EVALUATION OF SELECTED COURSEWARE FOR ONLINE DELIVERY OF DISTANCE EDUCATION COURSES

By

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Bachelor of Science

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1991

Submitted to the Faculty of the
Graduate College of the
Oklahoma State University
in partial fulfillment of
the requirements for
the Degree of
MASTER OF SCIENCE
August, 2003

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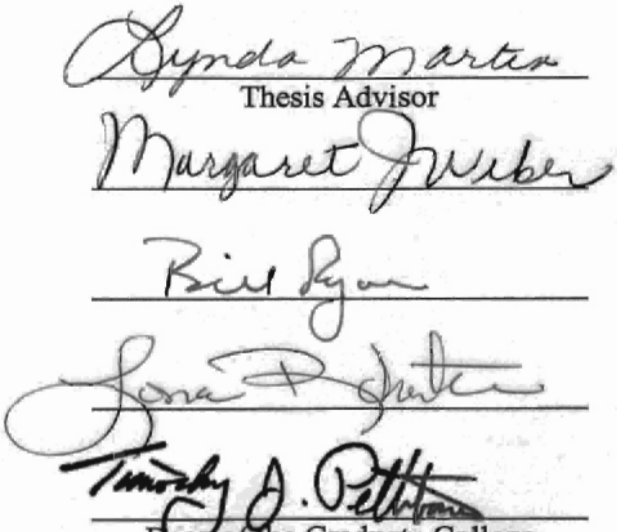
FOR ONLINE DELIVERY OF DISTANCE

EDUCATION COURSES

Thesis Approved:



Thesis Advisor

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DEDICATION

For my darling Ray Causin,

the best thing that ever happened to me…

For Papa Bebie and Mama Dading,

our manna from heaven…

ACKNOWLEDGMENTS

I would like to express my heartfelt gratitude to the following people who contributed to the success of my studies here at Oklahoma State University. For my wonderful, wonderful committee members: Dr. Lynda J. Martin, (my dearest chair and advisor), Dr. Margaret J. Weber, Dr. Bill Ryan and Dr. Lona J. Robertson: Your confidence, encouragement, inspiration, trust, and friendship mean so much to me. You have taught me and brought me to new heights of higher learning. I have never felt so lucky to have all of you in my committee. Words are not enough to express my appreciation for everything you did. I thanked you from the bottom of my heart.

For Dean Patricia Knaub, thank you for your encouragement. You inspire me to reach the most impossible dream. You told me that I would accomplish what I wanted in my personal and professional life, I took that to my heart. I would never forget our leadership class.

For Dr. Cheng I. Wei, thank you for your advises and reminders of balancing my leadership activities and my academics. For giving me travel assistance to our conference and for your support when serving as president to our college graduate students association.

For all the wonderful people in the HRAD department: Dr. Pat Moreo, Dr. Hailin Qu, Dr. Jerrold Leong, Dr. Bill Ryan, Dr. Lynda Martin, Dr. Woody Kim, Mom Cheryl LaFave, Anita Odell, and Ms. Kelly Way.

For all the good people in our college who opened up their arms without any hesitation: Becky Schlais, Allison Campbell, Lynn Smith, Ann Hentges, Mandi Robedeaux, Debbie Campbell, Jackie Lochmiller, Michelle Overstreet, Kristi Thrift, Cindy Haseley, Cindy Leslie, Rita Ryan, Shona Gambrell, Judy Horn, Katie Haliburton, Lee Fent, Kelli Shafer, Judy Lewis, Lisa Padilla and Diane Jones. Thank you all for your friendship and encouragement.

I am very grateful to Dr. Christine A. Johnson for opening up my doors to distance education. Thank you for referring me to Dr. Weber and Dr. Robertson. You were my angel.

For Lance Robertson, for being such a good friend. Working with you is an awesome experience. Thank you for your confidence and for listening. You are very dependable and trustworthy.

For the Robertson Family: Lona, Deedee and Alex, thank you very much for welcoming me in your home. It felt like home.

For my colleagues who made my student life exciting: Cihan Cobanoglu, Yen-Soon Kim, Chang Lee, Don Wood, Holly Im, Kyung Ah Lee, Samson Wang, Ronnie Yeh, Sam Karadag and last but not least my dear friend Kelly Way.

For Pat and Rosalie Moreo, thank you for always inviting us in your Casa. Your warm hospitality, great food and good wine are awesome.

For my Filipino friends: Edralin and Mike Lucas, Mel and Yoli Lim, Norma and Bob Eddington, Richie and Leon Spicer, Cecilia Baquireza, Tat Morillo, Rico and Liway Caldo, Amy Bernardo, and Cristopher Damaso. Thank you for friendship and Filipino foods.

For my dearest friend Gloria Baum, thank you for everything. Your generous heart, encouragement, inspiration, confidence and friendship made life easier in this country. You are a gem.

My grateful appreciation to Mr. John Dale Dunivan, thank you for taking care of us. You are family. We thanked God for bringing you to us. You are priceless.

For my dear, dearest sister Grace/Grassie/Gleng-gleng. Thank you for your love and support. I could not have survived without you. I am so fortunate and blessed to have you. I am forever grateful.

For my family: Papa Bernardo, Mama Elsie, Manang Langga, Belen and Cris Rondina; Gardo and Perlie, Katherine, Ivy, Sunshine, Honey, Iggi and Sweet-sweet; Mundo and Rosalia, Miko, Princess, Renren and Marga; Bebs and Kadil, Sahara and Sainab; Yvonne and Andy, Maan, Adie and Tiny; Grassie, Cheng, Aldrich, Keken, Hinky, and Miezelle, thank you for your love and prayers. You are my inspiration.

For my in-laws: Daddy Florencio, Mommy Ester, Connie Miriam, Rebecca, Randy, Robert, Buding and Florence. I am grateful to you for making Ray's life exciting. Thank you for your love and prayers.

For my beloved husband, Kingkoch Raybots, thank you for making my dreams came true. I admire you for your sacrifices, your generosity and understanding of my family. Your love and prayers will see me through. You inspire me to reach my goals in life. Through the years… I thanked God for giving you to me. I love you with all my heart and every fiber of my being.

And thank you Lord for everything…

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INTRODUCTION

Background

Distance education is not a new phenomenon in higher education (National Education Association, 2002). Historically, distance education meant written correspondence using the U.S. Post Office as the carrier (Emmons, 1999). Correspondence courses have been offered by colleges since the late 1800's. Traditional distance learning has tended to be correspondence-based and individually oriented. Print-based and delivered through the mail, correspondence was the first medium through which colleges in the United States could provide distance education, or what is now usually called independent study. Correspondence or independent study in the United States dates back to 1892, when the University of Chicago was established. During the following three decades a number of post secondary institutions, mainly state universities, opened correspondence study offices. These offices used videotapes, slides, and other ancillary materials (Pittman, 1987; Moore, 1973).

