for the major

were all found to have the most positive correlations with student satisfaction and were

significant at an alpha of < .01. The data displayed in Table 5 indicates that "the subject matter looked interesting", "reputation of the instructor", "course offered at a convenient time" and "course at a convenient location" were reasons that did not correlate with student satisfaction.

Table 4. Descriptive Statistics for Reason for Taking Online Course

Reason for Taking Course	Frequency	Percent	Cumulative Percent
General Education Requirement	32	20.8	20.8
Education requirement for major	31	20.1	40.9
Subject matter looked interesting	7	4.5	45.5
Reputation of instructor	4	2.6	48.1
Offered at a convenient time	3	1.9	50.0
Convenient location	2	1.3	51.3
Offered in Online format	56	36.4	87.7
Other	19	12.3	100.0

Table 5. Correlation Between Reasons for Taking Course and Student Satisfaction

Variable	r	t-value	F-Ratio	Probability Level
General Education Requirement	0.1325	8.32	69.26	< 0.01
Education requirement for major	0.1177	3.86	14.93	< 0.01
Subject matter looked interesting	0.0591	0.87	0.760	0.3829
Reputation of instructor	0.0235	2.65	7.00	0.0111
Offered at a convenient time	0.0748	1.42	2.01	0.1566
Convenient location	0.0078	2.20	4.83	0.0280
Offered in Online format	0.2284	10.56	111.46	< 0.01

Q3. **What relationship, if any, does the preparation and experience of the instructor teaching the course have on student satisfaction when participating in an online course offered by Marshall University?**

Question three asks if there is a relationship between the instructor's expertise and a student's satisfaction in the online course. Overall faculty technical expertise in all categories was 3.96 as indicated in Table 6. The data is based on a scaled response (1 = no ability to 5 = expert user). The area of the most expertise, with a mean value of 4.62, was sending and receiving e-mail. The area with least expertise, with a mean of 3.32, was creating and editing web pages. The graduate online course faculty had a higher overall mean of 4.16 in all areas of expertise. The lowest area of expertise in both types of online courses was in the area of creating and editing online web pages.

Table 6. Overall Mean of Faculty Gap Analysis Survey

Question	Overall	Undergrad. Courses	Graduate Courses
Send or receive e-mail	4.62	4.65	4.50
Search for information on the Internet/Web	4.32	4.27	4.50
Create or edit a World Wide Web site	3.32	3.31	3.38
Use the product WebCT	3.56	3.35	4.25
Overall	3.96	3.89	4.16

To answer question three, a multiple regression analysis was conducted as indicated in Table 7. Satisfaction in the online courses is weakly predictive to the independent categories of faculty preparation (R^2 = .193, p<.01). The dominant variable

having the highest predictive relationship with course satisfaction is the overall faculty

development value. This was followed by faculty expertise in WebCT. The influence of

the variable is positive. Neither editing web sites or sending email were predictive of

student satisfaction.

Table 7. <u>Summary of Regression Analysis for Preparation of Instructors and Satisfaction (N = 148)</u>

Variable	B	SE B	β
Send or receive e-mail	0.432	.429	.413
Search for information on the WWW	1.187	.621	1.257*
Create or edit a World Wide Web site	0.706	.531	1.431
Use the product WebCT	2.754	.552	1.379*
Overall	3.255	2.152	3.747*

Note. $R^2 = .193$ (ps < .05)

*p < .05.

Q4. What relationship, if any, does the course pace have on student satisfaction when participating in an online course offered by Marshall University?

Most students responded that the online courses were at a comfortable pace. Table

8 lists a mean of 79.2% for the descriptor "just right" far exceeds all other categories. A

small percentage of 6.5% felt the course was too fast. No student indicated the course

descriptor of "too slow".

Table 8. <u>Online Course Descriptive Statistics for Pace (N=154)</u>

	Frequency	Percent	Cumulative Percent
Not Applicable	22	14.3	14.3
Too Slow	0	0	14.3
Just Right	122	79.2	93.5
Too Fast	10	6.5	100.0
Total	154	100.0	

A high positive correlation, as listed in Table 9, was found with satisfaction and the course pace response of "just right" ($r = .4876$, $p < .01$). No significant relationship with student satisfaction is found with any other course pace, except a negative relationship of student satisfaction and the course pace being too fast ($r = -0.1410$).

Table 9. <u>Correlation Between Course Pace and Student Satisfaction (N=148)</u>

Variable	R	<u>t-value</u>	F-Ratio	Probability Level
Not Applicable				
Too Slow	0.0580	2.25	5.06	0.0271
Just Right	0.4876	8.56	73.33	<0.01
Too Fast	-0.1410	2.37	5.63	0.0205

Q5. <u>What relationship, if any, does the combination of instructional strategies have on student satisfaction when participating in an online course offered by Marshall University?</u>

As indicated in Table 10, the greatest mean value of 3.47 was for the type and combination of instructional strategies for searching for web resources, and the lowest

was using chat rooms, with a mean value of 2.70. Using E-mail, WebCT and Library

resources all had a mean over 3.0. The data is coded by the number of hours per week the

products were used during a normal week (1 = < one hour to 5 = > 10 hours).

Table 11 lists the correlation of these dependent variables with student

satisfaction in the online course. In instructional strategies, the highest positive

associations are found with accessing WebCT and student satisfaction (r = .4876, p <

.01). Interacting with E-mail has a positive correlation (r = .1994, p < .01), but the

strength of the correlation is lower. Interacting in a time delay mode had a negative

correlation with student satisfaction (r = -0.1410) and was not significant.

Table 10. <u>Descriptive Statistics for the Combination of Instructional Strategies</u>

	<u>M</u>	<u>SD.</u>	n
Interacting by Email	3.14	.73	148
Interacting outside the organization	2.77	.64	87
Interacting in "real-time" i.e. chats rooms, NetMeeting	2.70	.80	66
Interacting in a "time-delayed" mode	2.55	.83	66
Electronically searching for Library resources	3.35	.72	139
Searching for Web references	3.47	.67	144
Accessing WebCT	3.28	.79	144
Overall strategies mean	3.15	.55	150

Table 11. <u>Correlation Between Combination of Instructional Strategies and Student</u>
<u>Satisfaction (N=148)</u>

Variable	R	<u>t-value</u>	F-Ratio	Probability Level
Interacting by way of <u>E-mail,</u> bulletin boards, etc.	0.1994	5.30	28.13	<0.01
Interacting outside institution	0.0580	2.25	5.06	0.276
Interacting by way of a chat group or other "real-time" electronic communication (i.e. NetMeeting)	0.1419	3.93	15.47	<0.01
Interacting in a time delayed mode	-0.1410	2.37	5.63	0.0205
Electronically searching Library resources	0.0845	2.94	8.64	<0.01
Searching web for reference materials	0.0963	4.767	21.84	<0.01
Accessing the WebCT	0.4876	8.65	73.33	<0.01

<u>Q6. What relationship, if any, does the prior educational experience with the</u>

<u>online course tool have on student satisfaction when participating in an online</u>

<u>course offered by Marshall University?</u>

To address research question six, the scores of a student's educational background

and experience in using the online course delivery tool WebCT were compared to student

satisfaction. Students were asked to rate their knowledge of the product at the beginning

of the course (1 = novice to 5 = expert). The overall mean was 2.27, which implies that

most of the students were not well versed in the product (Table 12). Three of the courses

were freshman level and the other two were at the 200 and 300 level respectively.

Overall, 52% of the students responded either a novice to partial knowledge of the

WebCT product. No student defined themselves as an expert.

