To the Graduate Council:

I am submitting herewith a dissertation written by Suzan Jacqueline Vogel entitled "Development of a Model for the Evaluation of Web-based Distance Education Courses." I have examined the final paper copy of this dissertation for form and content and recommend that it be accepted in partial fulfillment of the requirements for the degree of Doctor of Education, with a major in Education.

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Development Of A Model For The Evaluation Of Web-based Distance Education Courses

A Dissertation
Presented for the
Doctorate of Education
Degree
The University of Tennessee, Knoxville

Suzan Jacqueline Vogel
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DEDICATION

This dissertation is dedicated to my brother,

Clement Joseph (Joey) Bowman
May 6, 1969 - August 26, 2000
Oh, I dream of an uncloudy day.

and
to my teacher and friend,

Harry Row
February 5, 1938 - August 3, 1999
Let cheerfulness abound with industry.

and
to my family,

Jon, Jamie, Jenny, and Jill
Individuals linked together
by an endless chain of love.

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Most of all, I wish to thank my family for enduring all of those long hours and making so many sacrifices for me.

ABSTRACT

The development and use of Web-based and Web-enhanced courses have increased at a rate that is exceeding the ability of researchers to keep up with this intense pace. The issues in evaluating these new Web-based courses are complex and need to be addressed.

Using data collected from surveys, interviews, document reviews and literature reviews, the researcher developed a practitioner-oriented model for evaluating institutional, instructor, and student readiness for Web-based instruction and the results of Web-based courses. Survey participants were administrators and faculty who are members of the twenty-two institutions represented by the East Tennessee Consortium for Higher Education. Additional interviews were also conducted with administrators at six virtual institutions that were not members of the East Tennessee Consortium for Higher Education.

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CHAPTER I

INTRODUCTION

Rationale for the Study

Current technology is changing at such a rapid pace that it is difficult for educators to keep abreast of what is available for teaching and learning. Distance education has a history of being impacted by new technologies. Television and videocassette recorders changed distance learning from paper and pencil correspondence to an asynchronous lecture format. Then, interactive television made distance learning more similar to the regular synchronous traditional class (Sherron and Boettcher, 1997). Now that personal computers and the Internet are widely available, distance learning is changing again. This rapid change has created a system that delivers Web-based courses via the Internet directly to the student no matter where he/ she is located (Porter, 1997). In 1993, Peterson's published its first guide to higher education distance learning that listed ninety-three institutions (Johnstone, 1997). By 2000, the list had grown to nearly 900 institutions. The Petersons.com web-site currently includes on-line scholarship opportunities and study tips for distance learners.

Sherron and Boettcher (1997) have provided a time line for the evolution of distance education. Distance education has been in existence since the 1800s using printed materials for correspondence courses. As new technologies evolved, so did distance education. First there was radio in the 1930s and then

television in the 1950s and 1960s. The second generation of distance education involved the use of multiple technologies. From 1960 to 1985, audiocassettes, videocassettes, and fax machines became part of distance education. The third generation of distance education (1985 to the present) incorporated computers. This development introduced such technologies as electronic mail, chat sessions, bulletin boards, compact disks, and Internet. With new satellite, cable, and telephone technologies, audio and videoconferencing were now possible. Distance education moved from the asynchronous (delayed) mode to the synchronous (real-time) mode (IDE Homepage, 1999).

Technologies currently being developed include live video interactive learning experiences, desktop videoconferencing, and digital video programming on demand. Many institutions are now offering entire degrees on-line via the World Wide Web (WWW or Web, for short). Ozer and Mendelson (1999) estimate that by 2001 there will be approximately 4.3 million small businesses alone on the Web. Many of these businesses are 'education businesses' like course development and brokering companies.

The rapid introduction of Web-based courses, and even entire degrees via the Internet, has created the need for an evaluation model that addresses the specific needs and peculiarities of on-line courses. Ravitz (1997) notes

> Educational researchers are encountering both unprecedented opportunities and challenges with the advent of new technologies and educational practices...the challenge for evaluators of such projects is to keep up with a dynamic, geographically distributed range of activity and to somehow organize, analyze, and learn from it.

Because Internet-based learning is so new, the data on its effectiveness and quality was limited in scope. Since distance learning courses that rely on high-bandwith networks are at most a few years old, there has not been enough time to collect, analyze, apply, and refine a large body of data and research (McArthur and Lewis, 1998). Melton (1999) further emphasized that the literature on Web-based education was lacking in the areas of course evaluations and learning styles.

The Web-based Education Commission (2001) noted that dazzling technology has no meaning unless it supports content that meets the needs of the learner. They noted that some of the skill development content is excellent, but much of it is mediocre. The Commission noted the rapid expansion of Internet usage in college classrooms. In 1999, nearly 40 percent of all college classes used Internet resources as compared with 15 percent just three years earlier. They further noted that in 2002, 2.2 million students are expected to enroll in distance education courses. This represents an increase of approximately 1.5 million students from 1998.

Gellman-Danley (1997) noted that accreditation standards need to be addressed because they are based on precedents that are not appropriate for Web-based courses. When evaluating Web-based courses, counting books on library shelves is no longer a valid accreditation activity. However, assessing the availability of on-line library resources is useful. The North Central Association has revised its criteria and accredited its first virtual university, Jones

International University (Blumenstyk, 1999). The Southern Association of Colleges and Schools is currently in the process of revising its accreditation standards and criteria to address the advent of these new distance education technologies.

New teaching technologies are rapidly being developed without the necessary evaluation methods and procedures.

Statement of the Problem

Some applications of existing evaluation models to distance education have already been made. These applications are discussed in Chapter 2.

McGreal (1997) suggests that every Web-based course should include a course or program evaluation questionnaire for students. However, current course and/or faculty evaluation questionnaires were designed for traditional classroom instruction and contain many questions that do not make sense in the context of a Web-based course. If questionnaires are to be an element of a Web-based course evaluation, should existing course evaluation forms be adapted or should an entirely new evaluation form be developed?

Can the models designed to evaluate courses, even distance education courses created before the advent of the Internet, be adapted for Web-based courses? Should they be adapted? Are they sufficiently comprehensive or does an entirely new model need to be created? These and other questions identify

the problem to be investigated in this study, that is, the need for a practical, but comprehensive, model of evaluation especially suited for Web-based courses.

There are 22 institutions within the East Tennessee Consortium for Higher Education involved in or planning to be involved in some sort of distance learning via video, television, and Internet. The Consortium members would like to know how other institutions are dealing with issues of evaluation for distance education in relationship to Web-based instruction and they would like to have an evaluation model in which they are confident for distance education courses. The interests and concerns of the Consortium appear to be representative of the larger nationwide problem.

Purpose of the Study

This study had a two-fold purpose: 1) to describe the current policy and practice of the ETCHE institutions concerning evaluation of their Web-based instruction and 2) to develop a criterion-based comprehensive model for evaluating Web-based instruction that might provide a consistent standard of evaluation for such courses.

Design of the Study

Three research questions were developed as a framework for the study. These questions were addressed through surveys, interviews, document reviews, and literature reviews.

Research Questions

1. How are the members of the East Tennessee Consortium for Higher Education and other selected programs currently evaluating Web-based courses?
2. According to the available literature and the participants in the study, what special issues or conditions should be addressed in evaluating Web-based distance learning courses?
3. What are the important components of a comprehensive evaluation model for Web-based learning?

Importance of the Study

At the spring 1999 East Tennessee Consortium for Higher Education meeting, breakout sessions were formed to discuss the current needs of the Consortium institutions. Despite the sessions being separated by topics, one of which was technology, several groups focused their discussions on Web-based

instruction and its lack of appropriate evaluation methods. This research was identified as an area of need for the Consortium institutions. However, the research has value to any institution that is planning to take their distance learning program into the next phase: Web-based courses. The issues involved in evaluating a Web-based course are complex and need to be addressed. The development of an evaluation model specifically for Web-based courses and the testing of one of its elements (a student survey) should be useful to many institutions. Some authors predict that by 2007 almost 50% of all learners in higher education will be enrolled in some sort of distance education course (Kascus, 1997).

Assumptions

In conducting this study, the researcher made the following assumptions:

1. that an evaluation model created specifically for a television- or video-based distance education course will not address all of the needs of a Web-based course, for example, ease of navigation of the Web site or usefulness of the chat tools.
2. that an evaluation model developed for institutions in East Tennessee will be applicable elsewhere.
3. that the methodology of surveys and interviews will yield high integrity responses.

4. that the interview data collected represent perceptions, values, and beliefs that are consistent for the interviewees across time.

Limitations

1. This study is limited by the experiences and perspectives of the respondents and interviewees.

Delimitations

1. The primary sources of information for this study were the member institutions of the East Tennessee Consortium for Higher Education, who have already noted an interest in distance education and volunteered to participate in the study.
2. Institutions other than Consortium members who were included in this study have been limited to eight in number.
3. This study may not generalize to Web-enhanced courses that are not completely Web-based courses, that is, courses where there is a traditional component that is complimented with a Web-based component.

Definition of Terms

1. Asynchronous interaction: two-way communication that involves delayed response, for example, email

2. Distance education: instruction and learning occurs when the student and instructor are separated by time and/or space

3. Distance learning: the desired outcome of distance education

4. Electronic mail: (a.k.a, email) messages sent from one computer user to another

5. Internet: an international network of networks begun by the United States government

6. Listserv: an email program that allows multiple computer users to connect onto a single system creating an on-line discussion

7. Network: a series of points connected by communication channels in different locations

8. On-line course: a course (not necessarily a distance education course) that utilizes the traditional face-to-face format for at least 51% of the instructional activities but does contain an on-line component, e. g., email or bulletin board, and does not involve a separate Web site for course content

9. Strong Web presence institution: an institution in which at least 20% of the courses are either Web-based or on-line courses

10. Synchronous interaction: two-way communication that involves immediate or real-time response, for example, two-way, interactive television

11. Uniform resource locator: (URL) the address of a homepage on the World Wide Web

12. Web-based course: a distance education course in which at least 51% of the instructional activities, e. g., quizzes, information input, and discussion, occur on-line and the course content (syllabus, assignments, readings, etc.) is stored on a Web site devoted specifically to that course

13. World Wide Web: (WWW) a graphical hyper-text Internet tool that provides access to homepages created by individuals, businesses, and other organizations

List of Abbreviations

AERA	American Education Research Association
AFT	American Federation of Teachers
AU	Athabasca University
CHEA	Council for Higher Education Accreditation
C-RAC	Council of Regional Accrediting Commissions
CSAQ	Computerized Self-Administered Questionnaire
CVU	California Virtual Institution
DETC	Distance Education Training Council
DLA	Distance Learning Activities
ETCHE	East Tennessee Consortium for Higher Education
FGCU	Florida Gulf Coast University
GPA	Grade Point Average
HTML	Hypertext Markup Language
IHEP	Institute for Higher Education Policy
IVC	Idaho Virtual Campus
KYVU	Kentucky Virtual University
NCA	North Central Association
NEA	National Education Association
ODELL	Office of Distance Education and Lifelong Learning
OU	Open University
PBS	Public Broadcasting System
RODP	Regents Online Degree Program
SACS	Southern Association of Colleges and Schools
SREB	Southern Regional Education Board
TVU	Tennessee Virtual University
URL	Universal Resource Locator
UW	University of Wyoming
VCT	Virtual College of Texas
WWW	World Wide Web

Organization of the Study

The report of this investigation contains six chapters. Chapter one has included an introduction and overview of the study. Chapter two contains a review of the literature concerning evaluation, distance education evaluation, and evaluation of Web-based courses. Chapter three contains the methods utilized for this investigation. Chapter four contains the findings and conclusions concerning research questions one and two. Chapter five contains the evaluation model developed in response to research question three. Chapter six contains discussion and recommendations that resulted from this investigation.

CHAPTER II

REVIEW OF THE LITERATURE

Evaluation Literature

Seeking an evaluation model appropriate to distance instruction was difficult. The literature regarding evaluation models or approaches was often conflicting and difficult to decipher. There were few widely-shared models of how to make decisions on which evaluation method was most appropriate in a given situation (Mark, 1999). What one author referred to as an evaluation model, another referred to as a theory. What one author called traditional, another called innovative. What one author denoted as an evaluation approach, another denoted as merely a method to be used during an evaluation. The seemingly simple question, 'What constitutes evaluation?' created disagreement. Scriven viewed the fundamental task of evaluation to be one of making a judgement of value or worth while Patton argued that evaluation should not be confined to such a narrow scope (Chen, 1996).

What was clear in the literature is that there exists a collection of specific individuals who have contributed significantly to the evaluation profession and literature. However, these contributions are not particularly easy to implement and do not appear to be written for practitioners. Several authors have provided cross-reference tables that aid the reader in sorting out the various models.

Worthen and Sanders (1973) provided a table of comparisons of contemporary evaluation models, but this table was limited by what was available in 1973. House (1978) also provided a table containing a taxonomy of evaluation models, but this table provided no frame of reference for the newer models. Chemlisky and Shadish (1997) provided a table that cross-referenced three perspectives (accountability, knowledge, and developmental) along nine dimensions.

Worthen et al (1997) carefully detailed six alternative views of evaluation: objectives-oriented, management-oriented, consumer-oriented, expertise-oriented, adversary-oriented, and participant-oriented. These were viewed as traditional approaches. Some literature has been devoted to empowerment and developmental evaluation (Fetterman, 1997 & Patton, 1997 & Scriven, 1997). However, Worthen et al chose not to include these approaches because they viewed them as uses of evaluation but not as types of evaluation.

Before a specific evaluation model can be selected for use, it must be determined if the evaluation is to be formative or summative. This represented another conflict in the literature. Scriven (1991) defined formative evaluation as evaluation designed to support the process of improvement and summative evaluation as evaluation for valuative conclusions for any other reasons besides development. Scriven's definition placed formative and summative evaluations as mutually exclusive events. Chen (1996) posited that an evaluation can serve both formative and summative purposes.

Evaluation often begins with a question to answer or a problem to solve. Ralph Tyler pointed out that it is essential to know the purposes of assessment or evaluation before choosing a method to appraise students' strengths and weaknesses (Horowitz, 1995). If your evaluation was directly related to goal-attainment, an objectives-oriented approach would be an appropriate model. One example of this approach was the Tylerian evaluation model, named for its proponent, Ralph Tyler (Worthen et al., 1997). This model was based on quantifiable behavioral objectives (House, 1978). A typical question asked in higher education is, "Are students meeting the objectives of the course?" To answer this question, student performance data can be used to determine the strengths and weaknesses of a course.

Stufflebeam (1994) advocated an objectivist approach to educational evaluation over other approaches that he stated do not meet *The Program Evaluation Standards* (1994); however, these approaches may still be suited for non-educational applications. According to Stufflebeam, non-objectivist pitfalls included the value free-orientation leaving value determination to others, the relativist-orientation accepting and reporting a range of alternative answers to a question, and empowerment evaluation turning evaluation into pseudo evaluation by giving away control of the evaluation's quality and integrity.

Although these criticisms appeared harsh, Stufflebeam's recommendations could apply to any good evaluation model. For example, Stufflebeam advocated assessing a program both for its merit and worth,

providing direction for improvement, conducting both formative and summative evaluations, grounding evaluations in functional communication among stakeholders, and employing multiple perspectives, multiple outcome measures, and both qualitative and quantitative measures.

Despite the conflict and disagreements, some common elements of a good evaluation model emerged from the literature, for example, knowing your purpose for evaluation. However, a review of the evaluation literature did not yield any evaluation models that were easy to implement by practitioners who are specialists in instruction rather than evaluation.

Distance Education Evaluation

When designing a distance learning course or program, there seem to be more questions than could possibly be answered and time is extremely limited. Colleges and universities are rushing to implement distance learning programs. Sherron and Boettcher (1997) propose three major reasons for the rush: the convergence of communication and computing technologies, the need for information age workers to acquire new skills without interrupting their working lives for extended periods of time, and the need to reduce the cost of education. Brindley and Paul (1993) cited the universal recognition of the importance of lifelong learning, which brings older and more sophisticated 'consumers' into the educational marketplace demanding greater flexibility and higher quality. Fear of

the advent of for-profit universities, like Western Governor's School and the University of Phoenix, has propelled some schools into developing distance learning programs (Strosnider, 1997 & Marchese, 1998). Florida's newly opened Gulf Coast University expects that as much as one-fourth of all of its courses will be on-line courses.

The successes and failures of these ventures have led to some basic design elements for distance education programs. One of the most frequently mentioned needs is for support of the faculty. Faculty cannot be expected to be successful in delivering a distance education course without proper training (Sherron & Boettcher, 1997). Teaching a distance learning course, especially if it is an Internet course, requires changes in the way faculty teach (Starr & Milheim, 1996). The teacher must shift from a teacher-centered lecture mode of instruction to a student-centered facilitator of knowledge mode of instruction (Kubala, 1998 & Cyrs, 1997). Kroder et al (1998) suggested that the course should be developed by a classroom teacher who has experience teaching the course. They further suggested that the developer should be the one to teach the course initially. Faculty who volunteered to participate in new modes of delivery were generally more successful than those who were assigned to participate.

In addition to proper, often time-consuming and expensive training, faculty needed administrative, physical, and technical support. Administrative support can include release time to properly develop teaching materials. Administrative

decisions, for example the 'housing' of distance education (Mirabito, 1996) or its relationship to the institution's mission (Henrikson, 1998), must be decided well in advance of the instructor teaching the course. Time and money must be invested in the physical space allocated to distance learning in order for it to operate effectively. Thought must be given to the furniture, hardware, and software (Sherron & Boettcher, 1997). What new types of teaching and learning spaces will be needed to provide distance education courses with the evolving technologies? Will more small video-conferencing rooms be needed? Will hardware and software need to be purchased? Will it be obsolete in six months? a year? What about course development software? Blumenstyk (1999) stated that course development companies, that barely existed three years ago, were aggressively marketing higher education. Can you assume that the company that you select now will still be providing the support needed to students, faculty, and administrators three years from now?

Technical support for faculty and students was considered extremely important in the design of a successful distance learning program. As more and more faculty are teaching with newer and newer technologies, more technical support is needed. This support needs to be provided in a language comprehendible to non-technical faculty (Henrikson, 1998). Kubala (1998) recommended that effective technical staff members should be good teachers themselves. Technical staff members must be able to provide assistance to

students who may have weak technical skills and are separated from the staff member by distance. This requires good communication skills.

Students and faculty needed additional support for what were considered normal activities for on-campus courses. Where and how will library resources be accessed by off-campus students? A more immediate response to requests for articles will be necessary (Taylor & Eustis, 1999). This can be accomplished using on-line journals (Sherron & Boettcher, 1997). But these cost money and mean tradeoffs somewhere else. However, off-campus students need to have access to the same resources as on-campus students (Hardy & Boaz, 1997). Other issues, such as, "How can registration and advising be accomplished at a distance?" need to be addressed. Can student services become more portable or flexible to address the needs of off-campus students?

What support services will be available to faculty and students in regard to issues of testing? Can testing be accomplished on-line or will proctors need to be employed? Who will find and pay the proctors? Kubala (1998) suggested that this was a possible area for collaboration with local community colleges. Community colleges typically already have make-up testing centers in place. These centers are staffed with professionals that understand security issues and could serve as an invaluable resource for exam proctoring for distance learners. If on-line testing was selected as the preferred delivery method of exams, then some further questions arose (Bicanich et al, 1997). How can privacy and security be assured? Does Internet testing place any subgroup at a

disadvantage? The advantage of on-line testing is that it promotes prompt (immediate) feedback, one of the Seven Principles for Good Practice created by Chickering and Gamson (1987). Once again training and support is essential for success.

The design of distance learning courses will also be effected by issues of awarding credit (Brindley & Paul, 1993). Administrative decisions regarding exactly how many credits from distance learning courses will be allowed to count toward a degree must be settled. If a student is registered at one institution and taking a distance learning course from another institution, who gets credit for this student, especially if that student is receiving financial aid? Questions of exactly what constitutes a "home" institution must be decided in advance if two institutions are to enter into a collaboration agreement.

The final design issue mentioned in the literature was interactivity (Kearsley, 1995). The amount and type of interactivity selected will dictate what type of distance learning mode will be used. Moore (1989) identified three types of interaction: student-content, student-teacher, and student-student. Much research has been conducted concerning the value of interaction, particularly student-student and student-faculty, in relationship to its positive effect on student development, for example Astin (1984) and Kuh et al (1991). This issue is further complicated by the fact that interaction could be synchronous (real-time) or asynchronous (delayed) (Sherron & Boettcher, 1997). Are you willing to settle for asynchronous student-content interaction? Then, correspondence

courses will meet your needs. However, Astin and others would argue that this method does not provide the rich, human interaction needed to promote positive student development. The advances in technology have made synchronous, student-student and student-faculty interactions possible via chat rooms and video cameras linked to the Internet; however, sufficient research is not yet available to determine if these methods provide the same positive effects on student development.

Once the distance learning program has been developed, it must be assessed and evaluated. Evaluations can aid in determining the effectiveness and efficiency of the program while pointing out areas in need of improvement. Evaluations can be useful for demonstrating the effectiveness of the program to key stakeholders, for example, those controlling funding (Franklin et al, 1996). The evaluation should address some basic questions. What are the academic standards for a distance education course? Is the distance education course comparable to the traditional course? That is, is it taught by the same instructors with the same qualifications? This is one of the complaints lodged against the new virtual universities. The University of Phoenix, for example, employs forty-five fulltime instructors and four thousand five hundred adjunct instructors (Strosnider, 1997). Does the distance learning course use the same textbook, assignments, and exams as the traditional course? Should it employ the same materials? Does it have the same semester duration and grading criteria? Should these elements be the same? How will the typical faculty evaluation form

be modified to incorporate the inherent teaching differences between distance learning and traditional courses? How, when, and by whom will technical and administrative support systems be evaluated? When and how will faculty training be evaluated?

Most of the models and perspectives in the literature were developed before the advent of the Internet technologies. Evaluating distance learning is further complicated by the fact that the instructor and learner are separated by time and/ or space. The learner cannot be observed directly as a traditional student can. Issues of evaluating services, for example, tutoring, become more important. There is more to evaluate because the learner has a more diverse set of inputs for learning (Thorpe, 1993). As recently as 1997, evaluators were still trying to develop an effective evaluation model for distance education video courses (Malone, et al).

A review of the literature on evaluating distance education yielded two primary styles of evaluation. In addition to the application of traditional models such as the Tylerian approach, hybrid mixes of experimental and naturalistic evaluation that employ both quantitative and qualitative methods were suggested.

Massey and Wilger (1998) advocated the traditional Tylerian approach to evaluating distance learning. That is, for technology based programs to be effective, they must define explicit educational goals or outcomes. Then performance measures must be used to assess the attainment of these goals.

They further recommended a cost-benefit analysis. However, at a departmental level, cost-benefit becomes almost impossible to determine since few departments actually know how much is spent on specific teaching and learning activities.

Western Governor's University is an example of an institution that follows a Tylerian approach to evaluation of distance education. This institution stated that quality is controlled by placing an emphasis on measurable outcomes based on assessments of students' skills and knowledge (Johnstone & Tilson, 1997).