According to Peters (1983), correspondence study offices depended upon an efficient mail service. During the 1920's and 1930's, several dozen U.S. colleges and universities tried to implement courses via radio. Thirteen colleges offered academic credit via radio. These schools failed totally. By 1940, all had discontinued their radio courses (Atkinson, 1941). Although some successful programs have been developed, radio today still has not become an important factor in distance education because the

level of interactivity practiced with this type of delivery is very slow (Chute, Thompson, & Hancock, 1999).

Another medium in distance education is television. It was predicted in 1934 that television would be an effective instrument in the educational system (Kurtz, 1934). But fifty years later television did not deliver what it had promised (Coffman, 2001).

While distance learning through the mail, radio and television has an extensive history, newer technologies such as digital communications and networking have begun to emerge to make it much easier for educators to provide some form of distance learning for their students (Picciano, 2001). Technology in the form of satellites and the Internet is a major contributor to the dramatic transformation of distance learning. Potashnik and Capper (1998) added that although the use of technology for distance learning is not new, satellites and the Internet are transforming the world into a borderless educational arena, benefiting both previously underserved citizens and education entrepreneurs. Although many developing countries still have limited access to these new technologies, major new investments in telecommunications and information systems are dramatically improving their access.

These distance education approaches extend beyond the limits of correspondence study. With telecommunications-based distance education, the teaching/learning experience for both instructor and students occur simultaneously (Barker, Frisbie, & Patrick, 1989).

During the 1980's there was an explosion of alternative instructional delivery systems for American public education. Distance learning projects utilizing telecommunications technologies such as cable television, fiber optics, microwave, slow

scan television, satellites, and microcomputer networking opened up opportunities for school districts to coordinate schedules and share resources, thereby providing an expansion of curricular offerings and educational opportunities for students (Barker, 1987; Kitchen & Russell, 1987).

Educators have always been drawn to technology because of its promise and potential, thus during the 1980's, students, faculty, and institutions embraced the use of computers for writing across the disciplines, financial analysis in business, and statistical analysis in the social sciences. Midway through the 1990's, there was a shift in emphasis from the computer as a desktop tool to the computer as a communications gateway to colleagues and information. Databases, libraries, and other information sources are now accessible via computer network for both faculty and students (National Education Association, 2002).

Today, the explosion in audio, video and computer technologies has provided instant delivery modes, leading to a sudden proliferation in distance education (Emmons, 1999). Increasing numbers of faculty are utilizing these new technologies. Easy access to the Internet, web sites and the availability of different computer applications and software programs has contributed to the increased utilization of this distance education delivery mode (National Education Association, 2002).

Institutions or universities have joined the electronic age bandwagon, and this development has resulted in a demand for software that is designed especially for education. Software is a series of instructions for the computer that performs a particular task that is also called a program. The two major categories of software are "system software" and "application software". System software is made up of control programs

such the operating system and database management system (DBMS). Application software is any program that processes data for the user such as inventory, spreadsheet, and word processing (TechWeb, 2002). The software programs used in education are called courseware and provide interactive training sessions for all disciplines. Courseware was originally introduced on LaserDiscs, then CD-ROMs and later, online or through the Internet. It was typically developed with authoring languages designed to create interactive question/answer sessions. Furthermore, it helps create test materials, tracks the results and monitors student progress (CPM, 2002; Hughes, 2001).

Distance learning has opened up a new realm of possibilities for learners and institutions. Hoping to present a united front against the onslaught of different educational software/courseware in distance education, many universities or institutions formed alliances to share information (Young, 2001; Poley 2001). One example is the Great Plains Interactive Distance Education Alliance (Great Plains IDEA) (Carnevale, 2001). Ten universities in ten different states have found a way to collaborate and to share ideas on distance education (Laughlin, 2001). Membership in the Great Plains IDEA is held by Human Sciences Colleges in ten Midwest universities. Member universities are: Colorado State University, Iowa State University, Kansas State University, Michigan State University, Montana State University, North Dakota State University, Oklahoma State University, South Dakota State University, Texas Tech University, and University of Nebraska. The alliance serves member institutions by offering faculty development opportunities; recommending standards, policies, and practices for distance education; and by creating a marketplace for sharing distance education courses and programs (Moxley, 2002).

The alliance was launched in 1994 when the University of Nebraska College of Human Resources and Consumer Sciences invited representatives of other human sciences colleges in the Midwest to join them in the collaborative development of distance education courses and programs for rural professionals. The leadership team for the Great Plains IDEA consists of academic administrators from the participating human sciences colleges (Moxley, 2001). In 1999, faculty members, graduate deans, continuing education directors, registrars, and chief financial officers of the participating universities were involved in the work of the alliance (Robertson, 2002).

Inter-institutional collaboration benefits faculty as the alliance introduces a vision for the future in the higher education that is greater than just that of any one campus. Faculty appreciate interactions with colleagues at sister institutions, and take ownership of curriculum, and program development. Collaborative learning modeled in Faculty Development workshops encourages learning and is a model for teaching students, both on-campus and at-a-distance (Maes, 2001).

According to Robertson (2002), faculty find that technology-assisted instruction is more effective when they switch roles to move away from functioning solely as transmitters of information to becoming designers of learning environments and experiences. Getting caught up in the technology toys is one of the dangers of electronic access to remote learning resources (Poley, 2001). Faculty who are preparing to teach via distance initially raise concerns about being technology-literate enough to be the master teacher in the classroom and to trouble-shoot when learners encounter technology problems. Through faculty development learnshops, faculty learn that they need to know how to use information technology as a tool to achieve the goals of the students and

teachers, in the context of the content and the objectives of the course (Moxley, 2001). The challenge for the faculty has been to focus on development of "content-rich" courseware, rather than focus on full and complete understanding of technology used for delivery.

The courseware identified by the Great Plains IDEA were: WebCT, University Proprietary Courseware, First Class, Blackboard, e-College, FrontPage 2000, Cold Fusion, Dreamweaver, and Learning Space. Some of the Courseware have the following capability or features: create a gradebook, password protected, capable of retrieving powerpoint files, capable of retrieving audio files, capable of retrieving video files, capable of web board discussion, capable of virtual chat, post announcements/updates, capable of storing lectures, assignments posting, student information posting, allows students to submit assignments, capable of creating tests and quizzes, capable of automatic grading for true/false choice tests, automatic grading for multiple choice tests, capable of asynchronous delivery (delayed time) of the course content, capable of synchronous delivery (real time) of the course content, and capable of threaded discussion. These features are important because they are needed in developing the course content in the Internet.