Table 12. <u>Frequency of Student Response to WebCT Expertise (N=148)</u>

Experience		Frequency	Percent	Valid Percent	Cumulative Percent
Novice	1.00	64	41.6	41.6	41.6
	2.00	14	9.1	9.1	50.6
	3.00	46	29.9	29.9	80.5
	4.00	30	19.5	19.5	100.0
Expert	5.00	0	0	0	
	Total	154	100.0	100.0	

To answer question six, regression analysis was conducted to investigate a student response to their self-reported expertise in the course product WebCT. Significant findings are reported in Table 13 at the level of 0.05. Satisfaction in the online courses is not related to the independent categories of student educational experience in the product WebCT ($R^2 = .063$).

Table 13. <u>Summary of Regression Analysis for Preparation of Students in WebCT and Satisfaction (N = 148)</u>

Variable	<u>B</u>	<u>SE B</u>	β
Student WebCT experience	.0054	.038	.012

Note. $R^2 = .063$ (<u>p</u>s < .05

Major Findings

The research data was drawn from a participant pool of 1129 students who were enrolled in 50 online courses. These are defined as either undergraduate or graduate online course in the fall 1999 term, including 714 students enrolled in 32 undergraduate courses and 415 students enrolled in 18 graduate courses. Online courses attracted a larger out of state population. Undergraduate course retention was 74%, and 94% for all graduate courses. This compares to an overall Marshall University course retention rate of 72% (West Virginia Bluebook, 1999). The total ending online population was 918 students. The ending population for undergraduate courses was 528 students enrolled in 31 courses. The mean undergraduate age for Marshall University students was 23.96 years and was 35.24 years for graduate students. This compared to a mean age of 26.68 years for students in undergraduate courses and 36.44 years for graduate courses. The ratio of male to female students in online courses, 37% males and 63% females, differs from the traditional Marshall University student population of 46% males to 54% females. The largest difference occurred in the female graduate course population. Female students were much more likely to be enrolled in online courses than their male counter parts. Online courses have similar race distribution compared to their traditional course counterparts. Online students are more likely to have been entered an RBA program.

Overall online course satisfaction rates were medium to high in all of the analyzed courses. The most important interaction and feedback variables were in response to the instructor returning assignments quickly.

Research question one was answered in the affirmative. Satisfaction in the online courses is related to the independent categories of interaction and feedback. All independent interaction and feedback variables were significant predictors of courcse satisfaction. Assignments were stimulating was the variable having the highest relationship with course satisfaction.

The analysis for research question two indicated that student online course satisfaction is influenced by why a student enrolls in a course. The choice "reason of the course being offered in an online format" was the predominant (36.4%) reason for students taking the course. The highest correlation values of "being available online" are found with student satisfaction ($r = .2284$, $p < .01$). The correlation between, "the courses being offered in an online format," course being required as a "general education requirement", and the "course being required as an education requirement for the major," were all found to have the most positive correlations with student satisfaction were significant at an alpha of $< .01$.

The data analysis for research question three showed a correlation of "the level of faculty technical experience," and student satisfaction. Overall, "faculty technical expertise" in all categories was a high 3.96. The area of the most expertise, with a mean value of 4.62, was "sending and receiving e-mail". The area with least expertise, with a mean of 3.32, was "creating and editing web pages." Satisfaction in the online courses is weakly predictive to the independent categories of faculty preparation ($R^2 = .193$, $p < .01$). The dominant variable having the highest predictive relationship with courses satisfaction is the overall faculty development value ($B = 3.255$, $p < .01$).

The figures for research question four showed a high positive correlation for satisfaction and "a course pace of just right" (r = .4876, p< .01). No other significant relationship with student satisfaction was found with any other course pace category. A negative relationship of student satisfaction and the course pace being too fast (r = -0.1410), but was not significant. Frequently, the student response was "that the online courses were at a comfortable pace."

The data analyzed for research question five supported a positive correlation between student satisfaction and the number and type of instructional strategies used. The highest positive associations are found with accessing WebCT and student satisfaction (r = .4876, p < .01). Interacting with E-mail has a positive correlation (r = .1994, p < .01), but the strength of the correlation is lower. The greatest mean value of 3.47 was for the type and combination of instructional strategies was searching for web resources, and the lowest was using chat rooms, with a mean value of 2.70.

The data for research question six does not show any association between a student's satisfaction in an online course and their previous experience with the online course delivery tool WebCT. Overall, 52% of the students responded either a novice to partial knowledge of the WebCT product. No student defined themselves as an expert.

Ancillary Data

Retention

The overall course retention rate was 82% for both undergraduate and graduate online courses. Undergraduate online course retention was 74% and 94% for all online graduate courses. This compares to an overall Marshall University course retention rate of 72% (West Virginia Bluebook, 1999). The total ending online population was 918

students. The ending population for undergraduate courses was 528 students enrolled in 31 courses. One of the original undergraduate courses had 0% retention rate. The ending population for graduate courses was 390 students enrolled in 18 courses.

Summary

Students enrolled in online courses are more likely to be older than traditional students, and have a higher percentage of females. Overall student satisfaction with online courses was medium to high. The data imply student satisfaction is influenced by the amount and type of learner interaction and feedback, the reason why a student takes a course, faculty technical expertise, the pace of the course, and the type of instructional strategies employed in the course. The data did not support the notion that a student's expertise in the online course delivery product called WebCT influenced student satisfaction. The retention rates for online courses exceeded the traditional course rate.

CHAPTER V

Summary, Conclusions, and Recommendations

This chapter provides a purpose of the study followed by a brief description of the procedures employed, the descriptive data and valid statistics. The research findings of the study are followed by the conclusions, implications, limitations, discussion and recommendation for further study.

<u>Purpose of the Study</u>

This research builds upon the educational literature of best practices for online education models and describes many of the demographic changes in online student populations that are influencing the education market. Educational researchers face many difficulties in trying to conduct controlled studies in university settings, because threats to validity and reliability are often beyond the influence of the investigator. The Flashlight Project of the American Association for Higher Education seeks to discover whether faculty and students find the available technology useful (or a hindrance) when they try to implement Chickering & Gamson's (1987) principles of good practice in undergraduate education. The following research questions and extensive demographic data formed the parameters for the study:

Q1.   What relationship, if any, does the amount of learner interaction and feedback have on student satisfaction when participating in an online course offered by Marshall University?

Q2.   What relationship, if any, does the reasons for students taking the course

have on student satisfaction when participating in an online course offered

by Marshall University?

Q3.   What relationship, if any, does the preparation and experience of the

instructor teaching the course have on student satisfaction when

participating in an online course offered by Marshall University?

Q4.   What relationship, if any, does the course pace have on student

satisfaction when participating in an online course offered by Marshall

University?

Q5.   What relationship, if any, does the combination of instructional strategies

have on student satisfaction when participating in an online course offered

by Marshall University?

Q6.   What relationship, if any, does the prior educational experience with the

online course tool have on student satisfaction when participating in an

online course offered by Marshall University?

Summary of Procedures

The present study quantitatively describes the level of student satisfaction present

in courses delivered via online WebCT courses using the Flashlight Project for

assessment. This study is a field experiment conducted in an online setting with

undergraduate and graduate students. Basic criteria were established to participate in an

online course. True field experiments are more vulnerable to extraneous factors that

present a threat to internal validity (Cook & Campbell 1976). The research design utilized

in this study was a descriptive research design, one-time case study (Campbell & Stanley, 1963).

The study includes a description of the online course, the subjects, the manipulation of independent variables and the measurement of the dependent variable. In measuring student satisfaction, this investigation built upon previous work using variables that are established in the education research community and was used as the dependent variable. The population for this study consisted of faculty and students who participated in online courses at Marshall University during the fall semester of 1999.

The population consisted of all courses using the online course creation tool, called WebCT. This formed the pool of potential respondents. The completion of the Flashlight Current Student Inventory (CSI) is a requirement of the Marshall University E-course Policy, but is an option for all other forms of online courses. The Flashlight Current Student Inventory (CSI) and Flashlight Faculty Gap Analysis (FGA) are designed to help individuals and teams develop such triads and the study designs that can rest on them. The Flashlight database was exported directly to the Statistical Product Service Solutions (SPSS), Base 10.0 system for statistical analysis of the data. Demographic data was also exported and correlated via pre-established student information data that is stored in Marshall's Systems and Computer Technology (SCT) Banner Student Information System and is linked via the course reference number.