When employing hybrid evaluation methods, students and faculty can be surveyed (quantitative method) to gauge their perceptions regarding the use of some distance learning technology (Henrikson, 1998). But surveys can only provide a limited amount of information. Franklin et al. (1996) also recommended focus groups and content analysis (qualitative methods). Simonson (1997) included observation and journals. Woodley and Kirkwood developed an eclectic approach to evaluation of distance education in 1986 to be used for the Open University (Simonson, 1997). This method combines quantitative and qualitative methods to collect measures of activity, efficiency, outcomes, program aims, policy, and organizations.

An example of a hybrid model is the AEIOU approach which addresses accountability, effectiveness, impact, organizational context, and unanticipated outcomes. Iowa's Star Schools project is an example of a statewide program that was evaluated using the AEIOU method (Sorensen, 1997). AEIOU stands

for accountability, effectiveness, impact, organizational context, and unanticipated outcomes. This approach was developed by James Fortune, Jan Sweeney, and Christine Sorensen. It has been used for several years at the Research Institute for Studies in Education at Iowa State University. The AEIOU approach allows for both formative (needs assessment and program development) and summative (effectiveness) evaluation and combines qualitative and quantitative data collection techniques. The AEIOU evaluation process provides a framework for identifying key questions necessary for an effective evaluation (Simonson, 1997).

According to several articles, effective evaluation projects need to be longitudinal. Moran and Payne (1998) state that Kirkwood College is in the process of a three year study to identify its riskiest distance delivered courses and design advising and academic interventions to improve outcomes. Rensselaer is in the process of a longitudinal study of students' performance and attitudes through their undergraduate career and two years beyond for those students participating in its studio courses (Massy & Wilger, 1998). At Marywood College, faculty teaching on-line courses regularly meet in committees for feedback and evaluative purposes (Mirabito, 1996). Carter (1998) states that ongoing assessment that is integral to decision making enhances its validity and increases the likelihood of its authority for educators and investors.

Russell (1999) compiled 355 articles and reports on distance education dating back to 1928 that he identified as reporting "no significant difference"

between distance education and traditional courses. In response to Russell's *The No Significant Difference Phenomenon*, the National Education Association (NEA) and the American Federation of Teachers (AFT) commissioned The Institute for Higher Education Policy (IHEP) to conduct a study of what the research does and does not tell us. They found problems with the overall quality of the articles and reports.

> The most significant problem is that the overall quality of the original research is questionable and thereby renders many of the findings inconclusive.

They also found that major gaps exist in the current research.

> A major gap in the research is the lack of studies measuring the effectiveness of total academic programs taught using distance learning. Virtually all of the comparative or descriptive studies focus upon individual courses...The research does not take into account the differences of individual learners...The research does not explain why the drop-out rates of distance learners are higher...The research does not include a theoretical or conceptual framework.

The final issue to consider in developing models of distance education evaluation involves accreditation associations. Decisions made by accreditation associations concerning distance education will effect program design and evaluation. Accrediting associations' guidelines range from no explicit guidelines (Association for Community and Junior Colleges, Western Association of Schools and Colleges and Commission on Higher Education, New England Association of Schools and Colleges) to very clearly defined guidelines (Southern Association of Colleges and Schools, Commission on Colleges). Accrediting associations are rapidly developing guidelines; however, distance learning technologies are

growing at a rate that exceeds our ability to develop sufficient guidelines (Gellman-Danley, 1997).

Evaluation of Web-based Courses

A review of the literature concerning the evaluation of Web-based courses yielded studies that were focused on comparing traditional course outputs to Web-based course outputs. Ryan (2000) found no difference in final grades for an on-line course in Construction Equipment and Methods compared to its traditional counterpart at the University of Oklahoma. Ryan also administered the University of Oklahoma College of Architecture Non-Studio Course Evaluation and found no difference in perception of quality between the two groups. Wegner et al. (1999b) also found no difference in test scores for graduate students enrolled in a Web-based course compared to a traditional course in Curriculum Design and Evaluation. Similar comparisons yielded similar results for Suter and Perry (1997) and Verbrugge (1997). Similar comparisons also yielded similar results for Powers and Mitchell (1997). However, it should be noted that in this study there were only seven graduate students enrolled in the Web-based course.

Wegner et al. (1999a) compared two groups of students using different communication tools for an on-line course. The first group used 'stand alone' communication tools, like email, fax, and research Web sites. The second group

used a commercially developed program called *TopClass*. The group utilizing the commercially produced program had significantly more occurrences of student-instructor and student-student communication.

While a review of the literature provided the numerous perspectives on evaluation outlined above and some thoughts on and studies of evaluation of distance education courses, it did not yield any comprehensive models for evaluating Web-based courses.

Summary

Although some research concerning evaluating technology-based distance education does exist, the studies were frequently inadequate, incomplete, and not applicable to Web-based courses. Findings from the literature review having implications for the development of an evaluation model for Web-based instruction included:

- formative versus summative evaluation
- knowing your purpose for evaluation
- faculty support and training issues
- student support issues
- interactivity
- outcome comparisons
- accreditation issues.

CHAPTER III

METHODS

Introduction

The purposes of this study were accomplished mainly through surveys and interviews. A review of relevant documents was also conducted. The investigator also reviewed existing research on evaluating Web-based instruction and incorporated the results of this review into the evaluation model.

Three research questions were developed as a framework for the study.

Research Questions

1. How are the members of the East Tennessee Consortium for Higher Education and other selected programs currently evaluating Web-based courses?

This question was addressed through surveys and interviews with Consortium representatives and representatives from other selected institutions of higher education. A review of documents that were provided by participating institutions also contributed information.

2. According to the available literature and the participants in the study, what special issues or conditions should be addressed in evaluating Web-based distance learning courses?

This question was also addressed through the surveys and interviews conducted with participants from Consortium and non-Consortium institutions of higher education and through the review of existing literature.

3. What are the important components of a comprehensive evaluation model for Web-based learning?

The response to this question was a model developed from the information collected in response to research questions one and two.

Participants

The participants in this study were individuals in two categories: individuals whose institutions are members of the Consortium and other individuals whose institutions are not members of the Consortium, but are extensively involved in Web-based education programs.

Data collected from the Consortium members came from surveys and interviews and review of any documents they provided. Data collected from other institutions of higher education were primarily interview data and information gleaned from analysis of existing documents provided by those institutions.

The sample of individuals from the Consortium institutions that were found to be offering Web-based courses at the time the study was conducted were representative of all the Consortium institutions except Roane State Community

College. The distribution of that representation is summarized in Column 2 (Web-based Course) of Table 1 on the following page.

Table 1 lists all of the institutions that were members of the Consortium when the study was conducted. The second column denotes whether or not an institution was or is planning to teach a Web-based course. The third column denotes the institutions that were represented in the administrator survey. The fourth column denotes the institutions that were represented in the faculty survey. The fifth column denotes the institutions that were represented in the administrator interviews. The last column denotes the institutions that were represented in the faculty interviews. The four institutions that were not currently and did not anticipate using Web-based instruction did not participate in the surveys or interviews.

A total of 178 individuals participated in the study. There were 154 survey participants and 38 interview participants. However, the 14 faculty interview participants were also participants in the faculty survey. The study participants are summarized in Table 2 immediately following Table 1.

Table 1. East Tennessee Consortium for Higher Education Representation in the Study

Institution	Web-based Course	Admin Survey	Faculty Survey	Admin Interview	Faculty Interview
Bryan	no	x			
Carson-Newman	yes	x	x	x	x
Chattanooga State	yes		x		x
Cleveland State	yes		x	x	x
Covenant	no				
East TN State	yes		x	x	x
King	yes		x	x	x
Knoxville Business	no	x			
Knoxville College	no				
Hiwassee	no	x			
Lee	yes	x	x	x	x
Lincoln Memorial	yes		x	x	x
Northeast State	yes		x	x	x
Pellissippi State	yes		x	x	x
Roane State	yes				
Southern Adventist	yes		x	x	x
TN Temple	no				
TN Wesleyan	no				
Tusculum	no	x			
University of TN, Chattanooga	yes	x		x	
University of TN, Knoxville	yes		x	x	x
Walters State	yes		x	x	x

Table 2. Study Participants

Participant Type	Sample Size
Consortium Administrator Survey	22
Consortium Faculty Survey	132
Consortium Administrator Interview	14
Consortium Faculty Interview	14 (also counted in surveys)
Virtual Interview	6
Additional Interview	4
Total	178

Survey Sample

All Consortium distance education directors or persons in equivalent positions were surveyed. Since it was anticipated that there would be a large population of Consortium instructors, a random sample of instructors of distance courses were surveyed with questions related to teaching. This sample was created using a random number generator on all the Consortium faculty having taught (in the past year) or planning to teach a Web-based course as listed in either the catalog, course timetable, or Web site or as noted by the distance education directors. The sample size required to be representative of the population was determined using the Krejce-Morgan Method (1970) which is based on a χ^2 distribution with 1 degree of freedom. The survey sample consisted of 154 individuals: 22 administrators and 132 faculty.

Consortium Administrator Survey Subjects

Web sites were used to identify the names and either telephone numbers or email addresses for the Distance Education Directors at the twenty-two Consortium institutes. If only telephone numbers were available, the researcher called to request the email addresses. Many institutions did not have distance education directors. For these institutions, the Academic Affairs office was contacted. As a result of feedback from pilot surveys, the survey was made available on-line and was conducted as an e-survey. (See Appendix G for a sample of questions that appeared on screen.) Each individual administrator was sent an email that the contained the URL for the on-line survey along with a randomly generated four letter "password." The password was used to code the responses in order to know who the respondents were. The initial response rate was $5/22 \approx 22.7\%$. After three weeks, non-respondents were sent an email reminder that contained the URL for the survey and the password. This increased the response rate to $7/22 \approx 31.8\%$. See Table 1, Column 3, Page 29 for participant information. After two more weeks, a third reminder was sent to non-respondents. This reminder resulted in no new surveys being completed ($n_1=7$). The demographics of the respondents are summarized in Table 3 on the following page.

Table 3. Consortium Administrator Respondents' Demographics

Demographic	Frequency
Institution Type	2-year 2 4-year 5 Comprehensive 0
Funding	Public 1 Private 6
Gender	Male 4 Female 3

Consortium Faculty Survey Subjects

The Consortium distance education directors were asked to provide the names of their faculty who have taught, will teach, or are currently teaching a Web-based course. Two of the seven provided the requested information. Course timetables and institutional Web site documents were reviewed for the remaining twenty institutions. A total population of 204 faculty members was identified. The sample size required to be representative of the population was determined using the Krejce-Morgan Method (1970) which is based on a χ^2 distribution with 1 degree of freedom. The calculated sample size was determined to be 132. The 204 faculty members were numbered and 132 were randomly selected using the random number generator feature of the TI-83 graphing calculator. Email addresses not provided by the administrator surveys were identified using the directory and search features of the Consortium Web sites. The same protocol was used for the faculty e-surveys as the administrator

e-surveys. Emails were sent that contained the URL for the survey site as well as a randomly generated "password" for identification purposes. The initial response rate was 31/132 ≈ 23.5%. After three weeks, non-respondents were sent an email reminder that contained the URL for the survey and the password. This increased the response rate to 37/132 ≈ 28.0%. After two more weeks, a third reminder was sent to non-respondents. This increased the response rate to 39/132 ≈ 29.5% (n_2=39). See Table 1, Column 4, Page 29 for participant information. The demographics of the faculty respondents are summarized in Table 4. The faculty respondents encompassed all position and instructional levels associated with the Consortium institutions.

Since Internet Web-based surveys are so new, the literature contained few references on acceptable response rates. Thach (1995), in referencing Keisler and Sproull, noted that even though email has been used for survey

Table 4. Consortium Faculty Respondents' Demographics

Demographics	**Frequency**
Institution Type	2-year 27 4-year 5 Comprehensive 7
Funding	Public 34 Private 5
Gender	Male 17 Female 22
Instructional Level	Lower Division 23 Upper Division 8 Graduate 5 Indeterminate 3

research since the late 1970s, its use has not been widely discussed in the literature. Thach noted that using email to conduct research has a major advantage in cost savings, but has the disadvantage of limiting the study's demographics only to those who have email addresses. This was not an issue for this study since it was already limited to the Consortium institutions, all of which have email access.

Berg (2001) conducted a similar study using a similar protocol concerning distance education, except that his study was national. His initial sample contained 1,114 email addresses and 176 completed surveys were returned. This generated a response rate of 15.8%. After removing the 295 'non-deliverables', his final response rate was 21.5%. The researcher had no initial non-deliverable email addresses during the survey phase of this research. Berg further noted that a response rate of 21.5% compared favorably to similar national Web-based research studies conducted by such organizations as the NEA.

Rubin and Babbie (2001) referred to this form of survey research as Computerized Self-Administered Questionnaire (CSAQ). They noted that this process is more efficient than traditional techniques and does not appear to reduce data quality. However, they provided no input as to what would be deemed an acceptable response rate.

A very brief follow-up email that only contained three questions from the original survey and a fourth question as to why the participant did not respond to

the original survey was sent to ten randomly selected faculty non-respondents. This represents approximately ten percent of the non-respondents. Five of the ten non-respondents replied to the email. Three completed the four-question survey. One responded that he did not know how to respond to the questions. The final one noted that she was not currently teaching a Web-based course; therefore, she did not respond to the survey. The faculty survey non-respondents' answers concerning evaluation were consistent with the respondents' answers. For example, the non-respondents considered student outcomes and student satisfaction to be important measures of quality and effectiveness.

Cook et al (2000) conducted a meta-analysis of response rates for 68 Web-based surveys following similar meta-analytic techniques conducted for paper-and-pencil surveys. They found that responses rates for e-surveys were typically lower than response rates for paper-and-pencil surveys. The mean response rate for the 68 surveys reported was 39.6% (SD = 19.6%) compared to 55.6 to 70% for paper-and-pencil surveys. Cook et al suggested pre-contacts and reminder emails to improve response rates and noted that representativeness was more essential than response rate.

As noted above under subjects, all types of institutions were represented in the surveys with one exception. No administrator survey responses were received from comprehensive universities. However, comprehensive universities were represented in the interview sample. Thus, their lack of representation in

the surveys should not effect the overall applicability of the data to all of the Consortium institutions.

Therefore, it is assumed that the survey response rates of 31.8% for the administrators and 29.5% for the faculty are acceptable response rates that are representative of the sample.

Survey Data Collection

The first two research questions were addressed partially with email surveys sent to the 22 Consortium institutions. These surveys were structured questionnaires designed for exploratory purposes. A closed-end format for questions was employed where possible for ease of analysis; however, it was necessary for some questions to be open-ended. The survey questions were structured for their intended audience: administrators or faculty. The survey questions concerning institutional issues, e. g., institutional program housing, were sent to the directors of distance learning or most appropriate person if there was no designated distance education director. The survey questions for faculty explored faculty issues, e. g., test security issues. The surveys are provided in Appendices B and C.

These surveys were constructed using a list of questions concerning Web-based instruction that was generated by individuals who are members of the ETCHE. Those questions were categorized and cross-referenced with the available literature to aid in criterion-based validity. It should be noted that the

surveys contained a number of questions related to distance instruction in addition to the questions regarding evaluation of distance courses. This was because the Consortium wanted the researcher to gather this information for their use. It should be further noted that these additional questions were frequently mentioned in the accreditation documents as typical questions to be included in an evaluation of distance education in general.

After initial construction, the surveys for distance education directors and faculty were critiqued and refined according to the recommendations of a director and assistant director of distance education at one of the Consortium institutions who volunteered to assist the researcher.

Next, a pilot sample of five administrator and five faculty surveys were emailed to individuals who were not in the study population and agreed to assist the researcher in reviewing the content and clarity of the questions, for example, faculty who taught a Web-based course two years ago. Voluntary pilot participants were also identified via the American Education Research Association (AERA) listserv. An email was sent to the AERA higher education listserv and multiple volunteers answered the request for pilot assistance. Results of this pilot were analyzed to identify any further revisions that were needed.

Results of the pilot noted a few questions that were not clear and those questions were adjusted. The major result of the pilot study was a change in study protocol. The pilot participants noted that it would be easier to complete

the survey over the Internet as an online survey. As a result of the pilot study, both the administrator and faculty surveys were converted to HTML code using Parse-Me Form Submission software and uploaded to the following Web sites: http://www2.pstcc.cc.tn.us/~jvogel/etche_admin2.html and http://www2.pstcc.cc.tn.us/~jvogel/etche_faculty.html.

The revised e-surveys were sent via email to the distance learning directors (or equivalent personnel) and faculty.

The study participants were sent an initial email that contained an introductory message with a brief description of the study and the affirmation of anonymity. This introduction was provided with the surveys in Appendices B and C. A second email was then sent that contained the appropriate URL for their survey and the 'password' code. All responses were then sent electronically to the researcher. This procedure made analyzing the data much easier for the researcher and significantly reduced the amount of paper results generated. In the pilot study conducted via email, the entire survey was returned in addition to the responses. One returned pilot email survey was 15 pages in length. With the online e-surveys, the Parse-Me routine reduced the results to one to two pages per survey participant.

Analysis of Survey Data

Due to the nature of the data required to answer the research questions, a mix of both qualitative and quantitative analysis techniques were employed. The majority of the data analysis was qualitative in nature.

Analysis of the administrator and faculty surveys included descriptive statistics where appropriate, for example, frequencies and percentages. Common themes were noted and compared to the interview results and ideas or recommendations from the available literature. Special attention was given to identifying the common elements of an evaluation model and the elements considered important to the administrators were compared to the results of the faculty surveys. Charts and frequencies were provided where appropriate. The only editing that was done to quotes was the correction of misspelled words. If only part of a quote was used, the deleted part was represented by ellipsis. No other editing was done to quoted responses. Much of the survey data is provided in Appendix E.

Interview Sample

The interview sample for both Consortium member and non-member institutions involved individuals at institutions that were engaged in some form of evaluation of Web-based education.

The **Consortium member** interview sample included instructors and administrators involved in development and implementation of Web-based distance learning courses. For each Consortium institution that was engaged in Web-based instruction, the member interview sample consisted of:

1. one or two administrators with strong ties to Web-based instruction as recommended by the distance education director

2. one or two faculty members per institution selected from among those who participated in the survey based on survey responses.

The **non-Consortium member** sample of interviewees was initially expected to include a total of six to eight institutions. These institutions were to include the following:

1. institutions with a strong Web presence that may include, but are not limited to Tennessee

2. virtual universities.

The non-member interviewees were to consist of the distance education director (or person in an equivalent position) from each institute of higher education and, perhaps, one other person recommended by the distance education director. However, due to the emergent nature of the study, more interviews and interviewees became necessary.

Additional interviews were conducted with individuals representing the Southern Regional Education Board, the Tennessee Board of Regents, and the Southern Association of Colleges and Schools.

Consortium Administrator Interviewees

As a result of reviewing Web sites, course timetables, and responses to surveys, the following 14 of the 22 Consortium institutions were found to be

involved in the development and/ or implementation of Web-based distance education courses (Table 1, Column 2, Page 29):

- Carson Newman College
- Chattanooga State Community College
- Cleveland State Community College
- East Tennessee State University
- King College
- Lee University
- Lincoln Memorial University
- Pellissippi State Technical Community College
- Roane State Community College
- Southern Adventist University
- Northeast State Technical Community College
- University of Tennessee, Chattanooga
- University of Tennessee, Knoxville
- Walters State Community College.

At least one administrator per institution was mentioned either in the administrator or faculty surveys. Frequently, the contact information was also provided. When a name was mentioned without contact information, that information was either gleaned from the institution's Web site or by telephoning the institution directly. Two community colleges were not represented.

At one non-represented institution, two names were on the interview list. One individual stated that he had no time to conduct a telephone interview. The other individual did not respond to a telephone message followed by an email message requesting an interview.

At the other non-represented institution, two names were also on the list. The first individual returned a telephone message. When the researcher returned his message, his voice mail was no longer available. A follow-up email resulted in a "This account will no longer accept messages." reply. An additional follow-up email resulted in a "This account is closed." message. As in the first case, the second individual did not respond to a telephone message followed by an email message requesting an interview.

This left $12/14 \approx 85.7\%$ of the Consortium institutions represented in the administrative interviews. A total of 14 interviews ($n_3=14$) with administrators were conducted. The positions of the interviewees varied greatly, for example, Academic Vice Presidents, Deans, and Assistant Directors of Technical Support.

Consortium Faculty Interviewees

Two institutions, one community college and one comprehensive university currently offering Web-based courses, did not return any faculty surveys (Table 1, Column6, Page 29). Therefore $12/14 \approx 85.7\%$ of the institutions were represented. A total of 14 ($n_4=14$) faculty were interviewed. These faculty were selected based on their responses to the survey. Four

institutions had only one individual faculty member returning the survey; therefore, these respondents were automatically selected to be interviewed. Seven individuals were selected because they had either created their own Web-based courses or they were trying to develop an evaluation for an existing Web-based course. The remaining three were selected due to intriguing comments on the social aspect, rejuvenating effects, and mentoring of other faculty in Web-based courses.

Non-Consortium Virtual University Interviewees

The distance education directors suggested the following virtual universities for participation based on name recognition only. They knew of no awards or recognition by professional organizations that would qualify them as exemplary institutions.

- Jones International University (which has received accreditation by NCA)
- University of Phoenix Online (which was recognized by the Public Broadcasting System, a.k.a. PBS)
- Western Governor's University (accreditation candidacy status expected by NCA)

Professional organizations such as the United States Distance Learning Association and The League for Innovations in Community Colleges recognize individuals for 'best practices' and 'benchmarks' in Web-based education.

However, these organizations do not recognize entire virtual universities. The following additional institutions were identified as having received recognition by The College Board:

- Athabasca University
- Florida Gulf Coast University
- Idaho Virtual Campus
- Open University, UK
- University of Maryland University College (accredited by Middle States)
- Virtual College of Texas.

Two additional virtual colleges were included in the study: Kentucky Virtual University and Online University of Wyoming. Kentucky Virtual University is considered a leader in online learning. Kentucky was the first state in the United States to have a virtual university, a virtual library, and a virtual high school. The Online University of Wyoming was included because it has been involved in distance education for more than a century. The University of Wyoming is the only four-year institution in the state and serves a population of students spread across 98,000 square miles.

A total of eight (n_5=8) institutions appeared initially to be available as interview sources. Jones International University, Western Governor's University, and Florida Gulf Coast University did not respond to telephone or email requests for an interview. The researcher had been given contact

information for a person at Jones International University when the study began approximately one year prior to the interview phase. The contact person agreed to an interview then and said to call back when it was time to conduct the interviews. When the researcher attempted to contact the person, no email or telephone messages were returned. The University of Phoenix Online responded with the following quote:

> I am sorry that we can not assist you with your dissertation. We get so many of these requests that we can not possibly help everyone who requests interviews with the staff.

The University of Maryland University College directed the researcher to the Office of Distance Education and Lifelong Learning (ODELL). After asking exactly what the interview questions were, the director of the ODELL responded with the following quote:

> Those are good questions. The Director for the Institute of Higher Education Assessment should be able to answer all of them.