This study examines how the courseware mentioned above support learning. Some of these courseware programs are currently in use by the educators of the Great Plains consortium.

Problem Statement

There are so many choices of software today. Those teachers selecting courseware need to be able to identify and understand courseware features that are best for supporting learning.

Purpose and Objectives of the Study

This study assessed the courseware preferences of faculty. Coursewares identified by the Great Plains Interactive Distance Education Alliance (Great Plains IDEA) faculty for this study are: Blackboard, Cold Fusion, Dreamweaver, e-College, First Class, FrontPage 2000, Learning Space University Proprietary Courseware, and WebCT,. Specifically, this study aims to:

- Examine their important features, courseware components and rationale for preferences of the faculty of the Great Plains Interactive Distance Education Alliance (Great Plains IDEA).
- Examine the demographic backgrounds of the faculty who delivered courses on the Internet using the courseware specified.

Research Questions

1) What are the top three coursewares most preferred by faculty for blended/web-enhanced and totally online instruction?

2) What are the perceptions of those faculty on those top three types of courseware relating to usability, navigability, portability, and file interface?
3) Is there an association between the courseware features and its relationship with (a) usability; (b) navigability; (c) file interface; and (d) portability?
4) What courseware features are preferred by faculty in creating and delivering courses using both blended/web-enhanced and totally online techniques?
5) What are the demographic characteristics of the faculty who use the courseware for both blended/web-enhanced and totally online instruction?

Definition of Terms

Distance education in this study is defined as the physical separation of instructor and student and the use of some technological delivery system (Hyatt, 2001). It is either asynchronous (delayed time) or synchronous (real time).

Traditional classroom teaching is defined as when teacher and student are physically in the same classroom at the same time.

Great Plains Interactive Distance Education Alliance (Great Plains IDEA) is a consortium of ten land grant universities in the Midwest. The Great Plains IDEA was created in 1994 as a way for institutions to collaborate and to share ideas on distance education (Laughlin, 2001).

Usability refers to the user-friendly ability of the courseware and the ease in creating course content. Navigability means that the instructor can navigate the courseware program easily while creating the course. File interface refers to the convenience of importing files such as word, excel, access, clip art, Powerpoint and

others within the courseware environment. Portability means that the faculty can check and update his/her course/lesson anytime, anywhere.

Significance of this Study

This study identifies technologies for distance education delivery and the characteristics that are useful for educators within each method.

Limitations

The first limitation of this study is that the sample will be drawn from the Great Plains Interactive Distance Education Alliance (GPIDEA). The findings cannot be generalized beyond that target population.

CHAPTER II

REVIEW OF LITERATURE

Distance education/learning, is a teaching method in which the instructor and the students are separated in terms of physical location and are frequently separated relative to time (Emmons, 1999). The instructor and students can be in different rooms, different buildings, different cities, different states, or even different countries. The desired result of distance education has been to provide an educational opportunity equal to that provided in traditional classroom teaching (Barker, Frisbie, & Patrick, 1989).

There are two categories of distance education delivery systems, synchronous and asynchronous (Emmons, 1999). Synchronous instruction requires the simultaneous participation of all students and instructors. The advantage of synchronous instruction is that interaction is done in "real time". Asynchronous instruction does not require the simultaneous participation of all students and instructors. Students do not need to be gathered together in the same location at the same time. Rather, students may choose their own instructional time frame and gather learning materials according to their schedules. Asynchronous instruction is more flexible than synchronous instruction. The advantages of asynchronous delivery include student choice of location and time, and interaction opportunities for all students (Steiner, 1995).

Distance education consists of all arrangements for providing instruction or electronic communications media to persons engaged in planned learning in a place or time different from that of the instructor or instructors. The key ingredient to distance education is that the instructor and learner are not in the same location during most of the program (Chute, Thompson, & Hancock, 1998).

Distance education is used in a variety of settings and for a broad range of purposes. Universities use it to increase the number of students who have access to higher education. Companies use it to upgrade their workers' skills and keep them abreast of rapidly advancing technologies. Individuals use it for their own professional development and to enhance their career opportunities. Governments use it to provide on-the-job training to teachers or other workers, to enhance the quality of traditional primary and secondary schooling, and to deliver instruction to remote rural areas that might not otherwise be served (Potashnik & Capper, 1998).

At its most basic level, distance education takes place when a content provider and a learner are separated by physical distance, and technology (voice, video, data, and print) – often in coordination with face-to-face communication or chat rooms and/or an electronic bulletin board (Smith, 1998). Distance education provides teachers a chance to reach those disadvantaged by limited time, distance, or physical disability, and update the knowledge base of workers at their places of employment (Smith, 1998).

A lot of the best uses of distance education are for people already working in the field who do not have time to physically go to a school campus. The obvious benefit of distance learning is accessibility and convenience. A student can take the program of their choice without having to move to be near a school. One can usually work or study

around hectic schedules (Emmons, 1999). Distance education students like the flexibility and the feeling of control over their study. Distance education has now become an important approach to lifetime learning and is recognized as an effective form of professional development (Miller, Smith & Tilstone, 1998).

In the early stages of distance education many students registered for courses because there were no other opportunities for professional development programs. It is now apparent that distance education provides other benefits which may not be available in more traditional approaches to professional development (Miller, 1998).

Educators throughout the world, whether in rural or urban areas, increasingly are considering developing distance learning as part of their academic programs. For rural and isolated communities, distance learning can be the vehicle to conquer geography and space between teachers and students. In populous metropolitan areas, distance learning is sometimes seen as a mechanism for fitting education into the busy lives of older students who struggle to find the time to balance careers, family responsibilities, and schooling (Picciano, 2001).

There is tremendous growth and diversity in distance education – in the number and types of individuals learning outside traditional classrooms, in the variety of providers, and in the range and effectiveness of new technologies serving as delivery tools for learning. Distance education is becoming increasingly global, creating a myriad of new alliances, as traditional educational institutions join with businesses, foreign governments, and international organizations to offer and use distance learning. Developing countries now have new opportunities to access knowledge and enhance their human capital (Potashnik & Capper, 1998).