The SPSS program was used to produce frequency tables and means for the entire online student population for all appropriate demographic data. This data was then compared to standard Marshall University student population data that is posted in Integrated Postsecondary Education Data System (IPEDS).

Several methods of statistical methods were performed to examine the data. In this study, the research questions one, three, and six attempted to investigate the relationship between one dependent variable and multiple categories of the independent variable. Therefore, multiple regression analysis was conducted. While regression methods are appropriate when determining the effects of an independent variable on a dependent variable, relationships between two variables are not always casual. Correlation analysis determines the relationship rather than the dependency between two variables. Therefore, correlation analysis was appropriate for answering research questions two, four, and five in which the purpose was to examine the relationship between these variables. T-value and F-ratio was calculated to determine if the correlation was statistically significant.

Summary of Findings

The research data was drawn from a participant pool of 1129 students who were enrolled in 50 online courses. These are defined as either undergraduate or graduate online course in the fall 1999 term, including 714 students enrolled in 32 undergraduate courses and 415 students enrolled in 18 graduate courses. Online courses attracted a larger out of state population. Undergraduate course retention was 74%, and 94% for all graduate courses. This compares to an overall Marshall University retention rate of 72% (West Virginia Bluebook, 1999). The total ending online population was 918 students. The ending population for undergraduate courses was 528 students enrolled in 31 courses. The mean undergraduate age for Marshall University students was 23.96 years and was 35.24 years for graduate students. This compared to a mean age of 26.68 years for students in undergraduate courses and 36.44 years for graduate courses. The ratio of

male to female students in online courses, 37% males and 63% females, differs from the traditional Marshall University student population of 46% males to 54% females. The largest difference occurred in the female graduate course population. Female students were much more likely to be enrolled in online courses than their male counter parts. Online courses had similar race distribution similar to their traditional course counterparts. Online students were more likely to have been entered a Regents Bachelors of Arts (RBA) program.

Overall online course satisfaction rates were medium to high in all of the analyzed courses. The most important interaction and feed back variables were in response to the instructor returning assignments quickly.

Research question one was answered in the affirmative. Satisfaction in the online courses is related to the independent categories of interaction and feedback. All independent interaction and feedback variables were significant predictors of satisfaction. The variable having the highest relationship with course satisfaction is that "assignments were stimulating."

The analysis for research question two also indicated that student online course satisfaction is influenced by why a student enrolls in a course. The "choice reason of the course being offered in an online format" was the predominant (36.4%) reason for students taking the course. The highest correlation values of being available online are found with student satisfaction ($r = .2284$, $p < .01$). The correlation between the courses being offered in an online format, course being required as a general education requirement and education requirement for the major were all found to have the most positive correlations with student satisfaction were significant at an alpha of $< .01$.

The data analysis for research question three showed a correlation of the level of faculty technical experience and student satisfaction. Overall faculty technical expertise in all categories was a high 3.96. The area of the most expertise, with a mean value of 4.62, was sending and receiving e-mail. The area with least expertise, with a mean of 3.32, was creating and editing web pages. Satisfaction in the online courses is weakly predictive to the independent categories of faculty preparation (R^2 = .193, p < .01). The dominant variable having the highest predictive relationship with course satisfaction is the overall faculty development value (B = 3.255, p < .01).

The figures for research question four showed a high positive correlation for satisfaction and a course pace of just right (r = .4876, p< .01). No significant relationship with student satisfaction is found with any other course pace, except a negative relationship of student satisfaction and the course pace being too fast (r = -0.1410). Most students responded that the online course were at a comfortable pace.

The data analyzed for research question five supported a positive correlation between student satisfaction and the number and type of instructional strategies used. The highest positive associations are found with accessing WebCT and student satisfaction (r = .4876, p < .01). Interacting with E-mail has a positive correlation (r = .1994, p < .01), but the strength of the correlation is lower. The greatest mean value of 3.47 was for the type and combination of instructional strategies for web resources, and the lowest was using chat rooms, with a mean value of 2.70.

The data for research question six does not show any association between a student's satisfaction in an online course and their previous experience with the online

course delivery tool WebCT. Overall, 52% of the students responded either a novice to partial knowledge of the WebCT product. No student defined themselves as an expert.

Ancillary data indicated the Marshall University online course retention rates were higher than traditionally taught courses. The overall retention rate was 82% for both undergraduate and graduate online courses. Undergraduate online course retention was 74% and 94% for all online graduate courses.

Conclusions

Marshall University is attracting a new demographic profile for students taking online courses. Students are more likely to be older than traditional students, with a higher percentage of females. The retention rates for online courses exceeded the traditional course rate. This could be an anomaly, or perhaps the online student population is receiving added care due to the nature of the course. Overall student satisfaction was medium to high. This could possibly be improved by continuing to implement best practice techniques and the continuation of the Flashlight assessment.

The data implies that student satisfaction is influenced by the amount and type of learner interaction and feedback, the reason why a student takes a course, faculty technical expertise, the pace of the course, and the type of instructional strategies employed in the course. The data did not support the notion that a student's expertise in the online course delivery product called WebCT influenced student satisfaction.

Q1.   What relationship, if any, does the amount of learner interaction and feedback have on student satisfaction when participating in an online course offered by Marshall University?

Both the quantitative data from this study implies that this is one of the most critical factors to improving student satisfaction in an online course. Communication is critical in any form of education. Students and instructors have to find effective ways to convey information, determine levels of understanding, and create a workable feedback system. In a face-to-face class, if students are confused, it is usually clear, but in an online course, if students are confused, there is no clue unless they choose to communicate about their confusion. Additional strategies, such as desktop video links, personal email, chat room utilization and periodic campus visits can improve interaction. (Dirr, 2000).

Q2   What relationship, if any, does the reasons for students taking the course have on student satisfaction when participating in an online course offered by Marshall University?

The overwhelming reason in this study that a student selected taking the course was the fact that it was delivered in the online format and that it met one of their educational requirements. The flexibility of online courses and the ability to develop an interactive environment seem to be more important to students than the ease or frequency of the medium. In fact, flexibility was one of the most positive aspects of the courses offered, and classes led by instructors who enhanced interactivity with audio clips, personal conversations, and notes received higher satisfaction ratings. Such flexibility and interaction may be of particular interest to graduate students, who often must juggle jobs, family and work-related travel. In a recent study by the College of Business Administration at the University of Wisconsin, online courses may be of even greater

interest to schools who want to bolster MBA enrollments, which have been declining in the past few years. According to the Journal of Management Education, those schools may have to learn to move faster and more creatively than they are accustomed to in order to compete with traditional schools and emerging rivals (2000).

Q3 What relationship, if any, does the preparation and experience of the instructor teaching the course have on student satisfaction when participating in an online course offered by Marshall University?

The preparation and technical expertise of the instructor has a positive predictive impact on student satisfaction. Educators need constant professional training to remain up-to-date with current pedagogy. Marshall University provides several forms of training for the WebCT product, but faculty members do not heavily attend these sessions. Flexible times and dates, desktop training, and frequently asked question lists have been developed to improve faculty development. Faculty development must be ongoing and not a one time event. The use of email, web page development and the course delivery products all may require newly acquired areas of expertise. As the product versions continue to change, the faculty expertise must keep pace with these products. Many Marshall University faculty members have taken an active role in assisting each other via faculty user groups. As the online faculty numbers increase, so does the need for additional technical support and resources. It appears that the major constraints to instructors being effective and more extensively exploiting online resources are lack of time to explore and lack of familiarity with how best to incorporate the resources with course objectives. It is important to note that this early feedback came from instructors

who worked with the first iteration of course design; the current course design has addressed the issue of more effective incorporation of online resources. Clearly, instructors have self-selected to participate in the project on the basis of their interest in learning about using technology in instruction and for reasons of professional development; however, as they actually experience the reality of the time commitment that requires, some instructors may opt out of participation. The challenge is to capitalize on instructors' interest in learning to use technology and provide support while they expend the effort necessary to become proficient in online teaching.