The director answered the first question 'How are you currently evaluating your Web-based courses?' with the following response:

> Well, lots of different activities are going on. Variety of different things here. Best thing to do is contact our Public Relations Office. How did you get my number? Why don't you give me your name and number and I'll get back to you.

Neither the director nor the Public Relations office contacted the researcher again. Therefore, a total of six interviews were conducted with staff at the following virtual institutions:

- Athabasca University
- Kentucky Virtual University
- Idaho Virtual Campus
- Online University of Wyoming
- Open University, UK
- Virtual College of Texas.

The non-member interviewees were expected to be the distance education director (or person in an equivalent position) and perhaps, one other person recommended by the distance education director. However, many of these institutions had no designated director since their focus was strictly on distance education. Of the virtual interviewees, only two consisted of the distance education director or coordinator. The other four virtual institutions did not have designated directors, so the other four virtual interviewees were an Executive Director of Public Relations, a Chief Academic Officer, a Course Evaluator, and a Virtual Campus Degree Advisor.

Additional Interviewees

Due to the emergent nature of the data, additional interviews were also conducted with the Director of Educational Technology for the Southern Regional Education Board (SREB), the Assistant Vice Chancellor of Academic Affairs for the Tennessee Board of Regents, the Associate Executive Director of the Commission on Colleges for the Southern Association of Colleges and Schools,

and a current Southern Association of Colleges and Schools (SACS) Self Study Director.

Interview Data Collection

Interview information was used to partially address all three research questions and was used to enrich the survey data. Due to the locations of the institutions, most interviews were conducted via telephone.

Prior to completing the actual interviews, one pilot interview for each respondent group was conducted and the interview protocol was altered based on the results of the pilot interview.

As a result of the pilot administrator interview, the questions were rearranged in the "real" interviews. The Consortium member administrators interviewed were asked the following questions in the order presented here:

1. Are you currently engaged in or developing an evaluation of your Web-based courses and programs?
2. Suppose you have been appointed to develop a comprehensive evaluation of your newly created Web-based program. What would your evaluation of this program be like?
3. Do you know of any virtual universities or institutions with a strong Web presence that has received any awards or acclaim?
4. Can you provide any evaluation instruments, methods, or URL's that your institution is using or considering using?

The interviews were conducted via telephone. All interviews were read immediately for accuracy and then coded by common themes.

As a result of the faculty pilot interview, one question was changed and the order of the questions were changed. The original interview question 'Are you currently engaged in or developing an evaluation of your Web-based courses?' was removed because that information could be gleaned from the survey responses. Due to the emergent nature of the data, an additional question (number 3) was added. Since the Consortium administrator interviews did not provide any exemplary or award winning models for virtual institutions, the faculty interviewees were asked for this information.

The Consortium member faculty interviewees were given the following interview questions:

1. Suppose you have been appointed to develop a comprehensive evaluation of your newly created Web-based course. What would your evaluation of this course be like?
2. Can you provide any evaluation instruments, methods, or URL's for you or your institution?
3. Do you know of any virtual universities or universities with a strong Web presence that have won any awards or acclaim?

Most of the faculty interviews were conducted via telephone. Faculty teaching at local institutions were interviewed in person where ever possible. All interviews were read immediately for accuracy and then coded by common themes.

Probing questions were used where necessary in all interviews to ensure specificity of responses. As noted above, additional interview questions were constructed based on the survey results; however, these questions were not developed until the survey results had been analyzed, and it was clear what information was needed to enrich the survey data. The Consortium interview sample contained many of the same individuals who were surveyed.

As previously explained, the non-member sample of interviewees included six institutions. The virtual universities that were already engaged in some form of evaluation were selected based on recommendations from the distance education directors and recognition as an exemplary program by some professional organization.

When the Consortium distance education directors were asked the question 'Do you know of any virtual universities or institutions with a strong Web presence that have received any awards or acclaim?', they provided responses that were comparable to the literature review. That is, the Consortium administrators did not know of any specific awards for institutions. They only knew of virtual institutions with 'name recognition', such as the Regents Online Degree Program (RODP), Phoenix Online University, Western Governors University, Jones International University, and Kentucky Virtual University. The Regents Online Degree Program was formerly known as the Tennessee Virtual

University; therefore, it was very familiar to the Consortium members. The only institution with a strong Web presence that was known by the interviewees was Florida Gulf Coast University. Four interviewees (28.6%) simply stated that they knew of no such institutions. Some sample comments are as follows.

> Not really. I know of several like Phoenix, but don't know if they are any good. Lots out there- but how know if they are any good. I don't know.
>
> The only one that comes to mind is Jones International, first accredited. I always refer to them as the leader because I don't know any that stands out above the rest. Regents Degree Program awarded Army contract...Big-real numbers are coming in the Web-enhanced.
>
> I know of several with a lot of attention, just not necessarily a lot of acclaim.
>
> I don't. Early on I looked around to get some feeling. Wasn't overly impressed...
>
> ...Phoenix does a lot online, but major purpose is leasing buildings.
>
> ...places will give awards for their Web sites, not for actual content...
>
> one- Kentucky- totally virtual- good place to ask

The non-Consortium virtual institution member sample of interviews included a total of six individuals representing the following six institutions:

- Athabasca University
- Kentucky Virtual University
- Idaho Virtual Campus
- Online University of Wyoming
- Open University, UK
- Virtual College of Texas.

Due to its frequent mention and being awarded the Army Contract, the RODP was also investigated. However, the RODP is not a virtual university. It is a consortium of Tennessee institutions.

Interviewees from the virtual institutions were asked the following questions:

1. How are you currently evaluating your Web-based courses?
2. What unique procedures are employed while evaluating Web-based courses that are not used for traditional courses?
3. What do you consider to be the important elements of an evaluation model for Web-based courses?

All virtual institution interviews were conducted via telephone. All interviewees were asked to provide available documents that would explain or provide additional information about their evaluation processes or procedures.

All interviews were read immediately for accuracy and then coded by common themes.

Analysis of Interview Data

The interviews of the Consortium members were coded and analyzed for common themes, especially in reference to the elements of the evaluation model. All interviews were read and each data were grouped according to a theme, for example, Web-site comments. Then, the categories were refined by combining or separating topics based on similarities, for example, user-friendly and ease of navigation were combined into a single group concerning use of the course Web

site. Next, the number of responses per category were counted to note the most common themes.

The administrator interview data were compared with the administrator survey results, and the faculty interview data were compared with the faculty survey results. Did the interview results support and extend or enrich the survey results? How were they alike or different?

The interview data from the virtual universities were analyzed for common themes, especially in reference to the necessary elements of an evaluation model. These data were compared to the Consortium survey and interview data and to findings from the literature. Were virtual universities evaluating their courses in the same or different ways as the more traditional Consortium institutions? Were they employing evaluation methods that were similar to those emerging from the literature?

Descriptive statistics, including charts and frequencies, were provided where appropriate.

Interview information was used to partially address all three research questions and was used to enrich the survey data. Those questions were:

1. How are the members of the East Tennessee Consortium for Higher Education and other selected programs currently evaluating Web-based courses?

2. According to the available literature and the participants in the study, what special issues or conditions should be addressed in evaluating Web-based distance learning courses?

3. What are the important components of a comprehensive evaluation model for Web-based learning?

As previously mentioned, the wide-spread locations of the institutions throughout East Tennessee required that most interviews had to be conducted via telephone. Follow-up interviews to enrich the survey data were conducted with both Consortium members and non-members after the survey data had been analyzed.

Document Review

The documents reviewed for this study consisted of catalogs, course timetables, Web site contents, accreditation standards, and evaluation materials provided by the survey and interview participants.

The review of documents served three purposes. First, a review of catalogs, course timetables, and Web sites of the Consortium institutions enriched the information received from the distance education directors in creating a list of faculty from which the faculty survey sample was devised. The distance education directors were asked to provide contact information for their faculty who have taught, are teaching, or will teach a Web-based course. Two of the distance educators provided the requested information. Timetables from the Consortium institutions were requested via telephone and email to be mailed to the researcher to identify additional faculty. The Consortium institution Web sites

were also accessed via the links provided at the Consortium Web site available at http://web.utk.edu/~etche/index.htm to identify additional faculty.

Second, Web sites and materials sent by the participants from virtual universities provided some information on evaluation methods or procedures. In response to the researcher's request for evaluation documents from the non-member virtual institutions, three basic answers were given. Either there were no evaluation documents available, the evaluation documents were not for public viewing, or the evaluation documents were available on the virtual institution's Web site. Some sample documents available via the Web sites included Annual Reports of Student Satisfaction Data, anecdotal testimonies from students and faculty, and an Evaluation for Distance Educators Guide.

Third, a review of printed accreditation standards was expected to yield information concerning evaluation of distance education courses in general and possibly Web-based courses as well. Particular attention was given to the standards of the Southern Association of Colleges and Schools since it is the accrediting association for the East Tennessee region and is in the process of revising its standards. Attention was also given to the standards of the North Central Association, since it awarded accreditation to Jones International University, a virtual university. Representatives of these associations were contacted for further information.

The documents were requested by telephone, email, traditional mail, or retrieved from the Web sites, where available. In addition to being retrieved

directly from the Web sites, the documents were received by email, traditional mail, and fax.

Document Analysis

The documents were read and themes were highlighted. The common themes were grouped into categories in a similar manner as employed with the interview data. The document data were coded and analyzed according to common themes especially in relationship to evaluating Web-based courses. Evaluation materials retrieved from Web sites or provided by participants were summarized and cross-referenced with the survey and interview data to identify common themes and practices.

Virtual University Web Site Document Analysis

The Web sites for the virtual universities were identified using the Google search engine. Each Web site was accessed and its content was reviewed for available evaluation procedures or documents.

SREB Web Site Document Analysis

The Southern Regional Education Board's Web site was investigated because the SREB was perceived to already have a screening and evaluation process in place for its Web-based courses. The SREB Web site also was accessed using the Google search engine. The SREB Director of Technology

was interviewed. He was asked to provide any information available concerning the SREB's screening and evaluation process for its Web-based courses.

Accreditation Document Analysis

The SACS Commission on Colleges Web site was reviewed for evaluation documents or procedures. The SACS Commission on Colleges Web site was accessed using the Google search engine. Additional SACS documents reviewed for information concerning evaluation of Web-based courses included:

- The Evaluation of Distance Learning Activities
- Planning Distance Learning Activities

Both of these documents were provided to the researcher during an in person interview with the Assistant Vice Chancellor of Academic Affairs for the Tennessee Board of Regents.

Additionally, the North Central Association's (NCA) Web site was also reviewed for evaluation documents and procedures. The NCA Web site also was accessed using the Google search engine.

Literature Review

To address the last research question, an evaluation model was developed by combining the survey and interview results with the available literature on constructing evaluation models, evaluation models for distance

education, evaluation models for Web-based courses, documents provided by institutions of higher education in the study, and information regarding accreditation standards.

A review of the literature concerning existing course evaluation approaches and instruments, including those used by the virtual universities (if available), was conducted. Since the literature review revealed the absence of a student course questionnaire that specifically addresses Web-based courses, a student survey instrument which could serve as one component of a comprehensive evaluation model was developed and tested.

Literature Analysis

Data gathering and analysis from the literature review involved analyzing the literature for common recommendations associated with constructing evaluation models, evaluation models for distance education, and evaluation models for Web-based courses. These common themes were compared with the survey and interview data to answer the following questions:

1. Were the elements considered necessary by the study subjects comparable to the elements referenced in the literature?

2. What unique elements were identified either in the literature review or by the subjects?

3. Are those surveyed or interviewed now employing evaluation methods recommended in the literature?

Accreditation literature was analyzed by comparing what the accrediting associations consider necessary elements of evaluation of Web-based courses to those elements deemed appropriate by the study population and the literature.

Student Course Questionnaire Survey Instrument Development

Since the literature review revealed an absence of a student course questionnaire that specifically addressed Web-based courses, a student survey instrument which could serve as one component of a comprehensive evaluation model was developed and tested. The survey was piloted using a Web-based Finite Mathematics course and two Web-based Probability and Statistics courses (n=24 total students).

After the questionnaire was piloted and amended, the new questionnaire was given to two sets of students taught by the same instructor enrolled in Finite Mathematics: one Web-based section (n=17 students) and two traditional sections (n=43). Since comparisons of Web-based to traditional student outcomes or results were a recurring theme throughout the study and considered a necessary component of a comprehensive evaluation model, the results of the questionnaires for the two groups were compared.

In order to test the comparability of the two groups of students, two factors were tested to ensure that the groups were comparable: gender and mean course GPA. Hypothesis testing was conducted and the analysis was completed using the Statdisk software package.

The Web students had a male to female ratio of 5:12. The traditional students had a male to female ratio of 24:19. In order to determine if gender was comparable for the two groups, the null hypothesis of equal proportions was tested at the α=0.05 significance level.

H_0: $p_1=p_2$

H_a: $p_1 \neq p_2$

α=0.05

The Web students had a combined course mean GPA of 2.235 (on a 4.0 scale) with a standard deviation of 1.669. The traditional students had combined course mean GPA of 2.942 with a standard deviation of 0.742. In order to determine if GPA was comparable for the two groups, the null hypothesis of equal mean course GPA's was tested at the α=0.05 significance level.

H_0: $\mu_1=\mu_2$

H_a: $\mu_1 \neq \mu_2$

α=0.05

The responses of the two samples were compared on the questions that were relevant to both Web-based and traditional students. The results are displayed in Table 13 located in Appendix F. The exact questions are located in Chapter Five. There were no significant differences in the mean responses to the questionnaire except for one question. The question "I had sufficient contact and interactions with my fellow classmates." had a mean of 4.395 for the traditional students and a mean of 3.294 for the Web-based students.

The student course questionnaire was designed to be a component of the evaluation model. It was designed by using the documents provided in conjunction with the responses provided by the study participants.

Reliability and Validity

To enhance reliability, the researcher collected data using multiple methods (surveys, interviews, document and literature reviews) over an extended period of time. Additionally, the researcher consistently employed the same data collection protocols. Internal validity was enhanced by triangulation. That is, the multiple sources of data provided for similar and converging conclusions. External validity was enhanced by employing a diverse set of study participants and providing sample participants' responses from which the reader can draw their own conclusions.

Summary

Multiple data collection methods were employed in this study to address the complicated issues associated with answering the research questions from the perspectives of:

- administrators
- faculty
- students.

CHAPTER IV

FINDINGS AND CONCLUSIONS

Introduction

The findings and conclusions of the study are organized by research question. Those pertinent to questions 1 and 2 appear in this chapter. The model developed in response to question 3 occupies the next chapter.

Research Question 1

How are the members of the East Tennessee Consortium for Higher Education and other selected programs currently evaluating Web-based courses?

Findings pertinent to this question are organized by data collection methods.

Administrator Survey Responses for Research Question 1

According to the administrator surveys, quality assurance in Web-based courses varied from being in the initial stages and doing very little to the following elaborately laid out plan:

> Web-based courses are first determined for development on the basis of degree program and student needs. After identification, an instructor is selected for course development. An initial training session is conducted outlining protocol and expectations of the

> course. Follow up training sessions are conducted to acclimate the instructor developing the course to the online delivery system. Meetings with instructors who have taught online are also conducted, where in round-table fashion, ideas, tips and tricks, etc, can be shared from experience. Once the course is developed, the Assistant Director of Extension Programs reviews the course. Additionally, a contact at eCollege also reviews the course. Findings are reported back to the developing instructor for correction and/or consideration. Upon approval from the Assistant Director of Extension programs, the course is then scheduled for inclusion in courses offered by the institution.

According to the administrator survey responses, measures of effectiveness included completing a separate student evaluation including specialized questions pertaining to distance learning, the course delivery company conducting a pre-course, mid-course, and post-course survey, and budget considerations being reviewed.

Faculty Survey Responses for Research Question 1

Assurance of Quality:

According to the faculty surveys, the main attempt at assuring quality in Web-based courses was primarily conducted during the course development phase by attempting to make the course as close to its traditional counterpart as possible. This included the areas such as: same syllabus, same expectations, same tests, same assignments, and same objectives (n=16, 41.0%). See Appendix E for more faculty survey details.

It is interesting to note that the second most mentioned method for attempting to assure quality was student interactions (n=12, 30.8%). Many

comments were provided in this area including references to creating evaluation methods or procedures that measure the quality and quantity of interactions.

Also frequently mentioned were student work and feedback. Some sample faculty responses are as follows:

> I compare the test scores and term assignments of my students with those of students in traditional classrooms. Also, I am in touch with each of my students at least once per week via E Mail.
>
> We are struggling with this. I would very much appreciate seeing whatever you come up with here!!
>
> The same material is covered in all courses even though the style of delivery differs. Much of the quality of learning depends more heavily upon the student than in a traditional classroom setting. Evaluation instruments are currently being developed.
>
> Give weekly assignments or quizzes to measure student understanding. Communicate frequently with students and try to develop an atmosphere in which open, honest, courteous communication is encouraged.
>
> In addition to evaluating course requirements (team exam projects) we plan to do an intensive student evaluation. In this we will concentrate on how well course objectives have been fulfilled and problems/opportunities provided by distance education. This is the first time I have taught via distance education and has been an important learning experience. I will make considerable changes in the course if I continue to teach it via distance education.
>
> As a department, we are not yet thinking of these issues. As an instructor, I conduct in-house research into the comparability of curriculum, instruction, and learning...Also, I informally poll colleagues about students who shift from my online classroom to their traditional brick and mortar classroom. Institutionally, also, we are not yet at this point. (In fact, administering online classes from an administrator's standpoint is quite problematic at this point in our short history.)

Additional comments are provided in Appendix E. The faculty survey participants provided more variety in their responses. However, both administrators and faculty survey participants mentioned comparing student services for Web-based students to their traditional on-campus counterparts.

Course Effectiveness:

According to the faculty survey responses, the two main measures of effectiveness included comparing success rates of the Web-based courses to their traditional counterparts (n=14, 35.9%) and student evaluations of the course and its instruction (n=10, 25.6%). Frequently, the same student evaluations were used as were used in the traditional courses. The questions that did not apply, like 'Did class begin and end on time?' were merely crossed out. Three student course evaluation instruments were provided to the researcher: one traditional student course evaluation and two pilot versions of a Web-based student course evaluation. The questions on these documents were evaluated for content and compared to other questions mentioned in the literature and interviews. The next most frequently mentioned measure of effectiveness was a 'lack of evaluation.' Some sample faculty comments are as follows:

> The student evaluation is not yet completed. We also hope to compare the success rate of on-line classes with the same classes taught in the classroom.
>
> Access is the most important effectiveness element I measure. For many working students, having the ability to asynchronously learn is a godsend.
>
> I also do comparisons of grades to my "traditional" classes. One problem area is retention.

Still under development

Can't measure cost-effectiveness. I measure student success by the quality of their writing at the end of the semester.

I have piloted a student evaluation of faculty/course on web course. Also, encouraged qualitative comments from students at end.

Again, I would like to see what you receive here.

not yet available.

Both the administrators and faculty survey respondents mentioned the need for a student course evaluation questionnaire. Also, both mentioned the need for cost-benefit analysis. According to Whalen and Wright (1999), little literature is available in the area of cost-benefit analysis for Web-based courses. Johnstone (2000), further notes that campuses vary in how and what they actually count. Jewett (2000) has provided some cost comparison analyses in the BRIDGE computerized simulation model.

Virtual Institution Interview Responses for Research Question 1

According to the virtual institution interviewees, the most frequent method of evaluating Web-based courses was student satisfaction surveys (n=4, 66.7%). The second most common method was having an evaluation research center (n=2, 33.3%). The remaining methods were mentioned only once, for example, computer access survey, review of technologies, and comparing grades to traditionally taught courses.

Virtual Institution Web-site Document Review Responses for Research Question 1

All of the virtual university Web sites were reviewed for additional information on evaluation procedures or methods.

The Athabasca University (AU) Web site is located at http://www.athabascau.ca. Student enrollment facts and figures were available. The only evaluation documents found on its Web site contained highlights of the annual student surveys, but did not contain the actual survey. Some sample data reported include the following:

> Overall student satisfaction remained high, with 95% of students reporting that they would recommend AU to a friend or colleague (and just 0.7% saying they would not).
> 82% of students rated the academic content of AU courses as either good or very good.
> Almost all students (96%) reported that they received their course material on time.
> 81% of students reported that they thought their AU studies would improve their career prospects.

The Kentucky Virtual University (KYVU) Web site is located at http://www.kyvu.org. The KYVU had no evaluation documents available on its Web site. Student enrollment facts and figures were available. Its Web site also contained student testimonials. Examples of the testimonials reported include the following:

> I enjoyed my class at KYVU more than I could tell you. I am handicapped and I use a wheelchair to get around. The ability to take the course at my convenience and to do it from home without the stress of going on campus during the winter was fantastic. With KYVU, I did not miss a thing. I intend to take as many classes as possible through KYVU.

> I have very little time left in my life - with children and full-time work. So being able to take the human ecology class that I have put off for so long on the computer--rather than taking my time to go to class - was GREAT! This is perfect for busy adults who are looking to finish up a degree. Thanks for the experience.

The Idaho Virtual Campus (IVC) Web site is located at http://ivc.uidaho.edu/entrance/. The Engineering Outreach Program at the University of Idaho has published a guide: Evaluation for Distance Educators. This guide can be accessed at http://www.uidaho.edu/evo/dist4.html. It contains explanations of evaluation methods and techniques as well as evaluation tips. It is practitioner oriented. For example, it lists specifically some questions that educators may want to ask students when collecting data. Additionally, during the interview phase, the researcher was directed to the *Web-based Commission's Report*. This document was very useful as it was consistent with other data from the study participants.

The Online University of Wyoming (Online UW) Web site is located at http://ecampus.uwyo.edu. No evaluation documents were found on the Online UW Web site.

The Open University (OU), UK Web site is located at http://www.open.ac.uk/frames.html. The United States now has a 'sister institution' to the Open University, UK. The Open University, US Web site is located at http://www.open.edu. The Student Research Centre is available online at http://iet.open.ac.uk/src/. The Student Research Centre studies open

and distance education policy on topics such as learning needs, student demographics, quality of student learning experience, and the social aspect of open and distance education. However, during the interview phase of the research, the Course Evaluator noted that evaluation documents and procedures are not in the public domain would not be provided to the researcher.

The Virtual College of Texas (VCT) Web site is located at http://www.vct.org/. No evaluation documents or procedures were found on the VCT Web site. According to the interview with the VCT Director of Operations, evaluation using a formal evaluation instrument was to be implemented in August 2001.

SREB Interview and Document Review Responses for Research Question 1

The Southern Regional Education Board is a consortium consisting of sixteen states: Alabama, Arkansas, Delaware, Florida, Georgia, Kentucky, Louisiana, Maryland, Mississippi, North Carolina, Oklahoma, South Carolina, Tennessee, Texas, Virginia and West Virginia. (See Figure 1 on the following page.)

The SREB Electronic Campus Web site is located at http://www.electroniccampus.org/. The SREB Electronic Campus is not a virtual university. The Electronic Campus is an "electronic marketplace". That is, the Electronic Campus serves as a "point of entry" to distance education courses and programs. All courses are offered by accredited colleges and universities and must adhere to the "Principles of Good Practice".