As the technology for distance education has been improving, the number of students taking advantage of it has also been increasing rapidly. In its most recent report, the National Center for Educational Statistics revealed that enrollments in distance education classes have more than doubled, increasing from 753,640 in the 1994-1995 school year to 1,632,350 in 1997-1998 (Coffman, 2001). The reasons are obvious. First there is simply the convenience of being able to attend class at a time and location that is convenient. But, perhaps more importantly, distance education frees students from the bonds of a particular college or university and allows them to select from a wide variety of courses offered at thousands of institutions all over the world (Towers, 2000; Strain 1987).

British Open University

The vanguard of multimedia applications in distance education surfaced in 1969 in England with the inception of the British Open University (OU). The British Open University is Britain's largest university established by Royal Charter in 1969. Its courses are designed for students studying in their homes or workplaces, in their own time, anywhere in the UK, Ireland, and throughout Europe. Courses use a range of teaching media – especially-produced textbooks, TV and radio programs, audio and video tapes, computer software and home experiment kits. Personal contact and support for students comes through locally-based tutors via a network of 330 regional study centers in the UK, overseas and in annual residential schools. More than 150 OU courses are using IT to enhance learning in various ways, including virtual tutorials and discussion groups, electronic submission (and marking) of assignments, multimedia teaching materials and computer mediated conferencing (The Open University, 2002).

Technological Advances

Coffman (2001) stated that new learning technologies include electronic technologies that can provide enhanced communication and interaction to support learning. These include:

- Communications technologies such as videoconferencing, electronic mail, computer conferencing; and
- Technologies that provide access to information, such as the Internet and the World Wide Web.

When considering distance education, the most common forms, correspondence study and telecourses, first come to mind. Yet, technological advancement has provided a vehicle for an increasing array of delivery systems. Many colleges and universities are jumping on the bandwagon and forming consortiums to support programs offered through cable or satellite transmission (Iverson, 1996). One example of this collaboration is the Great Plains alliance that was created in 1994 as a way for institutions to collaborate and to share ideas on distance education (Carnevale, 2001).

The fiscal pressures facing higher education combined with increased demand for access also have prompted renewed attention to technology (NEA, 2002). The National Education Association (NEA) recently conducted in-depth interviews with the education chairs of state legislative committees in 49 states. These legislators wholeheartedly endorsed the expanded use of technology as a means for delivering instruction in higher education – and they were willing to provide funding for new technologies. Technology is viewed as a critical linkage between colleges and universities and the public schools. In

sparsely populated areas, technology will provide educational access to students who are in remote locations (National Education Association, 2002).

Categories

There is not one single "silver bullet" distance technology that is ideal for all educational and training needs and learner requirements. One size does not fit all. Instead, a multiple media approach is frequently recommended. Just as multiple transport systems are used to move people – airplanes, trains, automobiles – multiple media forms are used to move ideas – audio, data, or video. The choice of technology and the mode of interaction – one-way, two-way asynchronous (delayed time), or two-way synchronous (real time) – depend on the needs of the organization and the design requirements for the distance learning program. There is no one "best" technology. Each technology has different characteristics – strengths and limitations – that make it more or less appropriate for a given learning need (Kirschner & Paas, 2001; Stern, 1993).

There are many ways to categorize technologies. One way is to sort them into groups based on the kind of message that is sent: audio, data (i.e. from a computer), video, or multimedia. Another way is to focus on the type of interaction made possible by the technology: one-way synchronous (real time), two-way synchronous, or two-way asynchronous (delayed time). To effectively plan and implement distance learning solutions, it is imperative to understand the technologies involved (Chute, Thompson & Hancock, 1998). There are many technology delivery methods – broadcast video, videocassettes, videodiscs, audiocassettes, satellite, cable, telephone, microcomputers, electronic mail networks, teleconferencing (Duning, 1987). The technologies that support distance learning continually increase in number, complexity, and power. As the options

increase, so does the difficulty in choosing appropriate distance learning solutions for particular educational and training needs. Following is the discussion of the various technologies in use today (Chute, Thompson & Hancock, 1998):

Audio Technologies:

Perhaps the simplest interactive distance learning technology option is the audio-only system based on the telephone. Telephone technologies have a number of advantages for distance education and training: They are readily available, familiar to users, reliable, and cost-effective.

The telephone is one of the most common pieces of office equipment. Although learning over the telephone, or educational audioconferencing, initially seems to be a strange concept, it is already in use for informal learning, information exchange, problem solving, and decision making. By expanding the idea of the conference call and more formally integrating elements of course design, content, and delivery, instructors can use audioconferencing for interactive delivery of training, and for ongoing professional collaboration and development (Chute, Thompson & Hancock, 1998) .

Some instructors and students worry about the lack of visual channel for communication in audio teleconferencing. However, research has shown that the audio form of delivery is effective for a variety of educational functions. Many experts emphasize that in most types of communication, including educational, audio is actually the most important channel of interaction. When visual input is needed to clarify, illustrate, or expand on audio communication, a visual channel can be added, sometimes through print materials and sometimes through the integration of an additional communications technology. By contrast, the arbitrary incorporation of video input that is

not necessary for a particular subject matter or student population can be counterproductive. Educational research suggests that unnecessary visual input can be a distraction that causes cognitive overload and lowers achievement.

According to Chute, Thompson & Hancock (1998), one of the most appealing benefits of audioconferencing is its cost-effectiveness. The equipment needs for training that uses telephone technologies can vary with the particular training situation. The type of equipment used also depends on the available resources and budget considerations. However, it is important to realize that the success of audioconference instruction is largely dependent on sound quality. While students are often willing and able to do without an interactive video channel, they will not put up with poor-quality audio. For this reason it is important to invest in high-quality audioconferencing equipment, which can range in price from $150 to $2000 per unit. The costs of high-quality audioconferencing equipment and the associated telephone line charges are low compared with those of face-to-face training that requires students or instructors to travel.

The devices used for audioconferencing range from individual telephones and inexpensive speakerphones to specially designed systems that include speakers, microphones, and equipment to mix sound. Although inexpensive speakerphones are sufficient when training is delivered to only a few students at a particular site or when the instruction periods are relatively short, for larger groups and/or longer instructional periods there may be a need for higher-quality equipment that typically employs digital signal processors (DSPs) that have echo cancellation circuits and noise control circuits to automatically adjust the unit to screen out ambient room noise. Whether the equipment used is simple or complex, the concept is simple. An instructor and students at multiple

sites "meet" and interact in real time. This real-time conversational interaction is what makes audioconferencing so effective (Picciano, 2001).