Q4   What relationship, if any, does the course pace have on student satisfaction when participating in an online course offered by Marshall University?

The pace of the course did correlate with student satisfaction in the course. Online course instructors do not always have the traditional methods, such as visual facial queues, for monitoring the pace of their course. Some online courses allow the student to set their own course pace. This could be as little as a few weeks to an entire year. Some of the open ended comments from students implied that they were not disciplined enough for an online course. Several of the online courses required students to successfully complete a section before they could begin another section, while others continually gave email feedback on how the student was progressing. While a faculty member may not have as many visual queues as their traditional counter-parts, they do have new methods that can provide vital information to access the student's progress in the course. WebCT, for example, provides tools to the instructor that includes progress tracking. This allows monitoring of student use of the site including first and last access, articles posted and

read and time spent on each. Students can be sorted by any of the above categories for ease of identification. For example, those who have stopped making access to the course material can be identified. There are other creative methods to control the course pace and move the student along.

Q5.   What relationship, if any, does the combination of instructional strategies have on student satisfaction when participating in an online course offered by Marshall University?

The positive correlation of the combination of instructional strategies on student satisfaction is greatest in accessing the course delivery product WebCT. The WebCT product offers several "active learning" tools. Searching for web resources was a common strategy used in almost every course; while others added video streaming, bulletin boards, chat rooms, and electronic library reserves. The technology delivering the instruction is a critical component in the student success factor. If a student spends more time "learning" to interact with the interface, valuable learning is lost in the process of manipulation. The number of tools a faculty member uses in a course can depend on the course, the faculty members expertise, and the amount and type of user resources and training (Unsworth, 1997). The ability to provide extensive library resources online has enhanced many resources for the Marshall University student population. Students may use full-text electronic subscriptions in addition to items placed in electronic reserves.

Q6.   What relationship, if any, does the prior educational experience with the online course tool have on student satisfaction when participating in an online course offered by Marshall University?

The study did not find any relationship between the prior experience of the student with the online course delivery tool WebCT and student satisfaction in the online course. One could argue that students are more adaptive in learning new software tools and therefore, they are not negatively influenced by their lack of initial expertise. Additionally, there is an expectation from the student and faculty member that they are in a course to learn, not only the new course content, but also any other skill set that is necessary for them to participate in the course. Regardless, the Marshall University Graduate College offers a program called "Super Saturday". This provides students an opportunity to become familiar with the WebCT product and any online course procedures. This training is also available via a CD-Rom and in an online format. A helpdesk is also provided for any student who is having technical difficulty.

Implications and Discussions

The 1990 United States census reported only three states that lost population between 1980 and 1990. West Virginia was one of those states. Nationally, West Virginia has the oldest per capita population (West Virginia Bluebook, 1999). Access issues are a major concern due to the rugged topography of the state as well as the focus for higher education to have a greater impact on workforce development. Online courses provide the potential to access to new student populations within the state and globally. The data indicates that online courses are attracting new non-traditional student populations that are older and more globally based. Female and RBA students are more likely to

participate in an online course at Marshall University than other students. Online courses can be retrieved from home, office, or even a public library, thus providing new higher education access points. The Community and Technical College at Marshall University has developed an expansive information technology centric online curriculum that is geared to workforce development.

Online learning environments present a great potential for competition from other higher education institutions and corporate America. According to Masi (1997), 81% of fortune 500 companies have an on-line program. Computerworld estimates the web-based education market could hit one billion dollars by the year 2001 (Duderstadt, 1999). The number of well-established universities offering online classes or complete online degrees programs continues to expand. The possibility for delivering dual credit online programs to high schools and improving the work force development sectors are strong motivating factors for an institution like Marshall University.

The competitive environment brought about through global digital networks will transform both educational methods and institutional roles. This environment will also affect how public policy makers approach such issues as institutional role and mission policies; program approval and review processes; service area boundaries; regulation of out-of-state providers; and admissions, residency, and transfer of credit policies. Due to the demographic changes in this new student market, it is critical that the institutions of higher education understand these issues and needs for servicing the online population. As competition for these students increases, both university and public policy will need to be reviewed on an ongoing basis.

The results of this study indicates that student satisfaction in online courses is influenced by interaction and feedback, the reasons students take the online course, the technical experience of the faculty member, the course pace, and the combination of instructional strategies used in the course. Student's prior educational experience with the product WebCT did not influence their satisfaction in the online course. Knowing what factors influence a student's satisfaction in an online course can increase the expansion of this type of instruction, expand an institution's student population, provide new access opportunities to underserved student populations and improve an institutions online course reputation.

The study indicated that interaction and feedback had a major influence on a student's satisfaction in an online course at Marshall University. These are key elements in a networked learning environment. In 1997, Schutte discovered that students who enrolled in a Web-based learning environment had significantly higher perceived peer contact, as well as time spent on task, a perception of more flexibility, and understanding of the material than did students in the traditional class. The author concluded that much of the performance differences could be attributed to student collaboration as to the technology itself.

Convenience and accessibility are two factors that not only make online courses attractive to students, but can also create satisfaction with their experience. These factors are especially relevant when compared to the alternatives of lengthy travel and expense or not receiving instruction. The literature points out that these factors can outweigh any technological, management and instructional deficits that may be present in online delivery. Learners, even those that are campus based, are choosing this new delivery in

order to allow learning to take place 'when' they want. The online environment is transcending the traditional barriers of distance and time. Therefore, institutions need to provide funding to market online course opportunities.

The online course environment requires a new demand on faculty. As the data in this study indicates, student satisfaction in an online course can be influenced by faculty technical expertise. Faculty will need ongoing support and training to polish their technical expertise, but also to learn how to expand their roles as facilitator, coach and mentor. The instructor provides the leadership, the educational goal of self-discovery and the Web-based structure and environment for the asynchronous experience to unfold. The student must be motivated to learn intrinsically rather than extrinsically, to participate in an interactive learning environment, to explore and experiment with the learning process. This will require either new institutional resources or a redirection of these resources from some other area in the institution. Due to the high demands of online faculty, university administrators need to be educated in how online courses are influencing a faculty member's workload and whether appropriate resources are being provided to the faculty.

The data in this study indicates that the course pace can also have an impact on a student's satisfaction in the online course. Therefore, faculty development in online courses should also include training tips and techniques that will assist the faculty in monitoring the students pace in the course and new course design techniques that can improve feedback to students on how they are progressing in the course. Instructors can improve the course pacing in an online course by assigning deadlines throughout the entire course.

The number and type of instructional strategies did influence student satisfaction in the online course. The positive association of accessing online library resources can have dramatic cost implications to the university. The institution must have the appropriate infrastructure, appropriate support staff and budgets to continue to provide and expand these resources. Institutional planning in this area requires a close coordination of educators, technologists and administrators to ensure that current and new instructional strategies can be supported and expanded within the online course.

Even though the data from this study did not indicate that student satisfaction in the online course is influenced by a student's expertise level in the online course delivery tool, the study may have lost students that did not complete the course or the survey due to early withdrawal from the course. The student may also have some technical limitations, both skills and resources. For students taking their first online course, many have a preconceived notion that the online course may not be as demanding as the course being taught in a traditional format. It is important that an online orientation session provide high course expectations and tips for succeeding in an online environment. (Kimeldorf, 1995). Marshall University provides a questionnaire for students who have never taken an online course. This consists of a series of questions that give students feedback on whether they have the basic technical skills to succeed in the online environment and whether they have access to the appropriate resources. It is the universities responsibility to provide a method for students to acquire these skills.