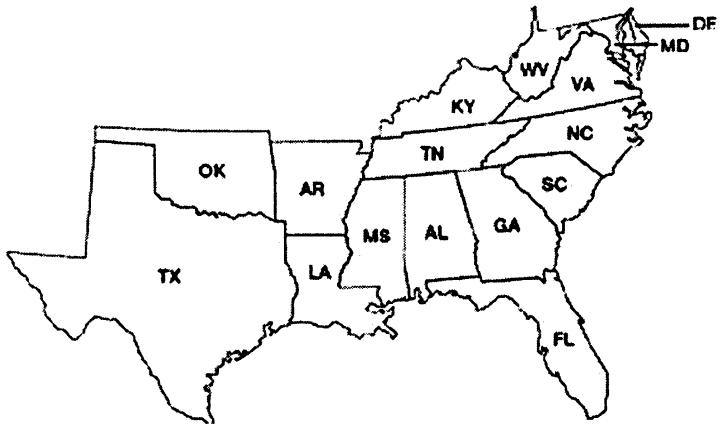

Figure 1. SREB Member States

An interview with the SREB Director of Technology resulted in the following comment:

> We do not evaluate online courses and programs, but the SREB Electronic Campus is based on the "Principles of Good Practice" that are standards for assessing courses and programs. In addition, the SREB Educational Technology Cooperative has the "Essential Principles" that addresses K-12 education. Both are on the SREB Web site. There is other material there that may be of help to you.

The researcher found that it was very common for virtual institutions and many traditional institutions to cite the “Principles of Good Practice” on their own Web sites. Sometimes SREB was given credit for the Principles; sometimes they were not. Some institutions made it appear as though they had derived the Principles. The Principles could serve as a standard against which to evaluate a Web-based program. They were used by the researcher as one element in the construction of the evaluation model. The Principles are included in Appendix H.

The 'other materials' that the director referred to were helpful documents. The SREB Web site contains sample survey instruments. Sample instruments included items such as the Technology Users Survey, the Florida Distance Learning Survey, and the Survey of Technology in Virginia's Colleges and Universities. These surveys can be accessed at the SREB Web site at http://www.sreb.org/.

Accreditation Interviews and Document Review Responses for Research Question 1

A review of accreditation standards yielded some information concerning evaluation of distance education courses. The Southern Association of Colleges and Schools (SACS) is the accrediting association for the East Tennessee region and was still in the process of revising its standards. According to Benberg (2001), the new accreditation requirements will allow more institutional flexibility. The revised standards were expected to be available on the SACS Web site in August 2001. The SACS Commission on Colleges Web site is located at http://www.sacscoc.org/.

The July 1996 updated version of the SACS's document entitled "The Evaluation of Distance Learning Activities" was provided to the researcher by the Assistant Vice Chancellor of Academic Affairs for the Tennessee Board of Regents during a face to face interview. This document provided additional validity for the study as the 'questions and areas of consideration regarding the *Criteria for Accreditation*' that were in the SACS document were directly related

to the initial questions asked by the Consortium that were used to develop the survey questions. Some sample questions were as follows:

- Has the institution developed a reasonable plan for evaluating the effectiveness of its distance learning activities?
- What distance learning activities are offered?
- What types of distance learning delivery systems are being used?
- How appropriate are these delivery systems for the programs being offered?
- Are admissions, degree completion, curriculum, and instructional design policies and procedures similar to those used for traditional campus-based programs?
- Are goals and objectives, and skills and competencies, the same for course offered on main campus as those offered through DLA (distance learning activities)?
- Are the academic qualifications of faculty teaching in distance learning activities similar to those teaching on campus?
- What interactions occur between students and faculty in DLA?
- How does the institute orient and train faculty for teaching in these programs?
- Are work loads similar to those of on-campus faculty?
- Does the institution contract for any or all of its distance learning activities with an outside party?

- What arrangements has the institution made for ensuring that students have access to appropriate learning resources?

The July 1996 updated version of the SACS's document "Planning Distance Learning Activities" was also provided to the researcher by the Assistant Vice Chancellor of Academic Affairs for the Tennessee Board of Regents. This document provided a broad framework for initiating or developing a distance learning program. Some sample points to consider are:

- the relevancy of a proposed distance learning program to the purpose and goals of the institution
- the ability of faculty to assess and document student achievement
- a strategy for making appropriate learning resources and services available for distance learning students
- the availability of facilities and equipment necessary to deliver a distance learning program
- a detailed plan for the systematic evaluation of the distance learning program and how the evaluation findings will be used to support program changes.

Attention was also given to the standards of the North Central Association (NCA), since it awarded accreditation to Jones International University, a virtual university. The Higher Learning Commission of the North Central Association

Web site is located at http://www.ncahigherlearningcommission.org/. The NCA Web site has provided a "Statement of Commitment by the Regional Accrediting Commissions for the Evaluation of Electronically Offered Degree and Certificate Programs." This statement is as follows:

> Technologically mediated instruction offered at a distance has rapidly become an important component of higher education. Growing numbers of colleges and universities are going on-line with courses and programs, while those already involved are expanding these activities. New providers, often lacking traditional institutional hallmarks, are emerging. This phenomenon is creating opportunities to serve new student clienteles and to better serve existing populations, and it is encouraging innovation throughout the academy. While these are welcome developments, the new delivery systems test conventional assumptions, raising fresh questions as to the essential nature and content of an educational experience and the resources required to support it. As such they present extraordinary and distinct challenges to the eight regional accrediting commissions which assure the quality of the great majority of degree-granting institutions of higher learning in the United States.

The NCA has developed a 16 page document entitled "Best Practices for Electronically Offered Degree and Certificate Programs." This document is available at http://www.ncahigherlearningcommission.org/resources/electronic_degrees/Best_Pract_DEd.pdf. The *Best Practices* document was initially developed by the Western Cooperative for Educational Telecommunications. This document also provided additional validity for the surveys, as many of the survey questions were also contained within this document. Some sample questions were as follows:

- Are training and technical support programs considered accurate by those for whom they are intended?

- Is a helpdesk function realistically available to students during hours when it is likely to be needed?
- Are the technologies judged to be appropriate (or inappropriate) to the program(s) in which they are used?
- What are the academic qualifications of those presenting and managing the program?
- What provisions for instructor-student and student-student interaction are included in the program/ course design and the course syllabus?
- Is instructor response to student assignments timely?
- What technologies are used for program interaction?
- What orientation and training programs are available?
- What steps are taken to retain students in the program?
- How is student performance evaluated?
- How are the respective characteristics of campus-based and electronically offered programs taken into account?

Additional Accreditation Literature and Document Review Responses for Research Question 1

In addition to accrediting Jones International University, the NCA also accredited an institution based completely on correspondence courses. Crow (2000) stated that the Commission wrestled with new definitions of faculty, of

services for students, and of learning support for programs. He further noted that tools to evaluate student learning are both underdeveloped and underused.

Accrediting officials noted that the sheer volume of colleges and universities offering some form of distance education was making their work more challenging (Olsen, 1999). The Distance Education Training Council (DETC) was founded in 1926 under the cooperative leadership of the Carnegie Corporation and the National Better Business Bureau. The DETC estimates that since 1890, approximately 130 million Americans have taken some form of a distance education course.

However, according to Johnstone (2001), students need to be informed consumers in that many institutions claim accreditation, but the accrediting associations are not recognized by the United States Secretary of Education and/ or the Council for Higher Education Accreditation (CHEA). The DETC is recognized by the CHEA; however, students studying at an institution that is accredited only by the DETC are unlikely to be eligible for federal financial aid.

Web-based education is challenging the traditional higher education system in that new institutions in this highly competitive market are impatient with the time that the traditional accreditation process takes to complete. This has lead to some 'shady' practices. For example, the for-profit institution, Canyon College, is based in Idaho, but only offers degrees to students who are not Idaho residents. The college's president states that it does not offer degrees to Idaho students so that it does not have to abide by Idaho state laws requiring

accreditation and state approval. Therefore, Idaho has no regulatory authority over the college. Neither does any other state since the college is located in Idaho. Idaho officials are considering changing the state code to be able to regulate any institution in the state. The chief academic officer for the Idaho State Board of Education states that there needs to be a national standard for online education that is governed by federal guidelines. The regional accrediting associations recently formed the Council of Regional Accrediting Commissions (C-RAC) to attempt to deal with some of these newly arising issues (Johnstone, 2001). The regional accrediting associations are also working with the Western Cooperative for Educational Telecommunications to develop guidelines for electronically delivered degree and certificate programs. These guidelines are in draft form and are under consideration for endorsement by the regional accrediting associations (Cook, 2001). These guidelines can be accessed at http://www.wiche.edu/telecom/Guidelines.htm. (WICHE represents Western Interstate Consortium for Higher Education.) This information was also used by the researcher as one element in the construction of the evaluation model.

Accreditation standards documents concerning Web-based instruction were summarized and cross-referenced with the survey and interview data to aid in identifying the important elements of a comprehensive evaluation model.

Conclusions Regarding Current Evaluation Practices (Research Question 1)

1. Most Consortium institutions had not gotten very far in evaluating their Web-based courses or programs. Only one of the 14 institutions teaching Web-based courses had developed a systematic evaluation process that measures the effectiveness of the course during the development phase of their Web-based program.

2. A common method of evaluation was comparing Web-based outcomes such as success rates to their traditional counterparts. According to the literature, this is common; however, it is not sufficient.

3. Many issues or elements were mentioned without any guidance as to how to evaluate them, e.g., faculty administration time, course effectiveness, and student access and retention.

4. Evaluation documents from virtual universities, if existent, are not easily accessible.

5. The SREB Web site contained many useful evaluation documents.

6. Accreditation documents contained many questions similar to those posed by the Consortium.

Research Question 2

According to the available literature and the participants in the study, what special issues or conditions should be addressed in evaluating Web-based distance learning courses?

Findings pertinent to this question are organized by data collection methods.

Administrator Survey Responses for Research Question 2

Only two administrator survey responses were received in reference to the issues or factors that make these courses different from traditional courses and

should be taken into consideration in an evaluation. The responses in their entirety are as follows:

> Because the student and instructor
> are not in visual contact, the instructor must be thorough with all information and not rely on a confused look on a student's face to answer questions and the student must often times seek the answer out of the course material.
>
> Time is an important, and flexible element.
> In a traditional course, days and times of attendance are very clear on a class schedule. The online environment, however, makes information available 24 hours a day, seven days a week. To encourage the self initiative of the distance learner, assignments and exercises have to be tailored in such a way as to allow students to operate in the flexibility that has attracted them to this form of educational delivery, yet at the same time, balanced by specific requirements which will keep them accountable and on track.

Faculty Survey Responses for Research Question 2

Many varied faculty responses were received in reference to issues or factors that make these courses different from traditional courses should be taken into consideration in an evaluation. Most issues or factors were only mentioned once or twice such as: academic advising, more written communication skills needed, access to computer hardware and software, and excessive time for students. The only issues or factors mentioned more often were: faculty time required to administer the course (n=7, 17.9%), instructor availability (n=4, 10.3%), and the overall quality of the Web site (n=5, 12.8%). Some sample comments are as follows:

> I think that academic advising becomes an important issue. Advisors should be aware of what characteristics, such as self motivation and discipline, that a student must have in order to be successful in a web course. Advisors need to advise certain students away from web courses.
>
> Academically weak students should not be enrolled in web courses (or at least not science web courses). These courses are NOT easier b/c they are taught on the web.
>
> TIME for administering! lack of guidance
>
> The amount of time spent one-on-one with a student is a very important aspect of my class—as well as the ability to ask me questions without the fear of what their fellow classmates might think. The anonymity factor is really important at times.
>
> Quality of web pages mounted by instructor (evaluative criteria as apply to other web sites)
>
> Ease of downloading (speed) "Fit" between what instructor expects students to have in the way of technology and what students do have. (Ex: Does the course demand Flash (tm)? Does the student have Flash?) "Fit" between what instructor expects students to have in the way of technological expertise and the technological expertise the student has.
>
> Turn around time for emails to instructors
>
> Availability of support services across campus in the online environment (financial aid, counseling, etc)

Some additional sample comments are provided in Appendix E. Both the administrator and faculty respondents mentioned the lack of face-to-face interaction. This factor is mentioned and debated frequently in the literature. For example, see Wagner (1997), Wegner, Holloway, and Garton (1999), Wegner, Holloway, and Wegner (1999), and Willis and Dickinson (1997). This was also a concern mentioned by one of the Consortium administrator interviewees.

> What would my evaluation contain? What do I consider important? Look for ease of navigation and the appearance- interactivity...Is it

> secure?...Evaluation is the crutch of the whole thing. Summative- quizzes and exams. Formative evaluation process: survey aspect is quite simple to set up in, use inside of WebCT...

When the virtual institution interviewees were asked the question 'What unique procedures are employed while evaluating Web-based courses that are not used for traditional courses?', the responses included positive and negative features. For example, an online evaluation was considered better than the traditional 'bubble sheet' because it was automatically tabulated and reduced administrative task time. However, open-ended start and finish times made course evaluation more difficult. Some sample comments are as follows.

> The pedagogy isn't any good. [You] can learn the content just as well if you motivated. But, you can't evaluate courses on a single rubric. Got to look at the course itself...Tools should not drive teaching. Pedagogy should...
>
> [The] faculty sign off on form saying course meets approved syllabi...
>
> I have tried to adapt a phenomenographic* approach to online learning to try and establish when 'deep' approaches to learning occur and when they do not in an online environment.

*According to Williams and May (1997), "the central doctrine of phenomenology is that of reduction. Here, we attempt to rid ourselves of prior understandings in order to grasp an experience in its unadulterated form (p. 75)." Rubin and Babbie (2001) note that the goal is to discover the subjects' experiences and how they make sense of those experiences.

Conclusions Regarding Special Issues and Conditions in Web-based Course Evaluations (Research Question 2)

1. There was insufficient data to draw any conclusions from administrators concerning special issues or conditions in evaluating Web-based courses.

2. The excessive time required to administer the course was the most common faculty theme, yet it was not mentioned by the administrators.

3. Faculty satisfaction, technical support, and training were also commonly identified issues and conditions by faculty.

4. Faculty identified certain student issues and conditions as focuses for evaluation, e.g., student interaction with faculty and other students, student retention, and student readiness for Web-based courses.

Research Question 3

What are the important components of a comprehensive evaluation model for Web-based learning?

The response to this question will be a model developed from the information collected in response to research questions one and two. Since the model is such a significant aspect of the research, it will be addressed in Chapter Five.

Summary of Key Findings

Although the Consortium institutions had not gotten very far with a comprehensive evaluation process, the combination of surveys, interviews, and

literature and document reviews from all the study participants provided the triangulation of the data necessary to develop the model.

Data collection related to research questions one and two yielded the following important findings:

- Most institutions had not developed a systematic evaluation process for evaluating Web-based courses.
- The most common method of evaluation was comparing Web-based outcomes to their traditional counterparts.
- Many issues were raised in relation to what needs to be considered in the evaluation process such as:
    1. faculty administration time
    2. student access
    3. student retention
    4. faculty satisfaction
    5. student satisfaction
    6. student and faculty interactions.

CHAPTER V

EVALUATION MODEL

Research Question 3

What are the important components of a comprehensive evaluation model for Web-based learning?

This question generated many varied responses. Common themes emerged from the surveys and interviews; for example, interactions, quality of Web site, and comparisons to traditional counterparts. But, also, the responses indicated that there were different components needed for different audiences. There are issues that were important to the faculty that were not mentioned at all by the administrators, for example, availability of the instructor, test security issues, quality and preparation of the students, and quality of student learning. As might be expected, administrators also had issues that were important to them that were not mentioned by the faculty, for example, SACS accreditation. Some sample responses are provided in Appendix E.

Although the original intent of Research Question 3 was to develop a model that would address how to evaluate a Web-based course or program, the emergent nature of the data caused this question to expand. Readiness for online courses was a recurrent theme for administrators, faculty, and students. Therefore, the model also contains components designed to evaluate readiness

for Web-based courses for administrators, faculty, and students. Additionally, technological support for faculty and students emerged as a recurring theme and was also incorporated into the model.

The virtual institution interview responses to the question 'What do you consider to be the important elements of an evaluation model for Web-based courses?' were consistent with the Consortium responses. The most frequently mentioned element was technology (n=4, 66.7%). The quality of the technology was perceived as either helping the course or hindering it. The second most frequently mentioned element was overall student satisfaction (n=3, 50.0%). Some sample comments are as follows:

> Student driven information- [such as] overall satisfaction, academic content, materials on time, assignment turnaround time, flexibility, improve career prospects
>
> The development resources hints that there are three main areas of logistics, technology, and pedagogy that must be addressed.
>
> [Need to evaluate]...instruction quality, content quality...readiness for online...such a new medium, does need to be evaluated, very much [is an] undertaking...[We] need to identify areas needed for improvements.
>
> Proof that learning has actually occurred [and]...want the media and technology of the course to not get in the way of learning.
>
> ...Good online teaching should follow good teaching in the classroom. Can't just sit in front of a computer and take a course...

Many questions were raised by individuals that are in differing stages of designing, developing, implementing, and delivering Web-based courses. This

further accentuated the need for a model that is segmented according to the needs of various audiences.

Because of the varied needs of the diverse audiences, the researcher selected to follow Scriven's concept of evaluation checklists as the framework of the evaluation model. The model also contains some elements of a circular evaluation model. That is, faculty are evaluating some aspects of student outputs while students are evaluating some aspects of faculty outputs. Administrators are evaluating some aspects of faculty outputs while faculty are evaluating some aspects of administrator outputs. The model is also multidimensional and is graphically represented in Figure 2 on the following page. Since it contains three dimensions: readiness, course evaluation, and program evaluation, the model will be hereafter referred to as the RCP Evaluation Model.

Following Figure 2 are the checklists and other elements of the RCP Evaluation Model that were designed to provide a framework for the most frequently asked questions or statements provided by the study participants, available documents, and the literature review. Each checklist is followed by a detailed discussion of explanations and applications.

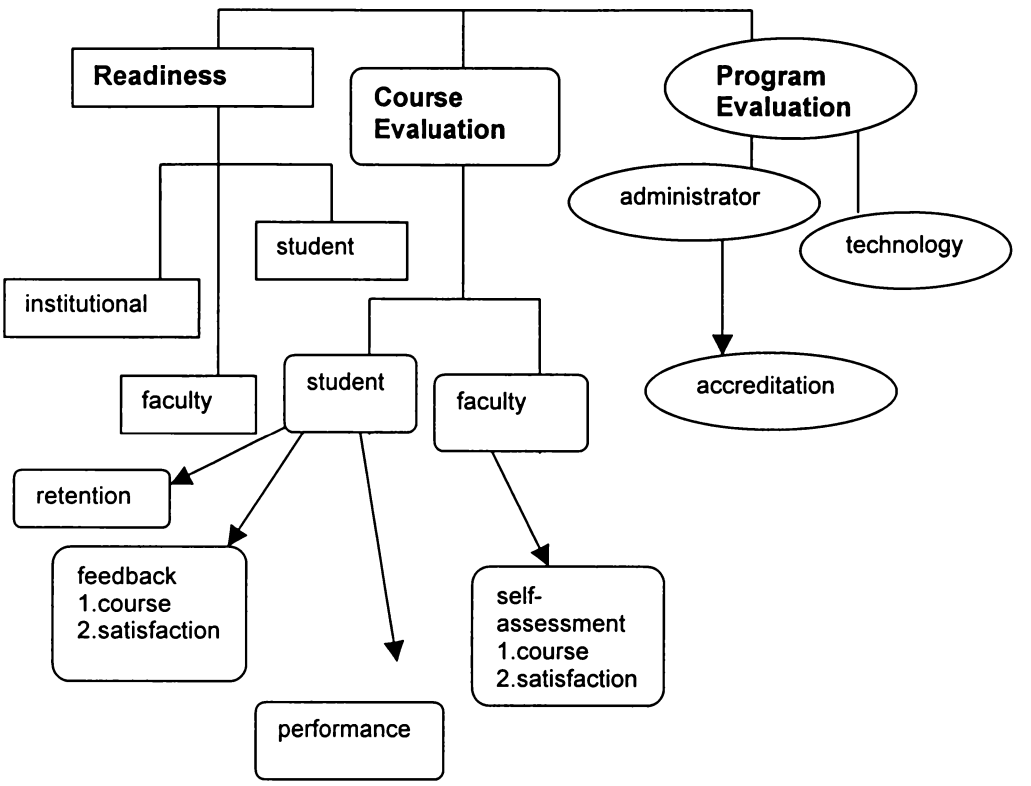

Figure 2. A Model for Evaluating Readiness for and Results of Web-based Learning Experiences

Dimension 1: Readiness

There are three checklists in this dimension: Institutional Readiness Checklist, Faculty Readiness Checklist, and Student Readiness Checklist. The Institutional Readiness Checklist was designed to aid administrators in deciding if they should pursue developing Web-based courses and programs for their institutions. The Faculty Readiness Checklist was designed to aid faculty in deciding if they should pursue developing and teaching Web-based courses. And the Student Readiness Checklist was designed to aid students in deciding if they should pursue taking a Web-based course. The Student Readiness Checklist instrument should be completed by all students who are considering taking a Web-based course for the first time.

Institutional Readiness Checklist Explanations and Applications

The Institutional Readiness Checklist is provided on the following page. (See Figure 3.)

1. *Are Web-based programs consistent with the college's mission?*

If the answer to this question is no, then your institution should not proceed with developing Web-based courses and programs.

Checklist 1: Institutional Readiness Checklist

Question	Yes	No	Not Applicable
1. Are Web-based programs consistent with the college's mission?			
2. Are Web-based programs cost effective?			
3a. Does the technological infrastructure exist to support Web-based instruction?			
3b. If not, would outsourcing or resource sharing be feasible?			
4. Is there a capital-replacement plan to make frequent, expensive hardware and software upgrades?			
5. Can your institution develop Web-based courses that meet appropriate accreditation standards?			
6. Do you have faculty interested in teaching such courses?			
7. Do you have adequate funding to provide release time or other incentives to faculty?			
8a. Do you have adequate technical support specialists available to assist faculty and students?			
8b. If not, would outsourcing or resource sharing be feasible?			
9. Do you have the ability to provide comparable student services to online students as traditional students?			
10. Do you have a detailed plan for the systematic evaluation of Web-based courses and how the evaluation results will be used for program improvement?			

Figure 3. Checklist for Assessing Institutional Readiness for Web-based Instruction

2. *Are Web-based programs cost effective?*

Has your institution considered all the costs? Are there hidden costs that need to be considered? More research is still needed in this area. However, if a reasonable cost analysis leads to Web-based courses not being cost effective, then your institution should not proceed with developing Web-based courses and programs.

3a. *Does the technological infrastructure exist to support Web-based instruction?*

3b. *If not, would outsourcing or resource sharing be feasible?*

If the technological infrastructure does not exist and cannot be outsourced or shared with another institution, then your institution should not proceed with developing Web-based courses and programs.

4. *Is there a capital-replacement plan to make frequent, expensive hardware and software upgrades?*

If a carefully detailed capital-replacement plan has been developed, is it thorough and realistic? If a carefully detailed capital-replacement plan has not been developed, then your institution should not proceed with developing Web-based courses and programs until such a plan is established.