The familiarity and reliability of telephone technology minimizes the need for technical support. Training systems are based on low-end technology. In most cases the instructor can operate the equipment without assistance. The usual dependability of telephone equipment does not eliminate the need for thorough testing and backup procedures, however. Someone – the instructor or a technical assistant – has to conduct preliminary tests of audio quality. These tests, particularly of the quality of intersite interactions should be conducted far enough ahead of classes to allow for the replacement or repair of equipment. Additionally, procedures for the restoration of temporarily disrupted telephone service or the replacement of a piece of equipment that fails unexpectedly should be developed and in place (Chute, Thompson & Hancock, 1998).

Audio Plus Data Technologies: Audiographics

Combining the audio capabilities of the telephone and the data capabilities of the computer creates a distance learning application called audiograpics. In this learning environment, the telephone is used for two-way voice interaction and the computer is used to share graphic materials and allow collaborative work (DLRN, 2000).

With an audiographic system, students can audioconference and see visual presentations at the same time. Students at different sites not only view the same image simultaneously, they also can write or type messages that can be seen by all the members of the group. Some audiographic systems allow students to simultaneously share computer programs. Students at different sites can enter data into the same spreadsheet, producing a collaborative workspace that is available to the students at every site. In

some systems a digitizing camera can be used to produce images of drawings, people, and displays (Bradshaw & Desser, 1990).

The audiographic equipment at each site generally includes audioconferencing apparatus, a computer software, a modem, and peripheral devices such as a mouse, a graphics tablet, a scanner, and a camera. Voice and data are transmitted over standard telephone lines. Although some audiographic systems combine the voice and computer signals on a single telephone line, others use one line for voice and another one for data. Applications using audiographics range from one-time product update sessions to semesterlong courses for ongoing collaborative professional development. The cost of an audiographic system, depending on the type and quality of equipment, can range from $500 to $500,000 (Chute, Thompson, & Hancock, 1999).

Audio Support Technologies:

Several audio communications support technologies, although neither powerful nor flexible enough to serve as primary delivery media, are widely used to support other forms of distance learning. These technologies include callback devices, voice mail, and facsimile (fax).

- Callback devices are telephone technologies combined with one-way video systems to provide necessary or desired interactivity. Callback devices allow students receiving training via one-way video technologies such as satellite transmission to call the originating location to answer questions posed by the instructor, request feedback or clarification, and interact with other students (Picciano, 2001; Chute, Thompson & Hancock, 1998).

- Voice mail is a system that allows telephone callers to leave a message that can be retrieved by the recipient at a later time. Voice mail can also be used as an effective teaching and learning tool, particularly when it is combined with other delivery technologies. Examples of the innovative use of voice mail include asynchronous student-instructor communications, feedback on or questions about assignments, and interim updates on course materials or procedures (Picciano, 2001; Chute, Thompson & Hancock, 1998).
- Facsimile, or fax, allows the exchange of written or graphic information between geographically separated sites. In cases where the main delivery system is audio-only, fax transmissions make the teaching-learning interaction more robust by supplementing audio interactions with visual information transmitted over telephone lines. Students or trainees can use fax machines to submit homework or project assignments (Picciano, 2001; Chute, Thompson & Hancock, 1998).

Video Technologies

Today distance learning uses a continuum of video communications technologies to integrate a vast array of instructional resources into a learning solution. Different types of video communications are being combined to mediate the flow of information among the organization, the instructors, and the students (Internet.com, 2002).

Videotapes:

For over 20 years videotapes have been useful tools for management communications and training dissemination. An inexpensive videotape can capture an

organizational leader's directives or a subject matter expert's message and make it available to others at a time and place convenient for them. A videotape of a respected organization leader also ensures that critical management communication is delivered in an effective and consistent manner throughout the enterprise.

Videotapes also can be used to provide cost-effective self-paced instruction and training for a variety of skills. For workers in the automotive industry, for example, the napa Institute of Automotive Technology (NIAT) offers independent study courses that include a videotape, a workbook (a pretest, quizzes, and shop exercises), and a final examination, which is mailed to NAPA for scoring. The 5 basic and 12 advanced courses in this program, which have been taken by over 30,000 students, cost NAPA approximately $80,000 each to develop; the courses sell for $89.50 each (Chute, Thompson, & Hancock, 1999).

One-Way Video Broadcasts

While the industrial use of videotapes began years ago in the training departments of large companies, today critical management communication more typically is delivered via live business video broadcasts to provide a quick, effective, and credible method of communicating management directives throughout a company. The term business video refers to the use of one-way satellite broadcasts of management communications and training programs throughout an enterprise. Industry estimates suggest that more than 70 percent of business video programs are distance learning programs (Chute, Thompson, & Hancock, 1999). Often, to achieve broader dissemination of critical messages, videotapes of the live broadcasts are later made available to employees and training departments.

Management and employee communication studies have shown that video is one of the most persuasive employee communications methods, especially when the message is presented by a person who is well known and holds a position of leadership. Business television programs provide an opportunity to reach large audiences quickly and with a unique impact. Business video broadcasts and videotapes are effective media for publicizing people, products, services, and events. Instructors should be aware that the most important element is the value of the message, not the quality of the production. The message must have a unique aspect that will be interesting and useful to the target audience (Chute, Thompson & Hancock, 1998).

One-way video distance learning applications are characterized by the transmission of video signals in only one direction: from the instructor to the students. A common method of delivering the video broadcast is by satellite. The components of a satellite broadcast system include the origination site, the satellite uplink for transmission of the program to a satellite orbiting the earth, the satellite transponder that receives the earth signal and retransmits is back to the earth, satellite downlink equipment, and a site for people to view the program on standard television monitors (Chute, Thompson & Hancock, 1998).

The program originates from a station on the earth and is transmitted to the satellite, which is in geostationary orbit. This means that the satellite "hovers" over the earth at the equator at a distance of 22,500 miles. As the earth rotates, the satellite rotates with it, appearing to stay at the same point in the sky. The satellite receives the signal from the origination at one site in North America and can be received simultaneously anywhere in the United States, serving a geographically dispersed audience. The area

covered by the broadcast signal is referred to as the "footprint" on the earth. an almost limitless number of sites in the footprint area can receive the program (Picciano, 2001).

The satellite-receiving antenna can be fixed or stationary. Inexpensive fixed antennas costing less than $500 are frequently used to receive satellite programs such as direct broadcast satellite (DBS) entertainment programming. Steerable satellite antennas can cost several thousand dollars; however, they permit the user to access even more programs by pointing the antenna at other satellites in the sky. Both fixed and steerable antennas must be connected to a device called a satellite receiver, which converts the satellite transmission to a video and audio signal that can be sent to a television monitor (Chute, Thompson, & Hancock, 1999).