Competition for student tuition dollars will intensify as universities figure out how to scale up online course programs. The offering of an excellent introductory course in a popular topic to as many people as possible will become a siren call to institutions

wishing to "corner the market" in a particular subject. Of course, competition will lead to far better courses than have been known before. However, institutions that produce poor courses will lose income. International education will change. Online courses will provide a way to educate international students without their coming to the U.S.

Marshall University's online course policy addresses a requirement for students to complete the CSI before completing the E-course. This requirement should be expanded to all forms of online education and needs an enforcement method. This research provides a baseline for further research in several aspects of online course delivery This may mean increased faculty development opportunities, implementing new interactive technologies, providing learning communities, and additional feedback techniques. Student satisfaction with all aspects of the online course are critical to maintaining high student retention rates. A learning infrastructure based on digital technology offers more than just education as usual on the Internet. It offers a set of extraordinary new tools: self-paced, multimedia modules that deliver leading pedagogy; in-depth outcome assessments; and online interaction with fellow students and teachers that facilitates continuous feedback and improvement. Being sensitive to factors such as, the course pace, interaction and feedback, and faculty development, can improve the over student experience in the online course.

The literature supports a positive association of the independent variables in this study with a student satisfaction in a course. The study's findings differed from the literature in not finding a positive association with a student's expertise in the online course tool. In a study of 52 high school students enrolled in five difference placement language courses, Tiene (1997) concluded that interaction between instructor and student

played a role in student satisfaction. In a study by McComb (1994), communication potential and the "richness" of the communication experience did seem to have an effect on students' attitudes and satisfaction with the course, the instructor, and their perceived learning outcome. Previous studies have shown that student learning outcomes and satisfaction in online educational environments are related to changes in the traditional instructor's role from leader to that of facilitator and moderator (Feenberg, 1987; Krendl and Lieberman, 1988; Faigley; 1990). Hiltz (1993) found that students who make the greatest use of the online tools utilized in a course tend to have the most positive attitudes toward their experience.

Marshall University online courses had a higher retention rate than traditionally taught courses. This data differs from what other institutions are experiencing. Some school administrators believe the low retention rates in distance learning can be attributed to the fact that students who enroll for online courses tend to be older and have responsibilities such as families and jobs that detract from the courses. Meanwhile, others say the problem is not with the students but with the courses, which cannot offer the face-to-face interaction needed to keep students interested. Some experts believe that retention rates for online courses will improve as technologies mature and instructors gain more experience working in an online environment. Although statistics range widely at different institutions, administrators agree that completion rates for distance education courses are generally 10 to 30 percentage points lower than in traditional courses (Smith, 2000).

The future effectiveness of electronic learning programs depend less on how advanced the technology is and more on how well it is deployed. The technology used in

a course is going to be less and less of an obstacle. The instructional design is more of the issue. At the same time, as the technologies themselves change, so must our research questions.

Recommendations for Further Research

Research studies indicate that the achievement and satisfaction of students in online courses is not significantly different than the achievement and satisfaction of students in traditional classrooms (Johnstone & Krauth, 1996). Distance education offers opportunities for students who cannot travel to a campus for their classes (e.g. Owston, 1997). Harasim (1993) asserts that computer networks make the world connected, and that this concept is applicable to distance education. However, past studies do not illustrate the details of students' perspectives on distance education. Moreover, research on the effect of distance education has been focused on student outcomes (Ahern & Repman, 1994), but not on the affective aspects of distance education. Johnstone and Krauth (1996) prove the efficacy of technology in distance education, but do not examine surrounding issues, such as students' isolation and effective advising from instructors. These issues are the next that will have greater research emphasis over the next decade.

As Windschitl (1998) notes, research on the use of the World Wide Web (WWW) lacks disciplined scholarly articles. "The vast majority of published work is description of technology implementation in classrooms" (p. 28) or a reflection of what has been done in distance education. One reason for this is because the WWW is relatively young and is still in a testing stage, not an evaluation stage. Indeed, the lack of disciplined scholarly articles characterizes the field of online education as a whole. In a 1997 article

by Romizowski and Mason, they claim that "only some 10% to 15%" of the articles published about online distance education by 1996 were true research studies. Moreover, little qualitative research based on observation and interviewing in online education has been conducted. Windschitl (1998) also suggests that qualitative studies capture unique phenomena about World Wide Web (WWW) use. The research literature on the use of WWW is short of analytical studies as well as qualitative studies (Burge, 1994; McIssac & Gunawardena, 1996).

Only a few scholars (e.g., Bromley & Apple, 1998; Jaffee, 1998; Wegerif, 1998) examine important limitations and pervasive problems. It is acceptable to fantasize about the future when a field is young because these discussions can propel the field forward. Distance education has great potential for providing rich environments for students; however, as history has taught us, new technology is not a panacea. It is time to seriously consider the actual experiences among students in distance education courses and to critically discuss the phenomena of online education. As Bates (1994) states, "it is a relatively untested assumption that advanced technologies, are pedagogically more effective than older" (p. 1577) technologies. We also question if technology can improve pedagogy with little special effort. Future studies would be improved by using a combination of both qualitative and quantitative data. In the demographic analysis, it would be interesting to review martial status and whether the student is currently employed. The data for faculty expertise in the online course product was self-reported. Students should be allowed to provide their own feedback to that question.

Unfortunately, a large fraction of the articles about computer-mediated distance education emphasize the potentials of new technology, and understate the extent to which

instructors may need to develop new pedagogies as well as different approaches to

managing their online courses. High quality on-line education is neither cheap nor easy.

We need research that is designed to teach us how the appropriate use of technology and

pedagogy could make distance education beneficial for students. "If failure isn't a

possibility, neither is discovery" (Unsworth, 1997).

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Appendix A

FLASHLIGHT PROJECT SURVEY INSTRUMENTS

<u>Current Student Inventory</u>

<u>Faculty Gap Analysis</u>

Flashlight Student Current Inventory Survey

MUOnline

Online Courses offered by Marshall University

Name _____

Student ID _____

Course Taken: _____

Student Academic and Demographic Items

1. Please enter your age in the space provided. Age: _____

2. Sex: (select the appropriate circle) ○ Male ○ Female

Academic Goals

3. What is the highest degree you have earned from any college or university (mark the appropriate circle, select only one)?

○ Certificate	○ A.A. or A.A.S	○ B.A. / B.S.
○ M.A. / M.S.	○ Ph.D. / Ed.D.	○ J.D.
○ M.D.	○ other (please specify) _____	○ I don't expect to earn a degree

4. At the beginning of this course, rate your knowledge of how to use WebCT where 1 is 'no knowledge and 5 is an 'expert user': (select only one)

○ 1   ○ 2   ○ 3   ○ 4   ○ 5

5. The pace of the training provided on the use of this technology for this course was: (select the appropriate circle, select only one)

○ Too fast for me to follow

○ Just right

○ Too slow

○ No basis for judgment or no opinion

6. Do you take this course primarily: (select only one)

○ at home?

- ○ at your place of employment?
- ○ at the main campus?
- ○ at a community distance learning site (such as a library)
- ○ at a remote campus?