5. *Can your institution develop Web-based courses that meet appropriate accreditation standards?*

Refer to the accreditation checklist. If your institution has not planned for all the items on the accreditation checklist, your institution may still proceed with

developing Web-based courses and programs. However, all of the items need to have been addressed before the course delivery begins.

6. *Do you have faculty interested in teaching such courses?*

If your institution does not have faculty interested in teaching Web-based courses, investigate the reasons why before proceeding. If faculty are forced to teach under these pedagogical conditions, their courses will not be successful. Without enthusiastic faculty available to develop and teach the courses, then your institution should not proceed with developing Web-based courses and programs.

7. *Do you have adequate funding to provide release time or other incentives to faculty?*

Even with willing and enthusiastic faculty available, additional incentives will be required due to the excessive time required for faculty to develop and teach these courses. If you do not have an incentive program developed, your institution needs to develop one before proceeding. This needs to be considered in the cost effectiveness analysis.

8a. *Do you have adequate technical support specialists available to assist faculty and students?*

8b. *If not, would outsourcing or resource sharing be feasible?*

You can begin to develop a Web-based program without the technical support in place, but it would be much better to already have technical support arranged prior to developing the program.

9. *Do you have the ability to provide comparable student services to online students as traditional students?*

Online students will need to have access to comparable student services. How will your online students access records, the cashier, bookstore, library, tutoring center, career services, counseling, and other services? Are your applications and other important forms available online? You can proceed with developing your Web-based courses and programs without having all of the services in place. However, they will need to be addressed before the courses are offered.

10. *Do you have a detailed plan for the systematic evaluation of Web-based courses and how the evaluation results will be used for program improvement?*

You can proceed with developing your Web-based courses and programs without having a systematic evaluation plan in place. However, it will need to be addressed before the courses are offered and adjusted where necessary.

In order to proceed with developing your Web-based program, it is essential that the answers to questions 1 (consistent with mission), 3 (technological infrastructure), and 6 (interested faculty) be yes. The remaining questions can initially have no for the answer, but need to be addressed before Web-based courses are taught.

Faculty Readiness Checklist Explanations and Applications

The Faculty Readiness Checklist is provided on the following page. (See Figure 4 on the following page.)

1. *Are Web-based courses consistent with your teaching philosophy and pedagogical style?*

Do you feel that you can effectively teach your content with minimal or no face to face contact with your students? Can you adjust your teaching style to fit the online platform? Are you willing to adjust your teaching style? If you feel that Web-based courses are not consistent with your current teaching philosophy and pedagogical style, then you may want to consider conducting more research and investigation before you make the decision to proceed.

2. *Are you prepared to be sufficiently available to your students, for example, checking emails at least two to three times daily?*

Do you have a computer with Internet access at home? Do you mind working on Saturdays and Sundays or do you consider that an additional burden? In order for online students to be successful, frequent feedback is needed. If you are not prepared to be logged on at least once a day, then you should consider not teaching a Web-based course.

Checklist 2: Faculty Readiness Checklist

Question	Yes	No	Not Applicable
1. Are Web-based courses consistent with your teaching philosophy and pedagogical style?			
2. Are you prepared to be sufficiently available to your students, for example, checking emails at least two to three times daily?			
3. Do you possess the necessary technical skills or are technical support specialists available when you need them?			
4. Are you willing to devote a significant amount of time to your Web-based courses?			
5. Can you develop Web-based courses that create a quality learning environment?			
6. Do you feel that your department and administration will support your Web-based courses?			
7. Are you prepared to provide multiple methods and ways of creating student interactions?			
8. Are you flexible and tolerant of change?			
9. Do you possess good written communication skills?			
10. Do you have a detailed plan for the systematic evaluation of your Web-based courses and how the evaluation results will be used for improvement?			

Figure 4. Checklist for Assuring Faculty Readiness to Develop a Web-based Course

3. *Do you possess the necessary technical skills or are technical support specialists available when you need them?*

If you are not technically proficient and do not have access to good technical support specialists, then you should not proceed with teaching a Web-based course.

4. *Are you willing to devote a significant amount of time to your Web-based courses?*

Web-based courses take much more time to develop and teach then traditional courses. Will your institution grant you release time to develop and teach your Web-based course? If you are not able to devote proportionally more time to your Web-based course than your traditional courses, you should consider not developing and teaching a Web-based course. If you cannot get release time but really want to develop and teach a Web-based course, then can you devise an innovative way to create more time such as team teaching or a student assistant?

5. *Can you develop Web-based courses that create a quality learning environment?*

Do you have access to support personal or other faculty to mentor you and provide support and constructive criticism? Do you know what elements create a quality learning environment? If not, do you know where to find the information? If you feel that you are not able to create a quality learning environment, then you should seek assistance before you proceed.

6. *Do feel that your department and administration will support your Web-based courses?*

You can proceed without feeling supported by your department and administration, but this may adversely effect your evaluations and promotions. It could also have the opposite effect and they may appreciate your innovativeness. You need to weigh the risks and rewards before you proceed.

7. *Are you prepared to provide multiple methods and ways of creating student interactions?*

Have you considered ways to provide student-content, student-student, and student-faculty interactions? Can you create or promote quality interactions in the absence of face to face contact? If you have devised a plan to allow for multiple ways to promote interactions, how are you going to evaluate the quality of the interactions? It is not sufficient to merely count the quantity of student interactions. If you have not considered this issue, then you should seek assistance before you proceed.

8. *Are you flexible and tolerant of change?*

If you are not able to be very flexible and accepting of change, then you should not proceed with teaching a Web-based course.

9. *Do you possess good written communication skills?*

The majority of Web-based instruction is text-based via web sites, emails, chat, and bulletin boards. If you are not proficient at written communication skills, then you should seek assistance before you proceed.

10. *Do you have a detailed plan for the systematic evaluation of your Web-based courses and how the evaluation results will be used for improvement?*

You can proceed without a detailed evaluation plan developed and develop it as you progress through the course. If you do have a plan laid out, be prepared to make changes as the course evolves.

In order to proceed with developing and teaching your Web-based course, it is essential that the answers to questions 2 (availability), 3 (technological proficiency), 4 (time), 5 (quality learning), and 8 (flexibility) be yes. The remaining questions, except 6, can initially have no for the answer, but need to be addressed before Web-based courses are taught. Question 6 (administrative support) is not essential, but is ideal for an exceptional program.

Student Readiness Checklist Explanations and Applications

The Student Readiness Checklist is provided on the following page. (See Figure 5 on the following page.)

1. *Are you able to motivate yourself to learn on your own?*

Can you get your assignments done without being reminded? Do you look things up on your own if you do not know what they mean? If you are not self-motivated, you cannot be successful in a Web-based course.

2. *Are you a well-organized and self-disciplined student?*

Checklist 3: Student Readiness Checklist

Question	Yes	No	Not Applicable
1. Are you able to motivate yourself to learn on your own?			
2. Are you a well-organized and self-disciplined student?			
3. Are you computer literate?			
4. Do you have regular, consistent access to the Internet?			
5. Are you able to send and receive emails with attachments?			
6. Do you perceive a Web-based course as easier and less work than a traditional course?			
7. Are you capable of reading and interpreting complex directions without assistance?			
8. Are you comfortable asking questions on a one-on-one basis?			
9. Are you able to effectively use digital libraries and search engines?			
10. Is the course that you are considering from an accredited college?			

Figure 5. Checklist for Assuring Student Readiness for Web-based Courses

Can you find things when you need them? Can you create your own routine and stick to it? If you are not a well-organized and self-disciplined student, you cannot be successful in a Web-based course.

3. *Are you computer literate?*

Computer literate means that you have the ability to perform tasks like sending emails with attachments, opening attachments, and opening Web pages when given a URL. If you are not computer literate, then do you know where to get help? Are you prepared to spend a lot of time before class and at the beginning learning computer skills? Are you willing to pay someone to teach you? If you do not have the extra time to get caught up, then you should not take a Web-based course. A self-assessment instrument is needed here.

4. *Do you have regular, consistent access to the Internet?*

If you do not and cannot get it before the class begins, then you should not take a Web-based course. You need to have your own access. Relying on a library or friend's account is not sufficient.

5. *Are you able to send and receive emails with attachments?*

This is an extension of question three. If you cannot master this skill before the class begins, then you should not take a Web-based course.

6. *Do you perceive a Web-based course as easier and less work than a traditional course?*

If the answer is yes, then you should not take a Web-based course. Most Web-based courses are harder and require more time. You have to be able to read and interpret the textbook by yourself.

7. *Are you capable of reading and interpreting complex directions without assistance?*

If not, then you should not take a Web-based course.

8. *Are you comfortable asking questions on a one-on-one basis?*

This can be an advantage to taking a Web-based course. You do not have to worry about others thinking that you are asking a 'silly' question. If you are not comfortable asking questions on a one-on-one basis, then you should talk to your instructor before proceeding to take a Web-based course.

9. *Are you able to effectively use digital libraries and search engines?*

This is not required of all courses. But, if you have never used digital libraries and search engines, as long as you know where to get help and are willing to seek assistance, then you should proceed with taking a Web-based course.

10. *Is the course that you are considering from an accredited college?*

This is important. If your college is not accredited, your credits may not transfer and your degree may not be recognized. Before you proceed with taking a Web-based course, inquire about your college. A reputable college will gladly provide this information. If your college does not willing provide the information, you need to consider a different college.

In order to proceed with taking a Web-based course, it is essential that the answers to questions 1 (self-motivated), 2 (organized), 3 (computer literate), 4 (Internet access), 7 (complex directions), and 10 (accredited) be yes and the answer to question 6 (easier) be no. Question 9 (digital libraries) can be addressed as it is needed while taking a Web-based course. The remaining questions can initially have no for the answer, but need to be addressed before your Web-based course begins.

Dimension 2: Course Evaluation

This dimension contains two aspects: students and faculty. The student aspect contains three levels: retention, feedback, and performance. This aspect contains two survey questionnaires: Student Course Questionnaire and Student Satisfaction Survey. For the faculty aspect, there is one checklist: Faculty Course Evaluation Checklist and one survey questionnaire: Faculty Satisfaction Survey.

Student Retention

Student retention to course completion should be investigated at both the faculty course level and the overall program level. Currently, there is no consistent way to measure retention making it difficult to compare different study or institution results. It is suggested by the researcher that a course completion

grade of C or better be the standard for successful completion. All grades below C (D or F) and withdrawals (W) be considered non-completion due to the fact that many institutions only accept C or higher for transfer credit. This issue is further complicated by incompletes (I's) and open-ended enrollments. The researcher suggests that the standard be to include all grades in data reporting and explanations where necessary.

Student Feedback

The student feedback level contains two components: the Student Course Questionnaire and the Student Satisfaction Survey. These two instruments have some over-lapping; however, the Student Course Questionnaire deals primarily with the structural components of the course while the Student Satisfaction Survey deals primarily with the affective aspect of the course.

Student Course Questionnaire Pilot

The original form of the questionnaire had 24 questions, of which, two were open-ended. Due to the recurring theme of comparability to traditional courses, 12 close-ended questions and one open-ended question were appropriate for either a Web-based or traditional course. The original closed-end questions were rated as:

- a. not applicable
- b. strongly disagree
- c. disagree

- d. neither agree or disagree
- e. agree
- f. strongly agree.

After the pilot study was completed using a Web-based Finite Mathematics course and two Web-based Probability and Statistics courses (n=24 total students), it was noted that the choice of *not applicable* was not necessary and was redundant with the choice of *neither agree or disagree*. It was also noted that a numerical Likert-type scale would make data analysis easier. The new scale became:

- 1. strongly disagree
- 2. disagree
- 3. neither agree or disagree
- 4. agree
- 5. strongly agree.

See Appendix D for the final version of the questionnaire containing only the questions appropriate to a traditional course. Some sample student comments concerning the pilot questionnaire are as follows.

> ...They ask clearly stated questions about the course. I would not delete any...I believe the questions help the instructor on ways to improve the course.
>
> For Web classes, I would delete #12 (I had sufficient contact and interactions with my fellow classmates.). Usually these types of classes have no interaction...I enjoyed the class and having autonomy as I chose...
>
> All questions were easy to read and understand...

...Use 4 – 5 categories instead of 6.

Just leave room to explain...Blank space for comments.

After the questionnaire was amended, the new questionnaire was administered to two sets of students taught by the same instructor enrolled in Finite Mathematics: one Web-based section (n=17 students) and two traditional sections (n=43). Since comparisons of Web-based to traditional student outcomes was a recurring theme throughout the study and considered a necessary component of a comprehensive evaluation model, the two groups were compared.

In order to test the comparability of the two groups of students, two factors were tested: gender and mean course GPA. Hypothesis testing was conducted and the analysis was completed using the Statdisk software package.

The Web students had a male to female ratio of 5:12. The traditional students had a male to female ratio of 24:19. The null hypothesis of equal proportions was tested at the α=0.05 significance level.

H_0: $p_1=p_2$

H_a: $p_1 \neq p_2$

α=0.05

The reported p-value was 0.0652 and the stated conclusion was "Fail to reject the null hypothesis." This means the sample data do not provide enough

evidence to suggest that the two groups of students have significantly different gender proportions.

The Web students had a combined course mean GPA of 2.235 (on a 4.0 scale) with a standard deviation of 1.669. The traditional students had combined course mean GPA of 2.942 with a standard deviation of 0.742. The null hypothesis of equal mean course GPA's was tested at the α=0.05 significance level.

H_0: $\mu_1=\mu_2$

H_a: $\mu_1\neq\mu_2$

α=0.05

The reported p-value was 0.1120 and the stated conclusion was "Fail to reject the null hypothesis." This means the sample data do not provide enough evidence to suggest that the two groups of students have significantly different mean course GPA's.

Therefore, the results of the two samples were compared on the questions that were relevant to both Web-based and traditional students. The results are displayed in Table 13 located in Appendix F. The only significant difference occurred with the means (using a 1-5 Likert-type scale) on the statement: I had sufficient contact and interactions with my fellow classmates. (Note: The word "sufficient" was changed to "enough" as part of the evaluation model revisions process.) The Student Perception of Web-based Course and

Satisfaction instruments are provided on the following pages. (See Figures 6 and 7.)

The demographics section can be omitted if your institution has a global database that easily provides that information. Also, additional demographics can be added to suit the needs of the user. Additionally, the responses can be coded using a Likert-type scale from one to five in order to be able to calculate means for each response.

The Student Satisfaction Survey has not been formally piloted in its entirety. It is meant to serve as a starting point to be adjusted for use by Web-based course faculty.

Student Performance Measures

Student performance measures primarily involve comparing Web-based course outputs to traditional course outputs. Typically, this involved comparing the course GPA's. This should only serve as one component of the evaluation process. A weakness identified in the literature is that this is frequently used as the only measure of evaluation.

Faculty Course Quality Checklist

This checklist was designed to serve as a summative evaluation to lead to improvements in future courses. It was designed to be completed after the course is under way or already has been taught. Completing the evaluation after

Student Perception of Web-based Course Instrument

Demographics: Please circle one response per statement.					
Gender:		Male		Female	
First Web-based course:		Yes		No	
Estimated course grade:	A	B	C	D	F

Perceptions: Please check one box per statement.					
Perceptions for **all** students.	strongly disagree	disagree	neither agree or disagree	agree	strongly agree
1. The instructor was supportive of my educational needs.					
2. The instructor was adequately available to meet my needs for this course.					
3. I had enough contact and interactions with the instructor. (I saw or talked to my instructor as often as I felt I needed to be successful in this course.)					
4. The instructor answered my questions within a reasonable amount of time.					
5. The instructor graded my assignments within a reasonable amount of time.					
6. Assignment due dates were clearly stated.					
7. The assignments were challenging.					
8. The assignments, quizzes, and/ or tests reflected the course content.					
9. I had enough time to complete the course assignments.					
10. The objectives of the course were clearly stated.					
11. The quality and instruction for this Web course is about the same as the quality and instruction that I have received in other traditional in-class courses.					

Figure 6. Student Perceptions of Web-based Course Instrument (continued on the next page)

Perceptions: Please check one box per statement.					
Perceptions for **Web-based** students.	strongly disagree	disagree	neither agree or disagree	agree	strongly agree
12. I had enough contact and interactions with my fellow classmates. (I saw or talked to my classmates as often as I felt I needed to be successful in this course.)					
13. The Web site was frequently updated.					
14. The Web site was easy to read.					
15. The Web site was easy to navigate.					
16. The Web site was easy to understand.					
17. The Web site provided all the tools and links that I needed to be successful in this course.					
18. Technical support was available when I needed it.					
19. I received all the necessary support services (library, advisement, etc.) that an on-campus student would have received.					
20. I learned as much in this course as I would have in a traditional in-class course.					
21. I expect that I would have received about the same grade if I had taken this class as a traditional in-class course.					
22. Overall, I am satisfied with the quality and content of this course.					
23. I would recommend this Web course to other students.					
24. I would consider taking another Web course in the future.					
25. I took this Web course because:					
26. Comments or suggestions for improvement of this course:					

Figure 6. (continued)

Sample Student Satisfaction Survey Instrument

Demographics: Please circle one response per statement.					
Gender:		Male		Female	
First Web-based course:		Yes		No	
Estimated course grade:	A	B	C	D	F

Satisfaction: Please check one box per statement.					
For **Web-based** courses:	strongly disagree	disagree	neither agree or disagree	agree	strongly agree
1. I enjoyed taking this course online.					
2. I am satisfied with the flexibility of this course.					
3. I am satisfied with the explanations or orientation to this course.					
4. The course turned out to be like what I had expected it to be.					
5. I am satisfied with the support that I received for this course from the instructor.					
6. I am satisfied with the support (e.g. tutoring, registration, library) that I received for this course from the college.					
7. I am satisfied with the support that I received for this course from the textbook and materials.					
8. I am satisfied with the course Web site. It was available when I needed it.					
9. The basis for determining grades was clearly stated.					
10. I feel that this course will help me in the future in other courses or employment or life.					

Figure 7. Student Satisfaction Survey for Web-based Courses

the course has already been taught has the negative side effect of not helping current students. (See Figure 8 on the following page.)

Faculty Course Quality Checklist Explanations and Applications

1. *I have asked peers or students to review my Web site for ease of navigation.*

Can someone not familiar with the course get from page to page without getting lost in cyberspace?

2. *I check and update my links frequently.*

Links disappear and die frequently and servers break and pages relocate. How often do you check all of your links?

3. *I respond to student questions within 24 hours.*

Prompt feedback is essential to Web student success.

4. *I have clearly stated objectives and deadlines.*

Clearly stated objectives and deadlines help keep students moving forward; however, some student freedom and flexibility needs to be maintained.

5. *I provide feedback on all major assignments within two weeks.*

Prompt feedback is essential to Web student success.

6. *I encourage student interactions and input.*

Student interactions and input is also essential to Web student success.

7. *I provide challenging assignments that encourage my students to think and are comparable to my traditional course assignments.*

Are your assignments, especially exams, challenging and comparable to your traditional assignments? If they are not, can you justify the differences?

Checklist 4: Faculty Course Quality Checklist

Statement	Yes	No	Not Applicable
1. I have asked peers or students to review my Web site for ease of navigation.			
2. I check and update my links frequently.			
3. I respond to student questions within 24 hours.			
4. I have clearly stated objectives and deadlines.			
5. I provide feedback on all major assignments within two weeks.			
6. I encourage student interactions and input.			
7. I provide challenging assignments that encourage my students to think and are comparable to my traditional course assignments.			
8. My Web-based courses adhere to the same grading scale as my traditional courses.			
9. Students in my Web-based courses earn similar grades to my traditional courses.			
10. I use student input and other course evaluation tools to improve my course.			

Figure 8. Checklist for Faculty Assessment of Web-based Course Quality

8. *My Web-based courses adhere to the same grading scale as my traditional courses.*

If they do not, can you justify the differences?

9. *Students in my Web-based courses earn similar grades to my traditional courses.*

If they do not, what are you going to do for future courses?

10. *I use student input and other course evaluation tools to improve my course.*

Are your students allowed to provide input and feedback concerning your course? What do you do with that input?

In order to produce a quality Web-based course, it is essential that the answers to questions 1-7 and 10 be yes. The remaining questions can initially have no for the answer, but the differences (grading scale and grades) need to be addressed.

Correspondence of Student and Faculty Course Instruments

All of the questions or statements on the Faculty Course Quality Checklist instrument have a similar question or statement on the Student Perception of Web-based Course instrument except two: number eight and 10. These statements are:

8. *My Web-based courses adhere to the same grading scale as my traditional courses.*

and

10. *I use student input and other course evaluation tools to improve my course.*

Therefore, the remaining eight questions or statements can be compared to provide additional triangulation of your data.

Faculty Satisfaction Survey Instrument

A sample faculty satisfaction survey instrument is provided on the following page. (See Figure 9 on the following page.) The Faculty Satisfaction Survey has not been formally piloted in its entirety. It is meant to serve as a starting point to be adjusted for use by Web-based course faculty. It can also be converted to a Likert-type scale in order to calculate means.

Dimension 3: Program Evaluation

There are three checklists in this dimension: Administrator Program Quality Checklist, Accreditation Evaluation and Assessment Checklist, and Technology Support Checklist. The Administrator Program Quality Checklist was designed to aid administrators in evaluating the quality of their Web-based courses and programs. The Accreditation Evaluation and Assessment Checklist was designed to provide a starting point for dealing with accreditation issues while the accreditation standards are in the process of being revised. When the revisions are complete, you are advised to refer to those standards. All ten

Sample Faculty Satisfaction Survey Instrument

Satisfaction: Please check one box per statement.					
For **Web-based** courses:	strongly disagree	disagree	neither agree or disagree	agree	strongly agree
1. I enjoyed teaching this course online.					
2. I enjoyed the flexibility of this course.					
3. I am satisfied with the training I received.					
4. I am satisfied with the student success rates for this course.					
5. I am satisfied with the student retention rates for this course.					
6. I am satisfied with the affective support that I received for this course.					
7. I am satisfied with the monetary support or incentives that I received for teaching this course.					
8. I am satisfied with the technical support that I received for this course.					
9. I am satisfied with the consistency and stability of the course delivery system.					

	Yes	No	Not Sure
10. I would recommend teaching Web-based courses to my peers.			
11. I would consider using the Web to enhance my traditional courses.			
12. I would consider teaching another Web-based course in the future.			

Figure 9. Faculty Satisfaction Survey for Web-based Courses

statements need to be addressed and implemented in order to have what is considered an exceptional program. The Technology Support Checklist was designed for the coordinator of technical support or most appropriate individual to aid in evaluating the technological needs of a Web-based program.

Administrator Program Quality Checklist Explanations and Applications

The Checklist is provided on the following page. (See Figure 10 on the following page.)

1. *Appropriate technical support is available for faculty.*

Is someone available who is knowledgeable and can assist and train faculty in a non-technical language?

2. *Appropriate technical support is available when students need it within a reasonable amount of time.*

Once again, is someone available who is knowledgeable and can assist students in a non-technical language? Is this person(s) available at reasonable times that meet the students' needs? Has a study been conducted to determine what times are most frequently needed by the students?