The origination site can cost over $100,000, and skilled engineers are needed to monitor and maintain the transmission facility. Most training organizations contract for satellite transmission services, since few organizations require seven days a week, 24 hours a day use of a broadcast facility. Transponder use time can average $700 per hour for domestic satellites and $3000 per hour for an international program. It is advisable for the training organization to focus on the development and delivery of the training program content and contract with a network service provider for the transmission of the satellite video signal (Picciano, 2001).

Many businesses combine one-way video transmission of training materials with interactive capabilities of two-way data or audio communication. Ford Motor Company, for example, uses the FORDSTAR Satellite Communications Network to broadcast hundreds of hours of training monthly to the company's technicians and salespeople. Instructors use a variety of technologies – including a computer for PowerPoint

demonstrations, an overhead projector, a laser disc player, and a VCR – in addition to the satellite transmission to conduct their classes. Students at the receiving sites see and hear the instructor and his or her presentation on the television monitors and can respond to questions posed by the instructor by using electronic keypads. Other companies and institutions use audio bridges to combine two-way voice interaction with one-way satellite transmission.

Video On Demand

Another video program service that has the potential to become a popular training dissemination vehicle is Video on Demand (VOD). VOD had its origins in test-marketing trials of a cable television service that enabled residential customers to access hundreds of movies from a terminal attached to their home television sets. The viewers selected a movie and used a telephone line to send the request to their cable operators, which in turn made the movie available on a particular channel. Customers did not have to travel to the local store to rent a videotape; instead, they selected from a menu of options and agreed to pay a fee for viewing a particular movie. This service has not been widely deployed in public cable networks but has enjoyed success in hotels and closed-circuit networks for years (Techweb, 2002; DLRN, 1995).

From a training point of view, VOD services allow the content of a video training program to be hosted in video servers on an organization's data network. In the future, with increases in the bandwidth available for public networks, video training programs could be hosted on Internet servers and made available to anyone with high-speed data access and a multimedia personal computer (PC).

Video Plus Computer-Based Training (CBT)

Video program content can be supplemented with other training technology to create a powerful communication pattern. Video, computer-based training (CBT), and data resources can enable learners to experience a variety of training delivery media as they complete units of instruction. Many forms of CBT exist, including computer-assisted instruction (CAI), computer-assisted learning (CAL), and computer-managed instruction (CMI). CAI and CAL provide drill and practice, tutorials, simulations, and games. CMI can perform routine data-processing tasks that are useful to instructors, such as assessing students, revising materials, and testing. Multimedia CBT programming incorporates text, graphics, audio, video, and data in the delivery of the training content.

Much of the discussion of video technology options up to this point has focused on the one-way presentation of training materials. CBT goes a step beyond these one-way technologies by providing an element of interaction. However, it is interaction only in a highly structured, preprogrammed sense (Techweb, 2002; DLRN, 1995).

Two-Way Video

A two-way video distance learning system provides video and audio communications in both directions between learners and instructors. All the locations in a two-way video system are equipped with cameras, monitors, and microphones. Point-to-point and multipoint connections enable instructors and learners to see and hear each other.

The ability of students to see and hear an instructor brings new levels of interaction to the distance learning experience. Problem solving, demonstration, behavior modeling, and skills practice are all enhanced by the addition of two-way video. Distance

learning applications using two-way video technology fall into two general categories: compressed video and full-motion video (DLRN, 1995).

Compressed Video. Compressed video systems offer the flexibility of a variety of bandwidth services to the user. The audio and video signals go through digital signal processing that eliminates redundant information, thereby reducing the bandwidth necessary to transmit information between locations. The compressed signals can be sent to virtually any location over the switched telephone network. When switched digital services are used, the quality of the picture is a function of how much bandwidth is used. The cost of the connection is based on the bandwidth used (DLRN, 1995).

Full Motion Video. A full-motion video distance learning system provides picture quality that is comparable to that of commercial television. These systems typically require an investment in fiber-optic cables, high-capacity circuits, and Asynchronous Transfer Mode (ATM) or satellite transponder access to link learning sites together. Full-motion network systems often are built with private full-time or part-time transmission paths to support them (Techweb, 2002).

The selection of a video system is influenced by learning requirements and cost factors. The technology is changing rapidly, and the trend is toward better-quality video and audio on less expensive worldwide transport services.

A comprehensive approach to distance learning applications takes all the technology options into consideration and builds systems that include many of the technologies mentioned here. A variety of combinations are in use today; an example would be a two-way video system that uses fax and Internet E-mail communications for student assignments and additional student-to-instructor and student-to-student

interaction. Solutions such as video conferencing, multipoint conferencing student response systems, and Internet-based collaborative learning are providing educators and trainers with new and more powerful tools to reach and engage their learners (Techweb, 2002).

Computer-Based Training (CBT)

Computer-based training is a training delivery mode in which a computer is used as a tool to deliver and/or manage learning experiences. The two major forms of CBT are computer-assisted instruction and computer-managed instruction.

Computer-Aided Instruction (CAI) focuses on the delivery of instruction by using the computer as the delivery mechanism. CAI is well suited for learning experiences that require drill and practice, tutorials, simulations, and instructional games. The student reads information presented on the screen and interacts with the content by using a mouse or keyboard. The student controls the pace of the instruction, and the computer controls the sequence of steps through the learning experience (Chute, Thompson & Hancock, 1998).

In Computer-Manage Instruction (CMI), the computer automates the routine data-tracking and information-processing tasks instructors perform: registering, testing, and mentoring students and keeping student records. CMI also may be used to diagnose the learning needs of individual students and prescribe optimal sequences of instruction. CMI enables the instructor to manage the provision of individualized instruction to many students (Chute, Thompson & Hancock, 1998).

Control Data Corporation was one of the early pioneers in providing CBT services to corporate clients. Its product, PLATO (Programmed Logic for Automated

Teaching Operations), was initially developed in 1960 at the University of Illinois. The PLATO system was deployed in over a thousand corporate, higher education, and government sites throughout the world. Terminals with modems connected the students by telephone lines to the PLATO mainframe computer, which led hundreds of course titles, tutorials, drills, and practice modules, and tests. PLATO employed hierarchical programmed instruction with both linear and branching capabilities. Early terminals had the ability to present only text and simple monochrome graphics to the students; even so, significant learning gains and time reduction for learning mastery were reported for CBT programs (Chute, Thompson & Hancock, 1998).