7. Why did you decide to take this course (mark the appropriate circles for all that apply)?

- ☐ to fulfill a general education requirement
- ☐ fulfill a requirement for my major
- ☐ the subject matter looked interesting
- ☐ the instructor has a good reputation
- ☐ it was offered at a convenient time
- ☐ it was offered at a convenient location
- ☐ it was offered via online technology
- ☐ Other [   ]

Instructional Strategies

	In a typical week during this semester, approximately how much time did you spend in each of the following act				
		(mark only one response per question)			
	For this course	Ten Hours or More	Six to Nine Hours	Three to Five Hours	On
8.	Interacting with an instructor or other students at Marshall University by way of E-mail or other "time-delayed" electronic communication (such as bulletin boards or discussion lists)?	○	○	○	
9.	Interacting with someone outside your institution (such as a stranger, a former instructor/teacher, a content expert, a peer) by way of E-mail or other "time-delayed" electronic communication (such as bulletin boards or discussion lists)?	○	○	○	
10.	Interacting with an instructor or other students at your institution by way of a chat group or other "real-time" electronic communication (simultaneous, multi-user computer discussion) for this course?	○	○	○	
11.	Interacting with someone outside your institution (such as a stranger, a former instructor/teacher, a content expert, a peer) by way of chat group or other "real-time" electronic communication (simultaneous, multi-user computer discussion) for this course?	○	○	○	
12.	Electronically searching Marshall University library catalog from a remote site (such as home, a community library, a remote/community learning center, etc.)?	○	○	○	
13.	Searching the Internet/World Wide Web to access reference materials and/or conduct research?	○	○	○	

14.	Accessing the Internet/World Wide Web to view or download course materials, view a multimedia presentation, use a self-paced instructional program, pick up and/or complete assignments, or take an examination?	○	○	○	

Learner Interaction and Feedback

Indicate how strongly you **agree** or **disagree** with each of the following statements:

		(mark the appropriate circle question)		
		Strongly Agree	**Agree**	**Dis**
15.	Assignments for this course were stimulating.	○	○	
16.	I am more comfortable participating in discussions in this course, than I am in other courses.	○	○	
17.	The emphasis on working in groups in this course has helped me to understand the ideas and concepts being taught	○	○	
18.	This course taught me how to work in a team/group to complete a project	○	○	
19.	I received comments on assignments or examinations for this course quickly	○	○	
20.	The instructor for this course returns graded assignments quickly	○	○	
21.	The instructor for this course gives useful comments on assignments	○	○	

	I would recommend that others take a course that:	(mark the appropriate circle question)		
		Strongly Agree	**Agree**	**Dis**
22.	uses electronic communication, such as electronic mail , chat rooms, Bulletin Boards and/or computer conferencing	○	○	
23.	uses WebCT	○	○	
24.	uses materials (course modules, multimedia texts, etc.) on the World Wide Web Internet	○	○	

25. Overall, I have been

    ○ Very Dissatisfied
    ○ Dissatisfied
    ○ Satisfied
    ○ Very Satisfied

with this course

26. List below the three things that are the greatest barriers to your successful use of (name of specific

technology inserted here) as it was used in this course (please list in order of priority)?

1.

2.

3.

27. Please use this section for additional comments:

Submit   Reset

Faculty Gap Analysis Survey

MUOnline

Online Courses offered by Marshall University
Using WebCT

Flashlight Faculty Gap Analysis

Name [   ]

Rate your ability to do each of the following:

(Check the appropriate number, from 1-no knowledge/ability to 5-expert user

		No Knowledge/ User Ability
0199F146	Send or receive e-mail	○ 1 ○ 2 ○ 3 ○ 4 ○ 5
0199F147	Search for information on the Internet/World Wide Web	○ 1 ○ 2 ○ 3 ○ 4 ○ 5
0199F150	Create or edit a World Wide Web site	○ 1 ○ 2 ○ 3 ○ 4 ○ 5
0199F152	Use the product WebCT	○ 1 ○ 2 ○ 3 ○ 4 ○ 5

Comment Area - Please provide us with any information regarding your needs for ongoing faculty development or issues that you would like to have addressed regarding the use of WebCT.

[   ]

Submit   Reset

Appendix B
Detailed Online Course Data

Descriptive Statistics

Table B1. Geographic Distribution of E-Course Students

Location	Undergrad Students	Undergrad. %	MU Number Undergraduate	MU % Undergraduate
In State (WV)	568	79.52 %	9,904	84.73 %
Out of State	147	21.48 %	1,784	15.27 %
Total	714	100%	11,688	100%

Table B2. Number of Students in Online Courses, Retention Rate and SREC Status

Description	Total Beg/End	Undergrad. Beg/End	Graduate Beg/End
Number of Courses	50/49	32/31	18/18
Number of SREC Courses	26/26	23/23	3/3
Number of Students	1129/918	714/528	415/390
Retention Rate Online	82%	74%	94%
Retention Rate MU	72%		

Table B3. Online Course Age Descriptive Statistics

	Mean	N	Std. Deviation	Range
E	26.68	714	8.77	17-64
T	36.44	415	8.93	22-64
Total Online	30.27	1129	10.00	17-64
MU undergrad	23.96	11,688		
MU graduate	35.24	3,740		
MU total	26.67	15,635		

Table B4. Online Course Age Distribution

Description	Undergrad.	%	Graduate	%
Under 18	2	.3%		
18 - 19	119	16.7%		
19 - 21	179	25.1%		
21 - 24	117	16.4%	17	3.9%
25 - 29	87	12.2%	92	22.2%
30 - 34	51	7.1%	60	19.0%
35 - 39	64	9.0%	82	19.8%
40 - 49	90	12.6%	118	28.4%
50 - 64	5	.7%	26	6.3%
65 and over				
Total	714	100.0%	415	100.0%

Table B5. Online Course Gender Distribution

Description	Overall MU	Overall Online	Undergrad. MU	Undergrad. Online	Grad MU	Graduate Online
Male	46%	37%	44%	43%	33%	28%
Female	54%	63%	56%	57%	67%	72%

Table B6. Online Course Race Distribution

Description	MU%	Online Overall %	Undergrad. %	Graduate %
White	81.1%	94.2%	93.8%	94.5%
African-American/Black	3.7%	4.4%	5.0%	3.7%
Hispanic/Latino	0.4%	0.1%	0.3%	0.0%
Asian/Pacific Islander	0.9%	0.5%	0.3%	1.0%
American Indian/Alaskan	.0.5%	0.5%	0.3%	0.7%
Non-Resident Alien	12.6%	0.1%	0.2%	0.0%

Table B7. Educational Background of Online Students

Highest Degree Earned	Overall	Overall %	Undergrad.	Undergrad. %	Graduate	Graduate %
No Degree	380	33.64%	380	53.22%	0	0%
Assoc. Degree	48	4.26%	48	6.72%	0	0%
RBA	58	5.15%	57	7.98%	1	0.24%
Bachelors	600	53.15%	229	32.07%	371	89.40%
Masters	43	3.8%	0	0%	43	10.36%
Doctorate	0	0%	0	0%	0	0
N	1129	100%	714	100%	415	100%

Standard Survey Response Form
Reporting Semester: Fall 1999
Official Fall Submission Information

General College Information:

Name:	Marshall University	President:	Dan Angel
Address:	400 Hal Greer Blvd.	Dir. Admissions:	James W. Harless
	Huntington, WV 25755	Dir. Inst. Research:	Michael J. McGuffey
Phone:	(304) 696-3170	Number of Degrees Offered by Level:	

	(800) 642-3499	Certificate	2
		Associate	23
FICE:	003815	Bachelors	44
		Masters	42
Control, Type:	Public, Co-ed	Ed. S.	2
Date Founded:	1837	Doctoral	1
Academic Calender:	Semester	First Professional	1
		Total	115

Enrollment Information:

Headcount(HC), Full Time Equivalent (FTE), Student Credit Hour (SCH) Production by Level

	HC	FTE	SCH (s)
All Levels	15,635	11,622	165,878
CTC	2,264	1,279	19,190
Undergraduate (excludes CTC)	9,424	8,353	125,294
Graduate	3,740	1,783	21,394
First Professional	207	207	n/a