3. *Comparable student support services are available to online students as on-campus students in a manner that is convenient to the online student.*

Online students will need to have access to comparable student services. How will your online students access records, the cashier, bookstore, library, tutoring center, career services, counseling, and other services? Are your applications and other important forms available online? Are you comparing the quality of

Checklist 5: Administrator Program Quality Checklist

Statement	Yes	No	Not Applicable
1. Appropriate technical support is available for faculty.			
2. Appropriate technical support is available when students need it within a reasonable amount of time.			
3. Comparable student support services are available to online students as on-campus students in a manner that is convenient to the online student.			
4. Appropriate Student Satisfaction surveys are available and the results are used for course improvements.			
5. Appropriate Student Course Evaluation Questionnaires are available and the results are used for course improvements.			
6. Appropriate Faculty Course Evaluation Questionnaires are available and the results are used for course improvements.			
7. Web-based versus traditional course outcome comparisons (e.g. grades, success and withdrawal rates) serve as one component of the evaluation process.			
8. Web-based versus traditional course withdrawal comparisons serve as one component of the evaluation process.			
9. A review of the online course technical components is completed as one component of the evaluation process.			
10. Web-based courses adhere to comparable standards as traditional courses.			

Figure 10. Checklist for Assessing Institutional Program Quality

your online support services to your on-campus support services? Have you identified any areas of weaknesses? What do you do with this information? All of the student support services cannot be equivalent. However, have you made every effort to make them as portable, flexible, and convenient as possible?

4. *Appropriate Student Satisfaction surveys are available and the results are used for course improvements.*

Questions 4 and 5 are similar and have some overlapping. However, the Student Satisfaction survey deals more with the affective aspect of the student's perceptions of the course. See Dimension 2 for a sample instrument.

5. *Appropriate Student Course Evaluation Questionnaires are available and the results are used for course improvements.*

Student Course Evaluation Questionnaires deal more with the structural aspect of the course. See Dimension 2 for a sample instrument.

6. *Appropriate Faculty Course Evaluation Questionnaires are available and the results are used for course improvements.*

This questionnaire was designed to deal with faculty issues after the course is developed and is being or was taught. See Dimension 2: Faculty Course Quality Checklist.

7. *Web-based versus traditional course outcome comparisons serve as one component of the evaluation process.*

Many evaluations are based strictly on comparing Web-based versus traditional course outcomes. This is an essential component of a comprehensive evaluation; however, it is not sufficient by itself.

8. *Web-based versus traditional course withdrawal comparisons serve as one component of the evaluation process.*

Once again, this is an essential component of a comprehensive evaluation; however, it is frequently overlooked or ignored.

9. *A review of the online course technical components is completed as one component of the evaluation process.*

This review should be completed by faculty, students, and technical staff. Was the course building software sufficient? Did the server crash often? Was the faculty technology compatible with the students' technology? What were some of the positive aspects of the technology? What were some of its weaknesses?

10. *Web-based courses adhere to comparable standards as traditional courses.*

Due to the inherit differences in pedagogy, the courses cannot be the same. However, steps can be taken to minimize these differences. Do faculty teaching Web-based courses have comparable qualifications to faculty teaching traditional courses? Do both courses follow similar syllabi? Is the content similar? Are Web-based students expected to have the same pre-requisite skills as the traditional students?

In order to establish a quality Web-based program, it is essential that the answers to questions 1 (faculty technical support), 2 (student technical support), 3 (comparable student services), and 10 (comparable standards) be yes. The remaining questions deal with the components of the evaluation process. Not all components may be needed at all times. But if the evaluation is to be comprehensive, a variety of these components should be used in the evaluation process and modified and updated as needed. A quality program employs multiple evaluation methods.

Accreditation Evaluation and Assessment Checklist Explanations and Applications

The Checklist is provided on the following page. (See Figure 11 on the following page.)

1. *Student performance is evaluated and compared to intended learning outcomes.*

Student learning outcomes are evaluated and compared to traditional outcomes. Is the educational effectiveness of Web-based courses and programs compared to traditional counterparts? Are comprehensive exams administered that assess intended learning outcomes?

2. *Methods are used by the institution to assure the integrity of student work.*

How is student integrity assured? Are there secure testing procedures in place?

Checklist 6: Accreditation Evaluation and Assessment Checklist

Statement	Yes	No	Not Applicable
1. Student performance is evaluated and compared to intended learning outcomes.			
2. Methods are used by the institution to assure the integrity of student work.			
3. The security of personal information is protected.			
4. Student success and retention rates are monitored.			
5. Student and faculty satisfaction are regularly measured.			
6. Access of student services and resources is documented.			
7. Institutional and student costs are analyzed.			
8. Academically qualified persons are involved in program development and implementation.			
9. Program evaluation is used to effect institutional planning.			
10. Evaluation of Web-based courses is part of the regular evaluation process for all academic programs.			

Figure 11. Checklist for Assessing Compliance with Accreditation Standards for Web-based Programs

How do you verify that the work was completed by the student who is actually enrolled in the class?

3. *The security of personal information is protected.*

Can 'outsiders' access sensitive student information? Are social security numbers, credit card numbers, etc safely and securely transmitted? Are forms and documents containing sensitive information properly disposed of, for example, shredded?

4. *Student success and retention rates are monitored.*

Student success and retention are evaluated and compared to traditional outcomes. Are the grade distributions similar? Are withdrawal rates similar? If not, why and what will be done with the results?

5. *Student and faculty satisfaction are regularly measured.*

A sample student satisfaction survey and a sample faculty satisfaction survey were included in Dimension 2. How are the results used to improve future courses?

6. *Access of student services and resources is documented.*

Are the access and usage of student services and other resources by Web-based students tracked? What is done with this information?

7. *Institutional and student costs are analyzed.*

How do the institutional and student costs compare to traditionally taught courses?

8. *Academically qualified persons are involved in program development and implementation.*

Who develops the programs and courses? What are their qualifications? Who teaches the courses? What are their qualifications?

9. *Program evaluation is used to effect institutional planning.*

What do you do with your evaluation results after they are collected and analyzed?

10. *Evaluation of Web-based courses is part of the regular evaluation process for all academic programs.*

Evaluation of Web-based courses should be part of the regular evaluation process.

As stated above, all ten statements need to be addressed and implemented in order to have what is considered an exceptional program.

Technology Specialist Checklist

The Checklist is provided on the following page. (See Figure 12 on the following page.)

1. *A program coordinator is appointed where appropriate.*

According to the literature and the study participants, it is essential to have someone to oversee all aspects of the program.

Checklist 7: Technology Support Checklist

Statement	Yes	No	Not Applicable
1. A program coordinator is appointed where appropriate.			
2. Faculty are provided adequate training prior to developing and teaching a Web-based course.			
3. Faculty are provided continuous training as technology evolves.			
4. Students are provided support and training where appropriate.			
5. Faculty and student needs are anticipated where possible.			
6. Continuous training and support is provided for technical support staff.			
7. Course delivery systems have been evaluated and selected based on pre-determined criteria.			
8. Consistency in design of courses is promoted wherever possible.			
9. Technology is selected based on the best hardware compatibilities.			
10. Technology is selected that allows for multiple learning styles.			

Figure 12. Checklist for Assessing Technological Support for Web-based Programs

2. *Faculty are provided adequate training prior to developing and teaching a Web-based course.*

Web-based courses cannot be successful without this essential element.

3. *Faculty are provided continuous training as technology evolves.*

Training cannot end once the course is developed and implemented. Continual training is essential.

4. *Students are provided support and training where appropriate.*

'24-7' support is ideal, but not always practical. Student training and support has to extend beyond the normal 9 to 5 workday.

5. *Faculty and student needs are anticipated where possible.*

Known potential problems areas need to be identified and shared with students and faculty as soon as possible. This will deter a lot of the frustration associated with online instruction. For example, if a server problem or software upgrade is anticipated, students and faculty need sufficient warning to make back up copies or log off the system.

6. *Continuous training and support is provided for technical support staff.*

Are the staff up to date on the current technology? Can the technical support staff answer questions in a way that is non-technical? What do they do if someone asks a question about some software or hardware that they are not familiar with?

7. *Course delivery systems have been evaluated and selected based on pre-determined criteria.*

Are you going to use WebCt or Blackboard or some 'home-grown' variety? Why did you pick a particular system? Did you lay out a specific set of criteria to judge the systems by?

8. *Consistency in design of courses is promoted wherever possible.*

When students take multiple online courses, do they have a similar and familiar feel to them? Do the different courses 'feel' similar? Do the technical support staff provide faculty with consistency guidelines?

9. *Technology is selected based on the best hardware compatibilities.*

When technology is selected, are student needs considered? If the faculty member is using a lot of multimedia aspects while the student has the cheapest computer he or she can afford, will the student be able to access the materials?

10. *Technology is selected that allows for multiple learning styles.*

Does the support staff train faculty on how to incorporate multiple learning styles into an online course?

All ten statements need to be addressed and implemented in order to have what is considered an exceptional program.

Conclusions Regarding the RCP Evaluation Model (Research Question 3)

1. The model needed to evaluate Web-based teaching and learning goes beyond a simple model for evaluating outcomes of a single course.

2. The model developed in this study needs to be refined through application in several institutional settings.

Summary

The researcher originally set out to develop a model for evaluating Web-based courses. However, due to the emergent nature of the data, the model expanded to include the additional dimension of readiness. The resulting RCP Evaluation model has three dimensions:

- Readiness
- Course Evaluation
- Program Evaluation.

CHAPTER VI

DISCUSSION AND RECOMMENDATIONS

Discussion

Although the idea of evaluation seems simple enough, the process is actually rather complicated. There are many roadblocks to effective evaluation. For example, according to one interviewee who was asked for any available evaluation documents, he had the following response:

> ...I haven't prepared any guidelines. I guess I'm not coming up with anything. One semester when we evaluated one college, the college's reaction was strongly opposed and said do not do this. Discovering how a particular college uses its evaluations was very enlightening. But we have an obligation to conduct evaluation and collect data.

While administrators perceived evaluation as a necessary tool for accreditation, some faculty perceived it as a threat to innovation. Because Web-based instruction is so new, the faculty were frequently forced to use student course evaluations that were designed for traditional classes. Several faculty commented that this led to less than desirable evaluation results which caused at least one faculty member to withdraw from teaching Web-based courses.

The issue of a lack of faculty support, training, and recognition emerged throughout the literature, surveys, and interviews. This was the most frequently mentioned faculty issue. The faculty did not perceive their Web-based classes

as having any less quality than their traditional classes even though the modes of delivery and pedagogy were different.

Both administrators and faculty were concerned about overall student satisfaction, retention, and the quality of teaching and learning. The methods for delivery of Web-based courses varied greatly from an 'online correspondence course' to a highly interactive, multimedia course.

When asked to provide any available evaluation documents, very few documents were provided. The reason frequently given was that they simply did not exist. However, the virtual universities that had such documents stated that they were not available to the public. It is interesting to note that the virtual universities with name recognition would not even consent to an interview, much less provide any evaluation documents.

The evaluation model created addresses many of the most frequently asked questions and issues, but it cannot possibly address all the issues for every institution. It can serve as a starting point to generate additional issues and concerns for individual institutions.

Recommendations

In the process of creating the model, the investigator determined that there are more issues that need further research.

1. The issue of cost-benefit analysis needs further research to determine the necessary components. The literature regarding standardized cost-benefit analysis models for Web-based courses was found to be very sparse. The study participants, both faculty and administrators, mentioned the need for a standardized model.

2. Some literature is emerging on what constitutes the characteristics of a good Web-based student; however, more research is needed here. The study participants noted that many students did not know what they were getting into when they enrolled in a Web-based course. In response to this issue, some of the institutions participating in this study are beginning to offer either Web-based courses "Is it for me?" checklists or introductory courses on how to take a Web-based course. The researcher developed a Student Readiness Checklist in response to this concern; however, more research is still needed in this. The Student Readiness Checklist needs to be tested and applied in several institutional settings to determine if it is sufficient.

3. A concern that emerged as a result of this research was the need to rethink what is considered traditional evaluation. The issue of open-ended enrollments and course completions creates questions about conducting course evaluations. One way to address this issue is to consider 'cohorts' of students who begin a course at approximately the same time and aggregate the data from this cohort whenever most individuals have completed the course. More research is needed in this area.

4. Another concern that emerged was the possibility of creating a "digital divide." As more and more students are taking some Web-based classes and Web-enhanced classes along with their traditional classes, concern is developing that minority and economically challenged students will not be prepared to compete in such a technologically advanced educational system. Research and action need to be taken as soon as possible in this area.

5. A final issue that has implications for further research is in the area of problems related to virtual institutions' longevity. Many institutions, that existed when the study began, were gone by the end of the study, for example, the California Virtual University (CVU). Early literature pointed to the CVU as a role model; now, it no longer exists. Tennessee was beginning the Tennessee Virtual University (TVU) when the study began. Now the TVU has morphed into the RODP. The Western Governors University still has far fewer students than anticipated and is still operating at a loss. This is creating a situation where students do not know if their institution will remain open long enough for them to complete their degrees. And, if they do complete the degree, will their degree be worth anything? 'Diploma mills' are sprouting up all over that tout such things as 'Get your (unaccredited) Masters for only $300 with no course work and never having to step on a campus.' More research needs to be completed that will empower students and inform them of the differences between 'diploma mills' and quality programs and provide them assurance of the stability and longevity of various institutions.

6. Distance education research frequently failed to use randomly selected subjects, focused on small-sized individual courses (for example, seven students in a single course), and did not take high withdrawal rates into account. More systematic, thorough research is needed, especially in the area of evaluating the quality of learning in Web-based courses.

Summary

The model developed in this study addressed many of the issues and concerns of the study participants. However, the model needs to be tested in several institutional settings and further refinement will be needed. After sufficient testing, the model may serve as a standard for Web-based instruction evaluation.

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APPENDICES

APPENDIX A

Consortium Institutions

Appendix A

Consortium Member Institutes taken directly from the Consortium Web site:

Current members include the following institutions

Bryan College

Carson-Newman College

Cleveland State Technical Community College

Covenant College

East Tennessee State University

King College

Knoxville College

Hiwassee College

Lee University

Pellissippi State Technical Community College

Roane State Community College

Southern Adventist University

Tennessee Wesleyan College

Northeast State Technical Community College

Tuscululm College

University of Tennessee at Chattanooga

University of Tennessee, Knoxville

Walters State Community College

Members without direct links listed on the Consortium Web site:

Chattanooga State Community College

Lincoln Memorial University

Tennessee Temple University

Knoxville Business College

Note: Maryville College joined the Consortium after the data collection phase of the research had been completed.

APPENDIX B

Email Survey for Consortium Distance Education Directors

Appendix B: Email Survey for Consortium Distance Education Directors

Dear Distance Education Director:

This survey serves two purposes. The results will fulfill the request for information put forth by the members of the East Tennessee Consortium for Higher Education, and the data collected will be used as partial fulfillment of the doctoral dissertation for the researcher.

Please take a few minutes to reply to the following questions. You may reply to this message and answer directly via email. If you would prefer to print out a hard-copy, please fax or mail your responses to:

Jackie Vogel
Assistant Professor of Mathematics
PSTCC
Hardin Valley Road
Knoxville, TN 37933.
Fax: 865-539-7021

Please fax or mail any supporting documents, e. g., evaluation instruments, that you wish to provide to the above address. Thank you very much for your time and consideration. I will notify you as soon as the compiled information is available on the ETCHE Web site.

Sincerely,

Jackie Vogel

Email Survey for Distance Education Directors: East Tennessee

Consortium for Higher Education:

Please place answers directly under their corresponding questions if no answer blank is provided. If an answer blank is provided, please place an x or the appropriate response in the appropriate blank or blanks.

Demographics:

Institution Name: _____

Institution Type: 2-year_____ 4-year _____ Comprehensive_____

Public _____ or Private: _____

Position: _____

Gender: Male_____ Female _____

Responsibilities in relation to Web-based instruction:

General Information:

1. What do you consider distance education to be?

2. At what stage of development of distance education is your institution? (Mark one choice only.)

____ a. no distance education attempted
____ b. sporadic distance education courses have been offered
____ c. established distance education policy and plan, but not yet fully implemented
____ d. distance education policy and plan are fully implemented and distance courses are an integral part of every semester

3. Does your institution currently offer Web-based courses, that is, courses where more than 50% of the instructional activities occur on-line?

____ a. yes
____ b. no

4. Does your institution anticipate offering Web-based courses in the next five years?

_____ a. yes
_____ b. no

If you answered no to both questions 3 and 4, please skip to Part II. If you answered yes to either question 3 or 4, please continue with question 5.

5. Does your institution offer entire degrees on-line?

_____ a. more than 5 degree programs
_____ b. 3-4 degree programs
_____ c. 1-2 degree programs
_____ d. no degree programs at this time

6. At what level does your institution offer entire program degrees?

_____ a. associate
_____ b. bachelors
_____ c. masters
_____ d. doctorate
_____ e. no program degrees at this time

7. What technologies is your institution using for its Web-based courses? Check all that apply.

_____ a. not teaching on-line
_____ b. email
_____ c. Web site for institution
_____ d. Web site for individual course
_____ e. chat room
_____ f. bulletin board
_____ g. whiteboard
_____ h. on-line testing
_____ i. audio streaming
_____ j. video streaming
_____ k. other (please specify_____)

8. What software is your institution using for its Web-based courses?

_____ a. no commercial package
_____ b. Blackboard
_____ c. CourseBuilder
_____ d. TopClass
_____ e. WebCT
_____ f. other commercial package (please specify_____)

9. If your institution has a distance education program, how is it coordinated?

10. Do you employ individuals outside of your institution as on-line 'professionals' and 'specialists' for the following services?

a. develop courses
_____ entirely
_____ partially
_____ none

b. teach courses
_____ entirely
_____ partially
_____ none

c. provide technical support for students
_____ entirely
_____ partially
_____ none

d. provide technical support for faculty
_____ entirely
_____ partially
_____ none

e. provide student services activities
_____ entirely
_____ partially
_____ none

other (please specify_____)
_____ entirely
_____ partially
_____ none

Quality and Effectiveness:

1. In what ways does your institution assure quality in its distance education courses, specifically Web-based courses?

2. In what ways does your institution measure the effectiveness of its Web-based courses, for example, cost effectiveness, student success? **If possible, please send any evaluation instruments that your institution uses.**

3. In what ways does your institution's distance education courses compare to its traditional courses?

a. semester duration or time frame, e. g., 15 weeks
_____ shorter
_____ same
_____ longer
_____ no data available

b. same instructors
_____ yes
_____ no
_____ no data available

c. same learner objectives
_____ yes
_____ no
_____ no data available

d. same measurement tools
_____ yes
_____ no
_____ no data available

e. student cost
_____ less
_____ same
_____ more
_____ no data available

f. same grading scale
_____ yes
_____ no
_____ no data available

g. other (please specify_____)

4. Do students participate in evaluating your institution's Web-based courses?
_____ a. yes **if possible, please send instruments or related materials**
_____ b. no

5. How does your institution's on-line pass rate (grade of D or higher) compare to its traditional pass rate?
_____ a. higher
_____ b. about the same
_____ c. lower
_____ d. no data available

6. How does your institution's withdrawal rate for students enrolled in Web-based courses compare to the withdrawal rate for students enrolled in traditional courses?
_____ a. higher
_____ b. about the same
_____ c. lower
_____ d. no data available

7. Have you identified any characteristics of a 'successful' on-line student? If yes, what are they?

8. How does your institution verify that course assignments are completed by the student who is actually enrolled in the course?

9. In evaluating the effectiveness of Web-based courses, what issues or factors that make these courses different from traditional courses should be taken into consideration?

10. What should be considered when evaluating Web-based courses? Please list all elements that you would consider important, e. g., faculty perceptions, student evaluations, amount or type of student learning.

Part II

1. What methods of distance education delivery does your institution currently employ? Check all that apply.

_____ a. correspondence course
_____ b. audiotape-based course
_____ c. videotape-based course
_____ d. television-based course
_____ e. videoconferencing-based course
_____ f. CD ROM-based course (other than Internet- or Intranet-based)
_____ g. one-way interactive television
_____ h. two-way interactive television
_____ i. Internet- or Web-based course
_____ j. other (please list_____)

2. What methods of distance education delivery do you anticipate your institution using during the next five years? Check all that apply.

_____ a. correspondence course
_____ b. audiotape-based course
_____ c. videotape-based course
_____ d. television-based course
_____ e. videoconferencing-based course
_____ f. CD ROM-based course (other than Internet- or Intranet-based)
_____ g. one-way interactive television
_____ h. two-way interactive television
_____ i. Internet- or Web-based course
_____ j. other (please list)

3. Is your institution engaging in sharing resources with other institutions? Please mark one response for each item.

a. dual credit
_____ currently
_____ anticipated
_____ no plans

b. physical spaces
_____ currently
_____ anticipated
_____ no plans

c. technological equipment
_____ currently
_____ anticipated
_____ no plans

d. faculty resources
_____ currently
_____ anticipated
_____ no plans

e. technical support
_____ currently
_____ anticipated
_____ no plans

f. other (please specify_____)

4. Does your institution plan to engage in sharing resources during the next five years? Please mark one response for each item.

a. dual credit
_____ currently
_____ anticipated
_____ no plans

b. physical spaces
_____ currently
_____ anticipated
_____ no plans

c. technological equipment
_____ currently
_____ anticipated
_____ no plans

d. faculty resources
_____ currently
_____ anticipated
_____ no plans

e. technical support
_____ currently
_____ anticipated
_____ no plans

f. other (please specify_____)

5. a. Does your institution have any cross-registered distance education students, that is, students registered at your institution and taking at least one class from another institution?
_____ yes
_____ no (Skip to question 6.)
_____ data not available (Skip to question 6.)

b. How does your institution resolve full-time equivalency (FTE) issues for cross-registered students?

6. a. Does your institution have any students that are enrolled in only distance education courses?
_____ none (Skip to question 7.)
_____ data not available (Skip to question 7.)
_____ less than 10%
_____ 10% to 19%
_____ 20% to 29%
_____ 30% or more

b. How does your institution collect fees for non-local distance education students? Mark all that apply.
_____ traditional mail- check or credit card
_____ telephone- credit card
_____ fax- credit card
_____ Web site- credit card
_____ other (please specify _____)

7. a. Does your institution have service areas, i. e., defined geographic areas of the state in which you are allowed to market and offer courses?
_____ 1 county
_____ 2-3 counties
_____ 4 or more counties
_____ no service areas (Skip to question 8.)

b. How does your institution address issues of service areas, if restrictions do exist? For example, if your institution is located in upper East Tennessee, does your institution also market to students in lower East Tennessee?

If your institution is not currently offering or does not anticipate offering Web-based courses in the future, please skip to Part III.

8. How are faculty compensated for **designing** Web-based courses? Mark all that apply.

_____ a. no additional compensation
_____ b. release time from regular teaching activities
_____ c. additional monetary compensation
_____ d. other (please specify_____)

9. How are faculty compensated for **teaching** Web-based courses? Mark all that apply.

_____ a. no additional compensation
_____ b. release time from regular teaching activities
_____ c. additional monetary compensation
_____ d. other (please specify_____)

10. Are there any other incentives or recognition programs in place or planned for faculty designing or teaching a Web-based course?