With the advent of microcomputers and minicomputers in the late 1970s and the PC in the early 1980s, CBT began to move away from the terminal and mainframe environments toward stand –alone, desktop computer environments. Processing power increased dramatically, graphics and text capabilities improved, color and sound were added, and the widespread availability and affordability of local Random Access Memory (RAM) and mass storage memory devices made stand-alone desktop computers the preferred way to deliver CBT. Also, hundreds of authoring programs and approaches for delivering CBT were developed.

CBT can be useful to companies that want to provide self-paced independent training. The automotive company Bear, for example, offers courses in electronic fuel injection and wheel alignment in this format. The computer disks for each course include a pretest, an introduction to the topic, a discussion of diagnostic procedures and troubleshooting, and a posttest (Picciano, 2001).

Computer Conferencing

Computer conferencing is a general term that includes several distinct but related activities in which computers support and facilitate communication between people. The three most common forms of computer-based conferencing are electronic mail (E-mail), group conferencing systems, and interactive messaging systems. All these systems can be used effectively in educational and training applications (Techweb, 2002).

Electronic Mail (E-Mail)

The simplest form of E-mail involves one-to-one communication between two computer users. The originator of the message types it on his or her computer and special software directs the computer to send it electronically (via the telephone lines) to another user, who can choose to read it, download it, discard it store it, or forward it. One way to extend the distribution of the message is by typing in the names and computer addresses of multiple recipients. However, many enhanced E-mail systems automate this function by creating and managing a distribution list for messages (DLRN, 1995).

Enhanced E-mail "exploder" systems such as Listserv have both a management function and a distribution function. First, they manage the list of subscribers or group members, which can number in the thousands, by keeping track of those who join (sign on) and those who resign from (sign off) the conferencing group. Second, they copy any message contributed by an individual and distribute it to all the group members. The system also stores or "archives" a copy of each message. In this way new subscribers can recall and read previous interactions to understand the background and prior discussion of a topic (Hughes, 2001; Chute, Thompson, & Hancock, 1998).

In education or training applications, electronic mail, like voice mail, allows students to leave questions for instructors which can be answered at a later time. However, E-mail is more powerful than voice mail because the questions-and-answer exchanges can be stored for other students to see; in this way, the same questions are not answered again and again over the duration of a course.

Any distance learning system can be made student-centered by improving the quality and in some cases the quantity of the interactions between the instructor and the students and those among the students. Many students have reported being pleasantly surprised to find that they have more interactions and opportunities for interaction in a distance learning environment than they would in many face-to-face classes. Busy working professionals who have little time for formal learning during the business day find that E-mail allows them to have ongoing interaction with fellow professionals throughout the course of study.

Using E-mail for instructional interactions has many other benefits. A major benefit for the student is that he or she determines the time and place of an interaction. The student has an opportunity to reflect on a question and provide a well-thought-out response. For this reason, many students prefer the less threatening E-mail responses to the thinking-on-your-feet responses required in a face-to-face classroom setting.

Many training organizations with global responsibilities are finding not only that E-mail interaction makes distance learning across multiple time zones and cultures easier but also that it is the preferred medium of expression for students who speak English as a second language. Those students are often overwhelmed in rapid question-and-answer sessions in a traditional classroom setting. Also, it may be culturally difficult or even

inappropriate for them to question or challenge an instructor in a face-to-face setting. The time delay of the interactions in E-mail communication make it possible for international students to be more reflective and word their comments carefully in responding to discussion topics or posing questions. The time delay also gives an analytic student the opportunity to research information before being required to respond.

As was mentioned earlier, most E-mail systems automatically keep a record of these interactions, which can be sorted by respondent, date, and sometimes topic. The storing, or archiving, of previous messages adds to the power and flexibility of this medium. A student can join a discussion late and still have the feeling of being a participant in the thought process that led to the development of the ideas. Similarly, E-mail discussions can easily be embellished by "bringing in" outside subject matter experts who can add their knowledge to the educational discourse that has developed through the extended exchange of messages. This supplemental dialogue then becomes part of the permanent record of the class (Hughes, 2001).

Group Conferencing Systems

In general, group conferencing systems extend the features and functions of electronic mail. These systems are designed to handle the needs that arise when interaction extends beyond two participants. In other words, whereas E-mail is often a one-on-one activity, group conferencing is a one-to-many or many-to-many activity. Group conferencing systems are used to manage the functions involved in group-oriented computer-based interactions. These functions include the management of group membership lists, the efficient distribution of messages to group members, and the storage and retrieval of prior interactions. Two types of group conferencing systems are

the bulletin board system and the conference management system (Techweb, 2002; DLRN, 1995).

A bulletin board system (BBS) provides the function that its name implies: It is a place to "post" messages of interest to the community that sponsors and maintains the system. Just as is the case with a real-world bulletin board, a "virtual" bulletin board often is divided into sections based on the content of the message. Users can send, or post, messages to the appropriate are of the bulletin board. Other users can reply directly to the sender of a message or distribute their responses to all the members of the conferencing group.

Conference management systems provide a structured approach to group conferences. They use database management features that allow the establishment of an asynchronous discussion forum through "threaded discussions", or discussions in which responses to questions and comments are visually organized in a hierarchy, making it easy to follow a line of reasoning – a thread. As the asynchronous discussions grow, the responses typically are placed in chronological order under topic headings. Sophisticated group conferencing systems permit students to search messages for key words and sort responses by specified characteristics. These functions are particularly useful when the topics of messages are diverse and wide-ranging and/or when the number of group members is very large (Techweb, 2002; DLRN, 1995).

The structured approach of conference management systems makes them easy to learn and use and particularly valuable in supporting instructional communication. In instructional settings students can interact with their instructors, with outside content

experts, and among themselves in both task-oriented and more informal exchanges. In this way, group computer conferencing fosters "many-to-many" communication.

Subject matter experts volunteer to participate because they know that they will have the ability to control the amount of interaction as well as the time and place of interaction. From the subject matter expert's point of view, such discussion opportunities provide a chance to test their theories and ideas with groups of students – often practicing professionals – different from the audiences with which they typically interact.

Interactive Messaging Systems

While most computer conferencing is asynchronous, or time-delayed, some conferencing systems support synchronous, or real-time, communication. In interactive messaging, a person types a message on his or her computer screen and the message appears simultaneously on the screens of all the other members of the group. The messaging system automatically appends the name of the sender of each message and manages the flow of messages. This type of conferencing interaction is useful when feedback is needed quickly or when a discussion will benefit from a more natural flow, as in brainstorming sessions (Internet.com, 2002).