Headcount(HC) and Full Time Equivalent (FTE) by Campus

	HC	FTE

All Students	15,635 11,622
Huntington	13,519 10,771
South Charleston	2,116 851

Gender and Full/Part Time Status

	Total			Full Time			Part Time		
	Total	Male	Female	All FT	Male	Female	All PT	Male	Female
All Levels									
Headcount	15,635	7,025	8,610	10,209	4,730	5,479	5,426	2,295	3,131
% of Total	100%	45%	55%	100%	46%	54%	100%	42%	58%
CTC									
Headcount	2,264	1,489	775	1,079	627	452	1,185	862	323
% of Total	100%	66%	34%	100%	58%	42%	100%	73%	27%
Undergraduate (excludes CTC)									
Headcount	9,424	4,187	5,237	7,905	3,603	4,302	1,519	584	935
% of Total	100%	44%	56%	100%	46%	54%	100%	38%	62%
Graduate									
Headcount	3,740	1,228	2,512	1,018	379	639	2,722	849	1,873
% of Total	100%	33%	67%	100%	37%	63%	100%	31%	69%
First Professional									
Headcount	207	121	86	207	121	86	0	0	0
% of Total	100%	58%	42%	100%	58%	42%	N/A	N/A	N/A

Ethnic Composition

	Total	White	Black	Hispanic	Asian	Am. Ind.	Unknown	Foreign
All Levels								
Headcount	15,635	12,676	575	64	138	82	1,963	137
% of All Races	100.0%	81.1%	3.7%	0.4%	0.9%	0.5%	12.6%	0.9%
CTC								
Headcount	2,264	1,427	87	8	13	8	718	3
% of All Races	100.0%	63.0%	3.8%	0.4%	0.6%	0.4%	31.7%	0.1%
Undergraduate (excludes CTC)								
Headcount	9,424	7,772	375	45	78	62	1024	68
% of All Races	100.0%	82.5%	4.0%	0.5%	0.8%	0.7%	10.9%	0.7%
Graduate								
Headcount	3,740	3,306	108	7	25	11	217	66
% of All Races	100.0%	88.4%	2.9%	0.2%	0.7%	0.3%	5.8%	1.8%
First Professional								
Headcount	207	171	5	4	22	1	4	0
% of All Races	100.0%	82.6%	2.4%	1.9%	10.6%	0.5%	1.9%	0.0%

Age

	Mean Age
All Levels	26.7
CTC	29.9
Undergraduate (excludes CTC)	22.5
Graduate	35.3
First Professsional	27.1

Residency:

		State of Residency			Fee Purposes		
	Total	In-State	Oth U.S.	Foreign	In-State	Out-State	Metro
All Levels							
Headcount	15,635	13,426	2,072	137	13,209	1,338	1,088
% of Total	100%	85.9%	13.3%	0.9%	84.5%	8.6%	7.0%
CTC							
Headcount	2,264	1,939	322	3	1,880	278	106
% of Total	100.0%	85.6%	14.2%	0.1%	83.0%	12.3%	4.7%
Undergraduate (excludes CTC)							
Headcount	9,424	7,965	1,391	68	7,865	788	771
% of Total	100.0%	84.5%	14.8%	0.7%	83.5%	8.4%	8.2%
Graduate							
Headcount	3,740	3,319	355	66	3,265	265	210
% of Total	100.0%	88.7%	9.5%	1.8%	87.3%	7.1%	5.6%
First-Professional							
Headcount	207	203	4	0	199	7	1
% of Total	100.0%	98.1%	1.9%	0.0%	96.1%	3.4%	0.5%

College Enrollment by Level:

			Level		
	Total	2-yr	Undgr	Grad	1st Prof
All Colleges	**15,635**	**2,384**	**9,304**	**3,740**	**207**
Comm & Tech	2,264	2,264	N/A	N/A	N/A
Business	1,851	N/A	1,581	270	N/A
CITE (GSITE)	165	N/A	N/A	165	N/A
Education & Human Serv	4,230	N/A	2,021	2,209	N/A
Fine Arts	281	N/A	250	31	N/A
Journalism & Mass Comm	350	N/A	313	37	N/A
Liberal Arts	2,290	N/A	1,861	429	N/A
Science	1,522	N/A	1,419	103	N/A

Nursing & Health Prof	1,006	120	752	134	N/A
Graduate School	273	N/A	N/A	273	N/A
Medicine	400	N/A	104	89	207
Regents BA	367	N/A	367	N/A	N/A
University College	636	N/A	636	N/A	N/A

Freshmen Admissions:

Applicants:

	From A1		Exc. CTC	
	#	%	#	%
Freshmen Applicants	2764		2278	
Accepted	2727	98.7%	2241	98.4%
Enrolled	2227	81.7%	1829	81.6%

Distribution of First-Time Freshmen by Full Time/Part Time Status

	Total	CTC	Oth 4-yr
Total	2,230	380	1,850
Full Time	2,059	265	1,794
Part Time	171	115	56

Requirements:

Number of High School Units (Years) Required or Recommended (Rec.) by Subject

English	4
Social Studies	3
Laboratory Science	2
Mathematics (College Prep)	2
Foreign Lang (Rec.)	2

The student must have a High School G.P.A. of 2.00 OR an ACT Composite of 19 in addtion to the above Board of Trustees Admissions Requirements

ACT/HS GPA Profile: (for 4-yr degree seeking freshmen)

Avg. ACT Composite:	20.1	Avg. HS GPA	
		Total	3.25

ACT Score Breakdown:

27-36
22-26
19-21
1-18

Sources: ACT Class Profile Service Report 1998-99.

Notes: SAT data is not available as sample size is too small to give adequate picture; The ACT
Score is the test most often used in the admissions process.
Excludes Transition Program students

Retention:

Retention to second year:		Completion Rate:	
First-time, full-time, 4-yr degree seeking freshmen:		First-time, full-time freshmen entering:	
Fall 1991 to Fall 1992	70%	Fall 1987	41.8%
Fall 1992 to Fall 1993	71%	Fall 1988	40.9%
Fall 1993 to Fall 1994	73%	Fall 1989	n/av
Fall 1994 to Fall 1995	70%	Fall 1990	38.2%
Fall 1995 to Fall 1996	70%	Fall 1991	34.1%
Fall 1996 to Fall 1997	72%	Fall 1992	35.6%
Fall 1997 to Fall 1998	72%	Fall 1993	34.9%
Fall 1998 to Fall 1999	72%		

Note: Assoc. degrees in 3 yrs., Bach. degrees in 6 yrs.,

Note: Excludes Transition Program Students

Undgr. students graduating within the State Systems (WV)

Graduation Information:

Degrees Conferred by Level for academic year 1998-99:

Certificate of Proficiency	0
Associate	206
Baccalaureate	1,205
Masters	870
Graduate Certificate	20
Doctoral	3
First Professional (M.D.)	47
Total	**2,351**

Degree Program Information:

Top degree programs by degrees conferred:

Undergraduate	# degrees	% of Bacc.	Graduate	# degrees	% of Mast.
Regents, B.A.	169	14.0%	Counseling, M.A.	113	13.0%
Management, B.B.A.	93	7.7%	Educational Admin, M.A.	84	9.7%
Elementary Educ, B.A.	92	7.6%	Special Educ, M.A.	66	7.6%
Psychology, B.A.	83	6.9%	Elementary Educ, M.A.	64	7.4%
Criminal Justice, B.A.	71	5.9%	Reading, M.A.	60	6.9%
Nursing, B.S.N.	71	5.9%	Psychology, M.A.	52	6.0%

Top degree programs by enrollment:

Undergraduate	# enrolled	% of Bacc.	Graduate	# enrolled	% of Mast.