_____ promotions
_____ awards
_____ no other incentives or recognition
_____ other (please specify _____)

Part III

Please include any additional comments that you wish to provide concerning designing, teaching, or evaluating Web-based courses.

Please include URL's for any Web sites that may contain useful information concerning the evaluation of Web-based courses or programs.

APPENDIX C

Email Survey for Consortium Distance Education Faculty

Appendix C: Email Survey for Consortium Distance Education Faculty:

Dear Faculty Member:

Higher education is rapidly changing, especially in the area of distance education. Web-based courses are quickly appearing in higher education institutions. Faculty are spending much time and energy developing these courses. Because these courses are so new, you can help determine how these courses and your teaching will be evaluated.

Your opinions are needed in determining how to appropriately evaluate these courses. Please take a few minutes to reply to the following questions. You may reply to this message and answer directly via email. If you would prefer to print out a hard-copy, please fax or mail your responses to:

Jackie Vogel
Assistant Professor of Mathematics
PSTCC
Hardin Valley Road
Knoxville, TN 37933.
Fax: 865-539-7021

Please fax or mail any supporting documents, e. g., evaluation instruments, that you wish to provide to the above address. Thank you very much for your time and consideration. I will notify you as soon as the compiled information is available on the ETCHE Web site.

Sincerely,

Jackie Vogel

Email Survey for Higher Education Faculty: East Tennessee Consortium for Higher Education:

Please place answers directly under their corresponding questions if no answer blank is provided. If an answer blank is provided, please place an x or the appropriate response in the appropriate blank or blanks.

Demographics:

Institution Name: _____

Institution Type: 2-year_____ 4-year _____ Comprehensive_____

Public _____ or Private: _____

Position: _____

Gender: Male_____ Female _____

Instructional Level: lower division _____ upper division ____ graduate _____

Responsibilities in relation to Web-based instruction:

General Information:

1. What do you consider distance education to be?

2. a. Are you currently teaching a Web-based course(s), that is, a course where more than half of the instructional activities occur on-line?
____ yes(please list course name)
____ no

b. If you are not currently teaching a Web-based course, do you anticipate teaching a Web-based course during the next five years?
____ yes (please list course name)
____ no

If you answered no to both parts of question 2, please skip to Part III. If you answered yes to either part of question 2, please continue with the next question.

Quality and Effectiveness:

1. In what ways do your distance education courses compare to your traditional courses?

a. semester duration or time frame, e. g., 15 weeks
_____ shorter
_____ same
_____ longer
_____ no data available

b. same instructors
_____ yes
_____ no
_____ no data available

c. same learner objectives
_____ yes
_____ no
_____ no data available

d. same measurement tools
_____ yes
_____ no
_____ no data available

e. cost to students
_____ less
_____ same
_____ more
_____ no data available

f. same grading scale
_____ yes
_____ no
_____ no data available

g. same assignments
_____ yes
_____ no
_____ no data available

h. same exams
____ yes
____ no
____ no data available

i. same text
____ yes
____ no
____ no data available

j. other, please specify

2. In what ways do you assure quality of teaching and learning in your distance education courses, specifically Web-based courses?

3. In what ways do you measure the effectiveness of your Web-based courses, for example, student success rates? **If possible, please send any evaluation instruments that you use.**

4. Do students participate in evaluating your Web-based courses?
____ yes **if possible, please mail or fax instruments or related materials**
____ no
____ do not know

5. How does your on-line pass rate (grade of D or higher) compare to your traditional pass rate?
____ higher
____ about the same
____ lower
____ no data available

6. How does the withdraw rate for your on-line courses compare to the withdraw rate for your traditional courses?
____ higher
____ about the same
____ lower
____ no data available

7. How do you verify that course assignments are completed by the student actually enrolled in your Web-based courses?

8. Have you identified any demographics or characteristics of a 'successful' on-line student? If yes, what are they?

Course Details:

1. Does your Web-based course calendar differ from your traditional course calendar?

_____ yes (please explain)
_____ no
_____ do not know

2. Does your Web-based course syllabus differ from your traditional syllabus?

_____ yes (please explain)
_____ no
_____ do not know

3. How is attendance calculated?

4. How does the preparation time for your Web-based courses compare to the preparation time for your traditional courses?

_____ less
_____ same
_____ somewhat more
_____ much more
_____ do not know

5. How do your courses build in a 'social aspect'? Mark all that apply.

_____ student presentations
_____ threaded discussions
_____ group projects or assignments
_____ required on-campus activities
_____ interactive chats
_____ other (please specify_____)
_____ do not know

6. Do you perceive your Web-based courses as having the same quality as your traditional courses in the following areas?

a. student learning
____ better
____ same
____ lesser
____ do not know

b. content
____ better
____ same
____ lesser
____ do not know

c. instruction
____ better
____ same
____ lesser
____ do not know

d. student-student interaction
____ better
____ same
____ lesser
____ do not know

e. student-faculty interaction
____ better
____ same
____ lesser
____ do not know

7. In evaluating the effectiveness of Web-based courses, what other issues or factors that make these courses different from traditional courses should be taken into consideration?

8. If someone were to evaluate the effectiveness and quality of your Web-based courses, what important elements should be taken into consideration?

Part II

1. What technologies are you using, have you used, or will you use for your Web-based courses? Check all that apply.

_____ a. email
_____ b. chat room
_____ c. Web site for institution
_____ d. Web site for individual course
_____ e. on-line grade book
_____ f. bulletin board
_____ g. whiteboard
_____ h. on-line testing
_____ i. audio streaming
_____ j. video streaming
_____ k. other (please specify_____)
_____ l. do not know

2. What software are you using, have you used, or will you use? Check all that apply.

_____ a. no commercial package
_____ b. Blackboard
_____ c. CourseBuilder
_____ d. TopClass
_____ e. WebCT
_____ f. other commercial package (please specify_____)
_____ g. do not know

3. How were you compensated (or will be in the future) for **designing** your Web-based courses? Check all that apply.

_____ a. no additional compensation
_____ b. release time from regular teaching activities
_____ c. additional monetary compensation
_____ d. other (please specify_____)
_____ e. do not know

4. How were you compensated (or will be in the future) for **teaching** your Web-based courses? Check all that apply.

_____ a. no additional compensation
_____ b. release time from regular teaching activities
_____ c. additional monetary compensation
_____ d. other (please specify_____)
_____ e. do not know

5. Have you received any other incentives or recognition for designing or teaching a Web-based course? Check all that apply.

_____ promotions
_____ awards
_____ no other incentives or recognition
_____ other (please specify _____)

Part III

1. What methods of distance education delivery do you currently employ? Check all that apply.

_____ a. correspondence course
_____ b. audiotape-based course
_____ c. videotape-based course
_____ d. television-based course
_____ e. videoconferencing-based course
_____ f. CD ROM-based course (other than Internet- or Intranet-based)
_____ g. one-way interactive television
_____ h. two-way interactive television
_____ i. Internet- or Web-based course
_____ j. not applicable
_____ k. other (please list)

2. What methods of distance education delivery do you anticipate using during the next five years? Check all that apply.

_____ a. correspondence course
_____ b. audiotape-based course
_____ c. videotape-based course
_____ d. television-based course
_____ e. videoconferencing-based course
_____ f. CD ROM-based course (other than Internet- or Intranet-based)
_____ g. one-way interactive television
_____ h. two-way interactive television
_____ i. Internet- or Web-based course
_____ j. other (please list)

Please include any additional comments that you wish to provide concerning designing, teaching, or evaluating Web-based courses.

APPENDIX D

Student Course Questionnaire Traditional Course Pilot Questions

Student Perception of Traditional Course

Please mark one answer per question.

1. strongly disagree
2. disagree
3. neither agree or disagree
4. agree
5. strongly agree

1. The instructor was supportive of my educational needs.
   1 2 3 4 5
2. The instructor was adequately available to meet my needs for this course.
   1 2 3 4 5
3. I had sufficient contact and interactions with the instructor.
   1 2 3 4 5
4. The instructor graded my assignments within a reasonable amount of time.
   1 2 3 4 5
5. Assignment due dates were clearly stated.
   1 2 3 4 5
6. The assignments were challenging.
   1 2 3 4 5
7. The assignments, quizzes, and/ or tests reflected the course content.
   1 2 3 4 5
8. I had sufficient time to complete the course assignments.
   1 2 3 4 5
9. The objectives of the course were clearly stated.
   1 2 3 4 5

---

10. I had sufficient contact and interactions with my fellow classmates.
    1 2 3 4 5
11. Technical support was available when I needed it.
    1 2 3 4 5
12. Overall, I am satisfied with the quality and content of this course.
    1 2 3 4 5

Comments or suggestions for improvement of this course:

Student Questionnaire Results

For all twelve questions, the null hypothesis $H_0:\mu_1=\mu_2$ was tested using the Statdisk software package. The p-value exceeded $\alpha=0.05$ for all claims except the following question. *I had sufficient contact and interactions with my fellow classmates*. See Table 13 in Appendix F.

The p-value for the differences in the means for this question was p=0.0058 and the stated conclusion was "Reject the null hypothesis." This means that we are rejecting the claim that the means are equal for the traditional students and the Web-based students for this question. The Web-based students reported less contact and interactions with their fellow classmates. This result is consistent with the literature. For example, Saunders et al (1997) found that while some students may thrive in an online environment, others do not. They found that the online environment can actually cause communication anxieties that prevent student interactions.

Both groups were asked the open-ended question of providing comments or suggestions for improvement of the course. Both groups noted that more tutoring center hours were needed. The traditional students provided far fewer comments than the Web-based students did. The traditional students tended to provide comments like 'drop the lowest test score' and 'delete chapter five' (the hardest chapter). The Web-based students' comments had more variety and

were more frequent. Some sample responses from the Web-based students are as follows.

> It would be much better if there were more testing center hours and more open (lab) hours.
>
> Encourage students to purchase solutions manual.
>
> more chat times...review sessions
>
> more online time available (chat sessions) instead of just once a week
>
> I needed more interactions with other students for study sessions.
>
> Make a better bulletin board.
>
> ...the class was laid out well...

It is also interesting to note the responses to the second open-ended question of why the student took the Web-based as opposed to the traditional course. The most frequent responses were fulltime employment/ work schedule (n=6), time constraints (n=5), and flexibility (n=4). This is also consistent with the literature. For example, Holzen (2000) noted that in a survey conducted by the Kellogg Commission it was stated that 83 percent of the respondents felt that students should be allowed to receive their learning anytime and anyplace through technology.

APPENDIX E

Additional Data

Additional Data

Not all data was included in the text. Additional data has been included in the Appendix for the reader's benefit.

Administrator Survey General Results

As noted above under subjects, seven of the 22 administrator surveys were returned. Of those seven, two institutions indicated that they were not currently involved in Web-based education and did not plan to implement Web-based education in the future. Their responsibilities in respect to Web-based education varied from "encourage or help facilitate where and when appropriate" to "All instruction including any Web-based instruction is under my administrative control."

Since the interpretation of what distance education is considered to be varies, the respondents were asked to provide a brief description of what they consider distance education to be. All seven respondents mentioned some form of separation of the student from the traditional class conducted on a 'main' campus site.

The stages of distance education at which institutions were currently was fairly evenly distributed. See Table 5.

Table 5. Stage of Distance Education Development

Stage of Distance Education Development	Frequency/ Percent
no distance education attempted	2 28.6%
sporadic distance education courses have been offered	2 28.6%
established distance education policy and plan, but not yet fully implemented	1 14.3%
distance education policy and plan are fully implemented and distance courses are an integral part of every semester	2 28.6%

Of the five responding institutions that are offering or will be offering Web-based courses, none are currently offering an entire degree program online. None of the responding institutions are employing only 'outside professionals' to complete such tasks as developing courses, teaching courses, providing technical support, or providing student services. However, 4/5 = 80% were employing 'outside professionals' to partially provide technical support for faculty.

Comparability to traditional courses is summarized in Table 6. The sharing of resources with other institutions is summarized in Table 7.

Table 6. Web-based Courses Compared to Traditional Courses

Comparability Criteria	Results
semester duration	3 same 2 no data available
same instructors	3 yes 2 no data available
same learner objectives	3 yes 2 no data available
same measurement tools	2 yes 3 no data available
student cost	2 same 1 more 2 no data available
same grading scale	3 yes 2 no data available
students participate in evaluations	2 yes 1 no 2 no response
online pass rate	1 about the same 3 no data available 1 no response
withdrawal rate	1 lower 3 no data available 1 no response

Table 7. Shared Resources

Shared Resources	Current Plans	Next Five Years
dual credit	1 currently 2 anticipated 2 no plans	1 currently 2 anticipated 2 no plans
physical spaces	3 currently 0 anticipated 2 no plans	2 currently 0 anticipated 3 no plans
technological equipment	1 currently 0 anticipated 4 no plans	1 currently 1 anticipated 3 no plans
faculty resources	1 currently 1 anticipated 3 no plans	1 currently 3 anticipated 1 no plans
technical support	1 currently 0 anticipated 3 no plans (1 blank response)	1 currently 0 anticipated 4 no plans

No cross-registered students were reported. Three institutions reported that they had no students that were enrolled in strictly distance education courses. One institution reported that less than 10% of their students were enrolled in strictly distance education courses. One institution reported that more than 30% of their students were enrolled in strictly distance education courses. Fee collection involved traditional mail, telephone, and fax methods.

One institution reported a service area of 4 or more counties, while the remaining four institutions reported no service areas.

> While the increase in web based courses hints towards the removal of the 30 mile rule, we do not go into another school's service area without their permission.

The characteristics of a successful online student responses varied from "too early" to identify to the typical responses of "self-motivated, initiative, and interest."

The process for verifying that course assignments were completed by the student who is actually enrolled in the course varied somewhat by institution. Some sample responses are as follows:

> ...the same way we verify that any student does the outside class work they're assigned... there's no way to know for sure
>
> This is a constant problem in distance learning. Like everyone else, each student is assigned a password and we largely rely on their honesty. In some cases, a midterm or final exam might be given only on the campus.
>
> ...Weekly assignments include threaded discussions, which must receive a specified number of responses from each student....Capabilities exist for live chat interaction as well...The online delivery system also charts the amount of time per unit/week that any given student is online. Email feedback can be, and is, required at various points in the course, and such feedback is required by specified dates.

The responding institutions are currently or anticipate using the following distance education technologies: correspondence course, videotape-based course, television-based course, videoconferencing-based course, CD ROM-based course, two-way interactive television, and Internet- or Web-based course.

The issue of faculty compensation for designing and teaching Web-based courses is summarized in Table 8.

Table 8. Administrator Survey Faculty Compensation

Compensation Type	For Designing a Web-based Course	For Teaching a Web-based Course
no additional compensation	2	3
release time from regular teaching activities	1	1
additional monetary compensation	1 (1 blank response)	1

Three institutions reported that no other incentives or recognition programs were in place or anticipated in the future. One institution left this question blank. The remaining respondent noted that faculty have applied for several grants.

Administrator Survey Evaluation Results

Some sample responses to the question "What important elements should be considered when evaluating Web-based courses?" are as follows:

> I'm concerned about the students missing out on the kinds of direct interaction with other students and the instructor as they'd have in a traditional course.
>
> ...cost effectiveness, equivalence to on campus programs, accrediting issues, outreach goals of the university
>
> I am not sure what you are asking for here. "Evaluation" is rather broad.

Faculty Survey General Results

As noted above under subjects, 39 of the 132 faculty surveys were returned. Of those 39 faculty respondents, 31 indicated that they were currently teaching a Web-based course. Five of the eight faculty respondents who were not currently teaching a Web-based course anticipated doing so in the next five years. Two of the eight faculty respondents who were not currently teaching a Web-based course had taught one in the past and did not anticipate doing so in the next five years. The remaining faculty respondent left the answer blank and was indeterminate. Their responsibilities in respect to Web-based education varied from no responsibilities to complete course design and delivery. Faculty responsibilities also included serving on committees and coordinating other instructors. Some sample responses are as follows:

> expected to design the entire course, including all presentation components for materials
>
> My responsibilities include making assignments, communicating with the students, reviewing and grading work submitted, in general, making sure the students are able to advance to the next course in the curriculum.
>
> I check E-mail each day and respond to the assignments with comments and a grade. I also provide instructions and clarification on the assignments and answer any question the students may have.
>
> Frequent contact with those with E-mail or via Blackboard.
>
> I am coordinating our first attempt at "distance learning". The teacher is in Denver, Colo. I dial him on a speaker-phone that is placed in the computer lab so students have voice communication with the teacher. They view his Web site on computers while he lectures.

> I now teach full time in an online environment and have been doing so for two semesters now. Since I teach only online, I do not have other classroom responsibilities. I do college and community service, as usual of faculty. I also currently serve on the TBR committee for the Regents' online degree.

The most frequently mentioned faculty responsibilities were instructor of a Web-based course (n=30, 76.9%) and course designer (n=15, 38.5%).

The faculty respondent positions are summarized in Table 9. The faculty respondent instructional levels are summarized in Table 10.

Many disciplines were also represented such as Business, Computer information Systems, English, Management, Mathematics, Nursing, Physics, Psychology, and Statistics. The faculty respondents encompassed all position and instructional levels associated with the Consortium institutions.

Table 9. Faculty Survey Respondents' Position

Position	Frequency
Instructor	6
Assistant Professor	8
Associate professor	11
Professor	9
Indeterminate	5

Table 10. Faculty Survey Respondents' Instructional Level

Level	Frequency
lower division	23
upper division	8
graduate	5
Indeterminate	3

Since the interpretation of what distance education is considered to be varies, the respondents were asked to provide a brief description of what they consider distance education to be. Similar to the administrator responses, the faculty respondents also frequently mentioned some form of separation of the student from the traditional class conducted on a 'main' campus site. However, the faculty appear to be also looking at distance education from the students' point of view. Some sample responses are as follows:

> This is a means by which a student to gain an education, no matter how far they are either in distance, time constraints, or home bound.
>
> Convenience for students. Equivalent in content and analytical skills to an "in person" class.
>
> anything allowing the student AT LEAST partial off-campus access to the course
>
> Providing quality instruction outside the limitations of the traditional classroom.
>
> For us, it is an opportunity to offer courses and instructors to our students which we could not otherwise afford. It is "enhancement" to our curriculum, rather than basic offerings. We will use it very sparingly.
>
> Distance education is the process of presenting the student with the opportunity to learn without limits on location.
>
> good form of learning for those who cannot attend a classroom
>
> Creating learning environments beyond the virtual classroom and reaching students beyond a specific geographical location.

The most frequently mentioned faculty descriptions of distance education involved references to not on campus or face-to-face (n=20, 51.3%) and alternative, non-traditional delivery (n=12, 30.8%).

Two faculty respondents were not currently and did not anticipate teaching a Web-based course in the future. Comparability to traditional courses is summarized in Table 11 on the following page.

The faculty respondents also provided additional comments on the comparability of Web-based courses to traditional courses. Some sample comments are as follows:

> The above answers are for general on line courses. Some special courses have different components.
>
> More written assignments and tighter deadlines online.
>
> the standard pedagogical style differs greatly
>
> The only thing missing is peer feedback, which I may try to include at another time.
>
> no simulations in web course
>
> Due to accreditation, same course # means same info presented.
>
> Things can't be exactly the same in online as in the traditional brick and mortar classroom. Some things must be changed. This is a very complex issue, not one given to one-line responses.

Table 11. Web-based Courses Compared to Traditional Courses

Comparability Criteria	Results
semester duration	1 shorter 35 same 1 longer
same instructors	34 yes 3 no
same learner objectives	35 yes 2 no
same measurement tools	33 yes 4 no 2 no data available
student cost	3 less 29 same 2 more 3 no data available
same grading scale	35 yes 2 no
same assignments	21 yes 15 no 1 no data available
same exams	22 yes 15 no
same text	28 yes 8 no 1 no data available
students participate in evaluations	5 yes 10 no 2 no response
online pass rate	6 higher 21 about the same 3 lower 6 no data available 1 no response
withdrawal rate	7 higher 21 about the same 5 lower 3 no data available 1 no response
same syllabus	16 yes 20 no 1 do not know
preparation time	3 less 4 same 7 somewhat more 20 much more 2 do not know 1 blank

Two additional issues in designing and teaching a Web-based course were addressed in the survey: attendance calculation and social aspect. Four faculty reported not recording attendance. The remaining faculty noted three ways of calculating attendance: logged into the course Web site, timely completion of assignments, and attending mandatory sessions. One notable comment from a non-recording faculty is as follows:

> I suspect "attendance" will become an artifact of classroom courses. It doesn't matter how long one's butt has been in the seat; it matters what one has done and learned. Of course, that has always been the case. The number of butt-in-seat minutes has simply been something we could measure.

Interactions and the social aspect of Web-based courses have received much attention in the literature. Vrasidas and McIsaac (1999) noted that one of the key elements of good teaching is the interactions that occur between student and teacher and among students themselves. Siegel and Kirkley (1997) noted that information is not knowledge. They noted that what is needed is new tools that create powerful instructional interactions that lead to deep conceptual insights. Ekhaml (2000) noted that WebCt (which is used by many of the Consortium institutions) provided for meaningful interactions of direct teacher-student and student-student interactions. Navarro and Shoemaker (2000) noted that the strongest critics of the online revolution warn of the emergence of the digital diplomas that lack the crucial element of personal interactions. The Consortium faculty devoted a significant amount of comments to this major issue when asked about assuring quality. The faculty respondents reported using

threaded discussions (n=24, 61.5%), group projects (n=16, 41.0%), interactive chats (n=11, 28.2%), required on-campus activities (n=7, 17.9%), and student presentations (n=6, 15.4%). Analysis of interactions need to go beyond merely counting email messages or bulletin board posting. Quality is much more important than quantity.

The characteristics of a successful online student responses varied from "too early" to identify to the typical responses of "self-motivated, initiative, and interest." Some sample responses are as follows:

> Non-traditional students tend to be more successful than those fresh out of high school. Stay at home Mom's tend to be successful.
>
> Very self motivated. No misperception that the course is easier on line (my perception is that it is harder on line).
>
> Must be self-motivated. Just don't know how to determine that before they sign up for the class.
>
> Some of the negative demographics are as follows: a. Are using a friend's or relative's computer, don't have daily computer access b. Have attempted the course unsuccessfully before in a live class c. Register for the Web section because they think it will take less time, because they don't want to attend class, or because all other sections are full
>
> A successful on-line student is the same as a successful in-class student--the student who asks questions, who submits all work when it's due, who ENJOYS learning--and this is apparent!
>
> Students with prior computer skills and maneuverability through the Internet seem to grasp the "online" instructional method quicker. A good self-discipline in study habits is another key element of success in an online student, full-time working professional, medium to advanced computer literacy, ability to express themselves in writing, self-motivated habit of checking e-mail often, not just once or twice a week, no hesitation to e-mail questions, thoughts, independent learner, thinker

> Mature. Self-motivated. Older. Have taken prior online courses. Have realistic expectations of what the course will be like. When a student says they are taking the class because it will save them time since they won't have to attend regular classes - that indicates problems.
>
> Interest & commitment. Not sure how you measure this.

The most frequently mentioned characteristics of a successful online student were highly self-motivated (n=20, 51.3%) and comfort and literacy with the computer (n=9, 23.1%).

The process for verifying that course assignments were completed by the student who is actually enrolled in the course varied from "do not verify" to "proctored exams." Some sample responses are as follows:

> The tests are proctored. The assignments are done more on the honor basis, but if the tests and the assignments are being done by two different people, it becomes obvious.
>
> I don't. We trust them. Access to the course is by password, and assignments are submitted by e-mail. There are many small writing assignments and it is unlikely that anyone would be able to persuade another individual to complete the number of assignments required. By the time the research paper is submitted, I am familiar with the students' writing styles and can usually spot any significant changes.
>
> By monitoring email sources. I cannot tell if the enrolled web students wrote their content, but I cannot tell whether my on-ground students wrote their content.
>
> I'm frankly not too worried about it. If they want to cheat in a classroom course by having someone else write their papers, they will find a way to do so. They get caught in a Web Course the same ways they get caught in a classroom course.
>
> This is a tough one. We ask students to abide by the honor policy and do the work themselves. I believe our distance learning department is working on a system to check e-mail addresses also.

> The very same ways we verify this in regular classrooms. We do enough in-class writing that we can tell styles and basic aptitude. However, I strongly believe that this is a non-issue. If a student is going to have Uncle Bill write a paper for him, Uncle Bill can do that just as easily for a regular, brick-and-mortar class -- if not more easily. The truth is that I get to know my online students a lot better over email than I was ever able to do in the regular classroom.

The most frequently mentioned ways of verifying student work were proctored exams (n=15,38.5%), the honor system (n=7, 17.9%), and consistency in performance (n=7,17.9%).

The responding faculty are currently or anticipate using all of the distance education technologies mentioned by the administrators: correspondence course, videotape-based course, television-based course, videoconferencing-based course, CD ROM-based course, two-way interactive television, and Internet- or Web-based course. In addition, they are also using or will be using audiotape-based course and one-way television. The faculty are also using combinations of technologies and creating Web-enhanced traditional courses. A notable quote was "God only knows what the next technology will be."

Many software packages were used including WebCT (n=13, 33.3%), FrontPage (n=9, 23.1%), and BlackBoard (n=4, 10.3%). Six faculty reported using no commercial software package for course development or delivery.

The issue of faculty compensation for designing and teaching Web-based courses is summarized in Table 12. Some sample faculty responses are as follows:

> My release time was granted prior to web-ct so after web-ct I spent a TON of my own time converting my course into web-ct.
>
> Consideration for annual evaluation
>
> I would love release time but don't get it
>
> We hired a part-time teacher for peanuts.

Seven of the faculty reported no other incentives or recognition programs were in place or anticipated in the future. Two faculty reported receiving awards.

Table 12. Faculty Survey Faculty Compensation

Compensation Type	For Designing a Web-based Course	For Teaching a Web-based Course
no additional compensation	17	24
release time from regular teaching activities	16	9
additional monetary compensation	2	3

Twenty-eight faculty marked other, but only five of those provided comments. All five comments are as follows:

> ANYONE teaching a web-ct course should be recognized! They are an incredible amount of work!!
>
> Consideration for annual evaluation
>
> $2,000 for training and developing the first three hour class. Nothing since.
>
> asked to lead informal workshops with other interested faculty around the region
>
> lower class sizes for web classes
>
> Other departments are beginning to experiment.
>
> Knowing that I provided educational opportunities

Faculty Survey Evaluation Results

As noted under results, quality assurance in Web-based courses was mainly determined by attempting to make the course as close to its traditional counterpart as possible. This included the areas mentioned above such as: same syllabus, same expectations, same tests, same assignments, and same objectives (n=16, 41.0%). Many comments were provided in this area including references to creating evaluation methods or procedures. Some additional sample responses are as follows:

> I think the quality of the questions asked by the instructor determines the quality of learning the students will do.
>
> ...The students actually take more time to communicate with me than do my classroom students.

> Through a consistent amount of dialogue with students to help measure their progress and understanding of the material...
>
> I'm unsure how to respond to the question...I fear that many students are not prepared to 'go it alone'. They may need more structure, and they may not be prepared to go at their own pace...Some students keep up, but unfortunately, some fall by the wayside. I try to keep in contact with these students. In fact, these students are getting more attention that regular class students in this context.
>
> I limit the enrollment to 15 which allows more communication with students.
>
> Where is it written that a class needs a "social aspect"? I have found that my on-line students are more likely to ask questions and to make comments than my "live" students. I sometimes feel I know them better than I do the ones I see face-to-face.
>
> Aside: My research interest is in your question d. (*student-student interactions*) I have presented twice on this topic, and am still struggling to frame the topic. As of now, I am framing it as "conversations" between students.

The two main measures of effectiveness included comparing success rates of the Web-based courses to their traditional counterparts (n=14, 35.9%) and student evaluations of the course and its instruction (n=10, 25.6%). Frequently, the same student evaluations were used as were used in the traditional courses.

Many varied responses were received in reference to what issues or factors that make these courses different from traditional courses should be taken into consideration in an evaluation. Most issues or factors were only mentioned once or twice. The only issues or factors mentioned more often were: faculty time required to administer the course, instructor availability, and the

overall quality of the Web site. Some additional sample comments are as follows:

> The students do not have the opportunity to see and feel expressions; they must motivate themselves - In class, it's real easy to see if there are long faces, or catch a frown - which indicates there might be some confusion about a point. On line, I depend on students to ask questions, but am not always confident that they recognize there are questions they need to be asking. So, by comparing the web course with an in-class course, I would at least consider this factor. First year paralegal students are frequently overwhelmed with the amount of work and the complexity of the materials. They often need a pep talk. I do not sense the webct students needing this type of reinforcement.
>
> The biggest effectiveness issues include: How much extra time it takes to teach a web class. I spend two-three times as much time on web classes as I do on traditional classes. If a faculty member has a couple web classes and a couple traditional classes too, they quickly run out of hours in the day.
>
> I do not think that posting notes on the web and having students simply take a correspondence course is worthwhile.
>
> Would the web students have taken alternative courses if the web course were not available? Many of my web students take other courses offered at the same time that my on-ground sections meet.
>
> We have tried for a long time to move classes to more of a discussion basis, or even collaboration, for a variety of reasons...In an online environment, the discussion can be preserved, which not only documents the grade but helps the student to see his/her own learning process.
>
> If the course is set up and administered properly, it is just like a regular course except the delivery method is different. The instructor has probably more interaction with each individual student than in a regular classroom. The preparation time for the instructor and the grading and interaction with the student is much more than in a regular setting.
>
> Course development of lecture materials must be checked more carefully. If you say it wrong in class you can fix it right away. It might be several days or weeks before a sharp student sends e-mail to question what you have written.

> Ability to provide an environment that is supportive and caring. Ability to explain concepts, provide resources and activities through a written, online environment.

The responses to the question "What important elements should be considered when evaluating Web-based courses?" tended towards re-iterating many of the points that had been previously mentioned. These responses included references to the quality of the Web site, traditional end-of-the-semester final exams, quality of student work, motivation, and the extra instructor time required. The two most frequently mentioned elements were quality of student-faculty communications (n=9, 23.1%) and quality and availability of course materials (n=7, 17.9%). Some sample responses are as follows:

> Availability of course-related material (syllabus, bulletin board area, listserv, etc.)
> Attractive, easy-to-navigate web site
> Frequent updates of the material on the web site
> Links to many places outside the discipline and outside the school that will help the students' learning experience

> ...I suppose the only way is with the traditional end-of-the-semester final essay...

> In what ways do students learn more and learn differently in working on online assignments as compared to the amount and kinds of learning done on assignments in traditional classrooms?
> What are student perceptions of the depth of their learning in these assignments? What processes of learning (reading, thinking, writing) take place in these assignments? What is the quality of writing, reading, thinking that students do (results, outcomes) in these assignments as compared to assignments in traditional courses?

> student satisfaction

the fact that I am given no additional time to place this material originally (and then update) on the web and given no true assistance in preparing the material to be presented on the internet...I think this is the biggest "downfall" of what is expected of instructors at our site. Assistance is very limited, and available technologies difficult to learn, due to time constraints (no additional time given to prepare these courses & no "lightening of load" from other course expectations)

...Time on task considerations (can be measured by the computer...Have a few faculty take the class and see what they say.

Preparation of instructor...Options available for different student learning styles...Inability of students to "get lost" within a group (All web students must respond to prompts in the class.)

Student skills. Retention of understanding.

Satisfaction with experience.

multiple methods of interaction and multiple ways of interaction...via listservs, chat, audio classes, discussion boards, etc.

We have to get away from the model that asks questions such as "Was the instructor on time for class?" We have to ask questions about instructor availability through electronic and physical means, the readability of the web pages, the substance of the web pages, whether the instructor relied too heavily on "packaged" course materials or links to other sites rather than actually creating a site of his or her own, the quality of the assignments, the seamlessness or "invisibility" of the technology (i.e. is the technology so integral that it disappears or is it constantly an issue, taking time away from content instruction)

Consortium Member Administrator Interviews

'Are you currently engaged in or developing an evaluation of your Web-based courses and programs?' resulted in eleven (78.6%) of the institutions responding *yes* and one institution responding *no*. The probing question 'Can you provide any additional information?' resulted in responses such as the following:

not yet, but some other departments are trying to start

We have a tool to use at the end of each section. Optional. Not any different than the traditional form. No specific new tool...

...still developing programs. Ongoing evaluation. Monitoring pretty closely as we go along.

I developed the form we use now...

The question 'Suppose you have been appointed to develop a comprehensive evaluation of your newly created Web-based program. What would your evaluation of this program be like?' provided a varied set of responses. The most frequently cited responses were ease of navigability of the Web site and its links (n=6, 42.9%), student satisfaction (n=5, 35.7%), and comparison to traditional courses (n=5, 35.7%). Probing questions included questions like 'Can you tell me more about that?' and 'Can you provide any additional details about that?'. Some sample responses are as follows:

...Does it meet your needs? Is this approach good for this particular course?

...We are at the ground floor and in the process of finding out...am piled under.

...would compare traditional with Web-based with hybrid courses...a competency test at the end of the semester...make sure you use an instrument that is not biased for Web-based or traditional. Want the same form for both...

...how well students do in comparison to traditional program would be a big one...system uptime/ downtime that interrupted the educational process. Faculty/ student input. Does it do what they wanted it to do?...

...Is it user-friendly?...interested in recommendations and improvements from the faculty...

...need for continuing professional development type things...tech support available when you need it...perception of course as equal to traditional course...take a closer look at, more of a checklist thing-disability accessibility. That's not something to easily evaluate...more of a formative thing as you get your course going...Early days- just getting it going. Then how can I make it better?...

....maintain SACS accreditation...Can your online students reach or receive the same support- library, advisement, etc- that onsite students do?...You have students with different computer skills and equipment...Unfortunately can't tell instructor which textbook to use. Can't impose on academic freedom...keep class size reasonable...Are you keeping students?...Content is more important than show...e-packs are designed so students can't get a used book...

type of tools...to communicate and collaborate...

...I expect online to provide 30-40% of distance education in the future. People will know in a couple of years what will work best for each course...Education as we know it will change drastically- for example- e-books...

Five Consortium administrators responded that it was too early in the development stage to have any evaluation instruments available. Three institutions were using their traditional course evaluation forms, of which, one was mailed to the researcher. Two institutions were using course evaluation instruments designed specifically for Web-based courses. One institution provided the researcher a copy via email. The second institution provided a URL; however, the actual survey questions could not be accessed with out a password. One institution provided the URL for a demographic survey. One institution provided the URL for their pre-Web-based course questionnaire. This questionnaire was designed to assess students' abilities and knowledge

concerning Web-based course pre-requisite skills. Another institution was in the process of developing a similar instrument. Some sample comments are as follows:

> ...it's not the perfect world. Don't have separate evaluations for just Web-based...
>
> ...still very informal. Still waiting to see if there is anything useable out there.
>
> Have some evaluations for specific (individual) courses...

Consortium Member Faculty Interviews

Responses to the question 'Suppose you have been appointed to develop a comprehensive evaluation of your newly created Web-based course. What would your evaluation of this course be like?' resulted in a variety of answers. The most frequently mentioned were: teacher availability (n=4, 28.6%), comparing success rates to traditional course (n=4, 28.6%), user-friendly site (n=3, 21.4%), and student satisfaction (n=3, 21.4%). Some sample responses are as follows:

> ...inconsistent with mission...was a conflict because can't drop in office...no warm body is a bit impersonal...another complaint- turn around time...
>
> ...how closely it aligns with a live version of the course...
>
> ...want to know if students felt that the Web-based element made things more convenient, and if there were any occasions when technical problems might have made things more difficult.
>
> ...resources that they can go to. I think it is important for students to interact with each other...

...What could you use to be more successful?...Ask others who have done them to look at my site and ask for comments and suggestions...

...how secure is the testing procedures...adequate access to the instructor...course completion rates...student comments...

...evaluation of how the course created a realistic alternative to campus-based instruction...course provide a stimulating experience...

...giving good advisement...

...Did it meet course objectives from student and faculty point of view?...technical problems...

...students working knowledge of basic computer skills...

How many people actually finish the course?...

In response to the question 'Can you provide any evaluation instruments, methods, or URL's for you or your institution?' one evaluation document was provided via a URL. However, that student course evaluation document was a standard evaluation. It was not designed for Web-based instruction. The students were instructed to not answer the 'irrelevant' questions. Eight faculty interviewees responded that they either did not have any evaluation instruments or they were not available yet. Four institutions provided sample evaluation questions in response to the first interview question.

In response to the question 'Do you know of any virtual universities or universities with a strong Web presence that have won any awards or acclaim?', ten faculty interviewees stated no (71.4%). Three mentioned the University of Phoenix Online (21.4%) and one mentioned the Regents Online Degree Program. Some sample responses are as follows:

...University of Phoenix. Referred to as trendsetters. Putting pressure on traditional residential colleges. May not be high quality, but high attention...

I have not heard much praise for virtual universities like, for example, Phoenix. I do not remember the name, but I was recently amused to receive a flyer for a virtual university with a cover picture of a professor standing in front of a chalkboard.

honestly don't...just too new...

I have not kept up with what is happening beyond my own little world. I simply don't have the time.

Non-Consortium Member Virtual Interviews

These interviewees were asked the following questions.

1. How are you currently evaluating your Web-based courses?

2. What unique procedures are employed while evaluating Web-based courses that are not used for traditional courses?

3. What do you consider to be the important elements of an evaluation model for Web-based courses?

All interviewees were asked to provide any available documents that would explain or provide additional information about their evaluation processes or procedures.

In response to the question 'How are you currently evaluating your Web-based courses?', four of the six virtual institutions were using student satisfaction surveys. Two of the virtual institutions had established evaluation research centers. Some sample comments are as follows:

...have two groups- student satisfaction survey and computer access surveys

...have an ongoing dialogue with our providers/ partners about quality

...pre-course questionnaire of open-ended questions...one face-to-face feedback session with students

...evaluate course and instructor...a technical review of the online courses is completed...comparing the grade distributions of the online courses to instructional television.

APPENDIX F

Student Course Questionnaire Comparisons

Table13. Student Course Questionnaire Comparisons

Question	Student Type	Strongly Disagree 1	Disagree 2	Neither Agree/ Disagree 3	Agree 4	Strongly Agree 5	Mean
instructor supportive	traditional	0	2	0	20	21	4.395
	Web-based	0	0	2	5	10	4.471
instructor available	traditional	0	1	3	18	21	4.372
	Web-based	0	0	1	8	8	4.412
instructor contact	traditional	0	1	5	21	16	4.209
	Web-based	0	0	5	4	8	4.176
timely grading	traditional	1	0	0	6	36	4.767
	Web-based	0	1	0	7	9	4.412
clear due dates stated	traditional	1	1	0	9	32	4.628
	Web-based	0	0	1	5	11	4.588
challenging assignment	traditional	0	1	5	15	22	4.349
	Web-based	0	0	1	4	12	4.647
tests reflect content	traditional	1	0	0	13	29	4.605
	Web-based	0	0	0	5	12	4.706
enough time assignment	traditional	2	1	0	12	28	4.465
	Web-based	0	0	2	4	11	4.529
objectives clear	traditional	2	0	0	16	25	4.442
	Web-based	0	0	0	6	11	4.647
*student contact	traditional	0	1	2	19	21	4.395
	Web-based	2	2	7	1	5	3.294
technical support	traditional	0	2	6	19	16	4.140
	Web-based	0	2	5	4	6	3.824
overall satisfaction	traditional	1	0	4	14	24	4.395
	Web-based	0	0	2	6	9	4.412

APPENDIX G

Sample Screen View of E-Survey

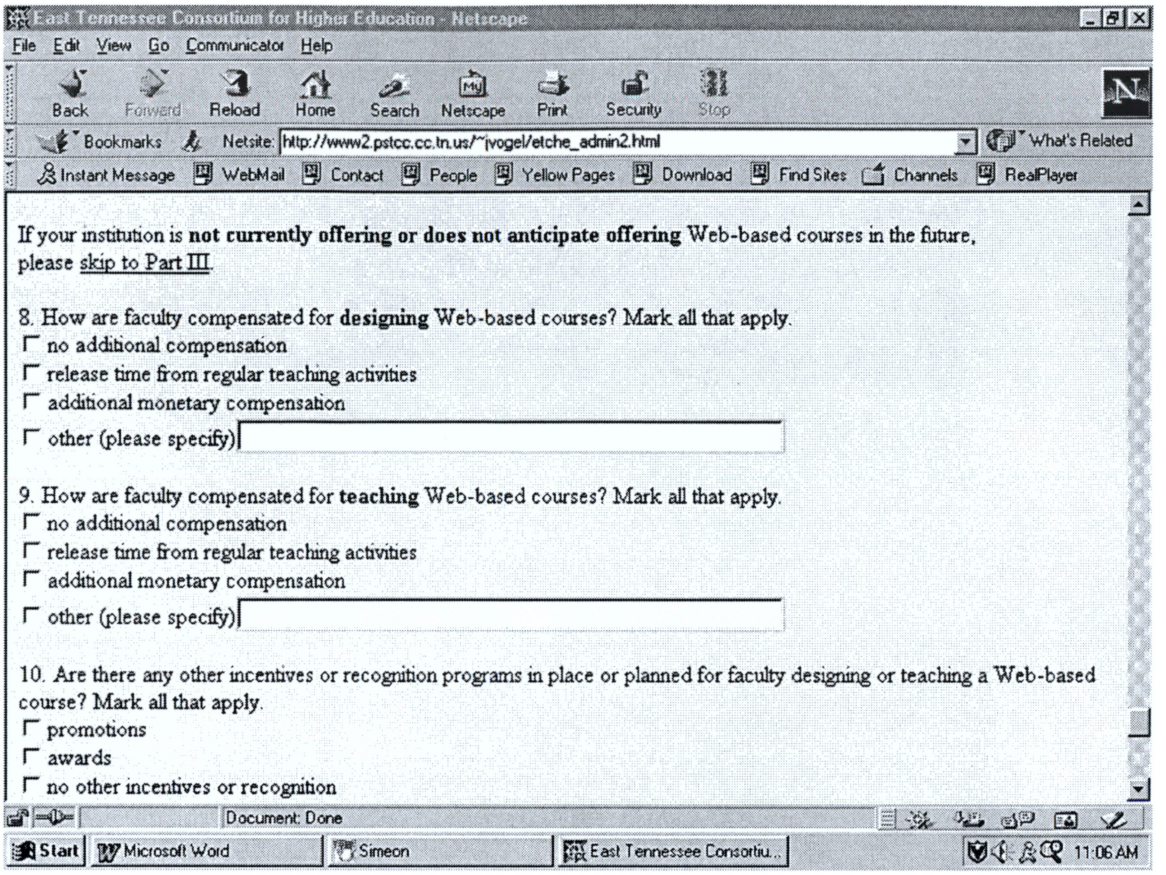

Figure 3: Sample Screen View of E-Survey

APPENDIX H

SREB Principles of Good Practice

SREB Principles of Good Practice

These Principles were taken directly from the SREB Web site.

Curriculum and Instruction

- Each program or course of study results in learning appropriate to the rigor and breadth of the degree or certificate awarded.
- A degree or certificate program or course offered electronically is coherent and complete.
- The course or program provides for appropriate interaction between faculty and students and among students.
- Qualified faculty provide appropriate supervision of the program or course that is offered electronically.
- Academic standards for all programs or courses offered electronically are the same as those for other courses or programs delivered at the institution where they originate.
- Student learning in programs or courses delivered electronically should be comparable to student learning in programs or courses offered at the campus where they originate.

Institutional Context and Commitment

- Role and Mission
- The program or course is consistent with the institution's role and mission.

- Review and approval processes ensure the appropriateness of the technology being used to meet program or course objectives.

Students and Student Services

- The program or course provides students with clear, complete and timely information on the curriculum, course and degree requirements, nature of faculty/student interaction, prerequisite technology competencies and skills, technical equipment requirements, availability of academic support services, financial aid resources, and costs and payment policies.
- Enrolled students have reasonable and adequate access to student services and resources appropriate to support their learning.
- The institution has admission/acceptance criteria to assess whether the student has the background, knowledge and technical skills required for undertaking the course or program.
- Advertising, recruiting and admissions materials clearly and accurately represent the program and the services available.

Faculty Support

- The program or course provides faculty support services specifically related to teaching via an electronic system.
- The institution ensures appropriate training for faculty who teach using technology.

- The program or course provides faculty with adequate equipment, software and communications for interaction with students, institutions and other faculty.

Resources for Learning

- The program or course ensures that appropriate learning resources are available to students.
- The program or course evaluates the adequacy of access to learning resources and the cost to students for access to those resources. It also documents the use of electronic resources.

Commitment to Support

- Policies for faculty evaluation include appropriate recognition of teaching and scholarly activities related to programs or courses offered electronically.
- The institution demonstrates a commitment to ongoing support, both financial and technical, and to continuation of the program or course for a period sufficient for students to complete a degree or certificate.

Evaluation and Assessment

- The institution evaluates program and course effectiveness, including assessments of student learning, student retention, and student and faculty satisfaction.
- At the completion of the program or course, the institution provides for assessment and documentation of student achievement in each course.
- Program or course announcements and electronic catalog entries provide

appropriate information.

Elaboration of the Principles

These principles serve as guidelines for colleges and universities participating in the Electronic Campus. These guidelines will be defined further and will address expanded topics as the Electronic Campus grows. The first of these amendments is titled “Principles for Electronic Campus Library Services.”

VITA

Jackie Vogel was born in rural North Carolina. She dropped out of high school after two years and received her GED two years later. She immediately began studying at Carson-Newman College where she received her Bachelors of Arts in Mathematics four years later. She received an assistantship at the University of Tennessee and completed her Master of Science degree in Mathematics two years later. After a year of teaching community college in Arizona, she returned to the University of Tennessee and received her second Master of Science degree in Education. She taught public school for one year in Tennessee, did statistical analysis for cancer research, and then returned to community college teaching. She completed her Doctorate of Education in December, 2001.

She has presented at numerous conferences, especially in reference to using technology in the mathematics classroom. Currently, she is working as an Associate Professor at a community college.