Program	Count	%	Program	Count	%
Elementary Educ, B.A.	802	8.7%	Counseling, M.A.	346	11.2%
Biological Science, B.S.	688	7.5%	Special Educ, M.A.	334	10.8%
Secondary Educ, B.A.	549	6.0%	Educational Admin, M.A.	254	8.2%
Regents B.A.	367	4.0%	Psychology, M.A.	211	6.8%
Journalism, B.A	313	3.4%	Elementary Educ, M.A.	198	6.4%
Nursing, B.S.N.	278	3.0%	Reading Educ, M.A.	196	6.3%

Tuition Rate per Regular Semester (Huntington)

	Student Level		
	Undgr	Grad	1st Prof
In-State	$1,220	$1,228	$4,738
Out-of-State	$3,256	$3,566	$11,728
Metro	$2,228	$2,400	N/A

Faculty Characteristics:

Part Time Faculty:

	CTC	4-yr	So Chas	Total - CTC SC, 4-yr	Med Sch Fac	University Total
Total	90	270	88	**448**	15	**463**
Gender						
Female						
Headcount	47	143	46	**236**	2	**238**
% of Gender Total	52%	53%	52%	**53%**	13%	**51%**
Male						
Headcount	43	127	42	**212**	13	**225**
% of Gender Total	48%	47%	48%	**47%**	87%	**49%**
Race						
White						
Headcount	87	260	85	**432**	11	**443**
% of Race Total	97%	96%	97%	**96%**	73%	**96%**
Black						
Headcount	2	2	1	**5**	1	**6**

				Total - CTC	Med Sch	University
% of Race Total	2%	1%	1%	**1%**	7%	**1%**
Hispanic						
Headcount	0	1	0	**1**	0	**1**
% of Race Total	0%	0%	0%	**0%**	0%	**0%**
Asian						
Headcount	1	7	2	**10**	3	**13**
% of Race Total	1%	3%	2%	**2%**	20%	**3%**
American Indian						
Headcount	0	0	0	**0**	0	**0**
% of Race Total	0%	0%	0%	**0%**	0%	**0%**

Full Time Faculty:

				Total - CTC	Med Sch	University
	CTC	4-yr	So Chas	**SC, 4-yr**	Fac	**Total**
Total	35	385	53	**473**	141	**614**
Gender						
Female						
Headcount	24	150	15	**189**	38	**227**
% of Gender Total	69%	39%	28%	**40%**	27%	**37%**
Male						
Headcount	11	235	38	**284**	103	**387**
% of Gender Total	31%	61%	72%	**60%**	73%	**63%**
Race						
White						
Headcount	32	350	50	**432**	122	**554**
% of Race Total	91%	91%	94%	**91%**	87%	**90%**
Black						
Headcount	3	10	2	**15**	0	**15**
% of Race Total	9%	3%	4%	**3%**	0%	**2%**
Hispanic						
Headcount	0	6	1	**7**	6	**13**
% of Race Total	0%	2%	2%	**1%**	4%	**2%**
Asian						
Headcount	0	15	0	**15**	13	**28**
% of Race Total	0%	4%	0%	**3%**	9%	**5%**
American Indian						
Headcount	0	4	0	**4**	0	**4**
% of Race Total	0%	1%	0%	**1%**	0%	**1%**
Rank						
Professor						
Headcount	4	165	23	**192**	62	**254**

% of Rank Total	11%	43%	43%	**41%**	44%	**41%**
Associate Professor						
Headcount	7	96	19	**122**	41	**163**
% of Rank Total	20%	25%	36%	**26%**	29%	**27%**
Assistant Professor						
Headcount	13	104	9	**126**	36	**162**
% of Rank Total	37%	27%	17%	**27%**	26%	**26%**
Instructor						
Headcount	11	20	1	**32**	2	**34**
% of Rank Total	31%	5%	2%	**7%**	1%	**6%**
No Rank						
Headcount	0	0	1	**1**	0	**1**
% of Rank Total	0%	0%	2%	**0%**	0%	**0%**
% Tenured	46%	65%	75%	**65%**	57%	**62%**
% with Terminal Degree	17%	78%	87%	**74%**	99%	**79%**

Note: Library and Adjunct Faculty excluded

Human Resources

	Total	Full Time	Part Time
Total University	**2006**	**1499**	**507**
Faculty	1169	693	476
Staff	837	806	31
Total Huntington	**1803**	**1387**	**416**
Faculty	1024	636	388
Staff	779	751	28
Total South Charleston	**203**	**112**	**91**
Faculty	145	57	88
Staff	58	55	3

Note: Library and Adjunct Faculty are included in the Faculty counts.

Class Size/Productivity Summary Data:

Student FTE to Faculty FTE Ratio:

Fall 1998	22:1
Fall 1997	22:1
Fall 1996	23:1
Fall 1995	22:1
Fall 1994	22:1
Fall 1993	18:1
Fall 1992	18:1
Fall 1991	19:1

Source: WV Higher Education Report Card

Average Class Size by Course Level and Type of Course:

	Overall	Lecture	Lab
Overall Undergraduate	25	25	20
Foundation	37	37	n/a
Career Technical	21	22	17
Lower Undergraduate	27	27	25
Upper Undergraduate	21	21	12
Graduate	11	11	3

Notes: Special Courses such as Independent Study excluded.
Courses taught for undergraduates and graduates simultaneously such as MTH 443/543 are listed at 400-level.

Last Updated on 2/11/00
By Mary Catherine Bass

Information Technology
Drinko Library 305
Marshall University
400 Hal Greer Blvd
Huntington, WV 25755

Phone 304.696.6706

Fax 304.696.3229

E-mail Fox@Marshall.edu

Web: Webpages.marshall.edu/~fox/

Jan I. Fox

Summary of Qualifications	**Vice President for Information Technology (CIO)**

1999-Present   Marshall University   Huntington, WV
The position is responsible for the overall campus technology implementations and management responsibilities for University Libraries, Instructional Technology, University Computing Services, Telecommunications, University Video & Satellite Networks, Instructional Television and Web Development.

Education

Ed.D. /Higher Education Administration -Graduation May 2000
Dissertation: "Factors Influencing Student Satisfaction in Online Courses at
        Marshall University"
1990 - 2000   West Virginia University   Morgantown, WV

MS/Biology
1981 - 1983   Marshall University   Huntington, WV

BS/Biology - Magna Cum Laude
1977 - 1981   Marshall University   Huntington, WV

Professional experience

Associate Vice President for Information Technology/CIO
1997-1999   Marshall University   Huntington, WV

Assistant Vice President for Information Technology, CIO
1995 - 1997   Marshall University   Huntington, WV

Chair/Associate Professor, Department of Academic Computing
1987 - 1995   Marshall University School of Medicine   Huntington, WV

Assistant Professor
1985 - 1987   Marshall University School of Medicine   Huntington, WV

Environmental Modeler
1983 - 1985   US Army Corps of Engineers   Huntington, WV

Publications & Presentations

Fox, J.I.M. McCarthy, A. Jarrell, J. Ross. RuralNet Supporting Rural Health Care Outreach AAMC Boston MA, 1994.

Fox, J.I., Making The Right Connections, Faulkner & Gray's Health Data Network.

Turner, J., A. Hassen and Fox, J. I., MDTV, The West Virginia Telemedicine Program. WVNET, 1995

Fox, J., A. Taylor, K. Hayes, M. McCarthy. Extending Campus LAN's to Remote Users. EDUCOM 1995

Wiley, D., J. Fox. Developing an Electronic Course Policy. CAUSE 1997.

Book Section:

DeMesquita, S. and J. I. Fox. "51 Reasons how we use the Internet" and what it says about the information superhighway. Mentoring Rural Science Students by Electronic Mail. FARNET Inc., Lexington, MA. 1994. 101-102

Marketed Programs:

Reichenbecher, V. E., Beck, S. A., Fox, J. I.: SAM. Elsevier (Biosoft), New York, 1985.

Television Program:

PBS Special "The Intenet Show" 1994

Grant Experience

Principle Investigator for West Virginia Board of Trustees Technical Advantage Grant for Instructional Technology Training: $10,000 1997

Project Coordinator for West Virginia Board of Trustees Technical Advantage Grant: $1.2 Million 1996 multimedia.marshall.edu

Project Director and PI for the ARC $100,000 Advantage Valley Rural Economic Development Project. www.adval.org 1996.

Principle Investigator for the Bell Atlantic Health Connections Grant. $48,000 1995.

Science by Electronic Mail – Co-Principle Investigator & Project Coordinator. Benedum Foundation. $72,000 1992.