Groupware

A specialized conferencing application, groupware, combines delayed and real-time communication features in a way that makes it particularly useful in business environments. Groupware creates an "electronic work space" that supports a variety of functions. For example, based on the conferencing concept described above, groupware can sort, organize, and store the inputs of group participants as well as support group processes such as idea generation, evaluation, and consensus building. It also allows for

data sharing and collaboration among a group of networked (that is, connected through their computers) users. Group members can simultaneously work on the same document or spreadsheet, and any changes made appear immediately on each individual's computer screen. Some groupware programs have other specialized features, including automatic organization of a group's telephone messages, appointments, facility schedules, memos, and work assignments (Techweb, 2002; Internet.com, 2002).

Challenges

One of the chief challenges in training and education today is to find ways to quickly disseminate new policy information, product information, and service-related information to a widely dispersed audience. One cannot rely on traditional channels for the dissemination of information. In the traditional training environment people often had to wait for months, maybe as long as a year, to get into a required training course. These delays resulted from a shortage of qualified instructors or training facilities and from the personal scheduling conflicts of busy students (Hyatt, 1998).

In today's business environment, change is a constant. There is a need to create within organizations continuous learning environments that allow employees to easily access the learning resources they need to keep informed about the changes that are occurring in their companies and professions. The Internet offers a basis for the creation of flexible learning environments that meet many of the educational and training needs of organizations in today's information society (Hyatt, 1998).

Knowledge workers today are constantly confronted with new products and services, policies and procedures, and price structures. These types of changes used to run in 12- to 24-month planning cycles. Today, however, significant changes occur almost

on a monthly basis. This phenomenon is especially apparent in the Web software business, where the Web "year" has shrunk to about three months. These changes in business and industry are causing people to develop new ways to bring geographically dispersed employees up to date quickly.

Hewlett-Packard reports that the half-life of a software engineer's knowledge is on the order of 2½ years (Chute, Thompson, & Hancock, 1999). After 2½ years, half of what the engineer learned in initial training has become obsolete. Without continuously updated training, these engineers can no longer bring the same value to the organization that they did the day they were hired from college. The rapid rate of technological development also means that much of the information a fourth-year software engineering student learned in his or her freshman and sophomore years is obsolete upon graduation. There is a need for mechanisms for continuous training and retraining to keep these professionals knowledgeable in their fields (Holmberg, 1982).

The need for perpetual changes in curricula may not be as dramatic in some fields as it is in software engineering, but most knowledge workers share a need for continuous training to remain proficient in their jobs. This training is necessary not only for people in technical areas but also for those in sales, service, manufacturing, and human resources. The entire organization needs to remain current so that it can remain competitive.

Corporate executives understand that training and retraining are critical to the success of an organization. However, they also need to understand that changing conditions often necessitate changing training strategies. While face-to-face instruction worked well for many years, it cannot accommodate all of today's training challenges. The rate of change of information and time-to-market pressures dictate the embrace of

new delivery systems that can reach large, geographically dispersed audiences in cost-effective, time-efficient ways. In many cases Internet-based distance learning technologies offer the needed solutions.

The Internet

The Internet is a network of networks. To send and receive data communications the user needs the right equipment and software. There is an access point to the Internet and a unique address of the distant personal computer or server one is trying to reach. Most people are not as interested in how data communications systems work as they are in effectively using those systems. However, a brief technical explanation that offers some insights into a few of the challenges that distance learning practitioners face (and overcome) when they use the Internet to deliver training programs follows:

The Internet was established in the 1970's as a packet network with multiple-path routing because the U.S. Department of Defense wanted to build networks that could withstand partial outages during national emergencies. The Defense Department created a network called ARPAnet and various other radio and satellite networks. The ARPAnet was a research experiment to see how information could be routed through the Internet using the Internet Protocol (IP) (Hughes, 2001; Chute, Thompson & Hancock, 1998).

Internet-based delivery of training programs allows a corporation to avoid the cumbersome logistics of maintaining dedicated training facilities, which can be quite expensive. With Internet delivery, organizations can focus their limited resources on developing training programs, not on delivering training to the workplace (Hughes, 2001; Chute, Thompson & Hancock, 1998).

The Internet is one of the most basic yet powerful options available to deliver and update training quickly. Today, there are a wide variety of Internet delivery options available to corporate trainers. The ease of use of common browsers makes them suitable for virtually anyone with personal computer (PC) skills. Updated information can be hosted, and learners can read it, discuss it freely through real-time computer interaction in "chat" rooms, and question instructors with on-line discussions or electronic mail to obtain the clarification they need to be successful in a course. Groups of learners can participate in protracted conversations in cyberspace. Learners also can complete testing exercises on the Web to obtain certification. In fact, the entire learning transaction can be accommodated in the cyberspace environment (Hughes, 2001; Chute, Thompson & Hancock, 1998).

Another advantage of Wed-based delivery of content is that training developers can disseminate and update information immediately rather than worrying about having to change the training materials and mail out the changed materials to remote sites. The updates can be done electronically on the Web so that any student accessing the information after an update has been hosted, receives the most current information. Also, students can use the updated Web content as a source of current reference materials on their jobs. For example, the AT&T Network Engineering and Operations Training Organizations allows students who have questions about the course content, to go back to the Web site and access the most current information. In contrast, if students participate in a face-to-face course, the information they take away in the course binder most likely will become obsolete soon after they complete the course (Hughes, 2001; Chute, Thompson & Hancock, 1998).

The World Wide Web (WWW) is a facet of the Internet consisting of client and server computers that store multimedia documents. The WWW is a project that began at the Conseil European pour la Recherdie Nucleaire (CERN), the European particle physics laboratory. Its primary goal was to make it easier for physicists to collaborate by allowing them to share all types of information in real time. The WWW uses a client-server model with information "hosted," or stored, on networked servers accessed by personal computer (PC) clients. The WWW might have remained a CERN project if Tim Berners-Lee, the WWW's project leader, had not made the specifications public. Soon the WWW began to find new communities of users and information providers. The client computers use software packages called browsers to view multimedia documents, and the server computers use server software to maintain documents for clients to access (DLRN, 1995; Chute, Thompson, & Hancock, 1999).

The Internet has a unique number of qualities that can allow teachers at all levels to create and use new tools to introduce and personalize the learning experience for their students. This medium carries vast quantities of information in all different formats and modalities such as text, figures, video, and audio (both downloadable and streaming). It is dynamic in that new information is being added and "old" information is either being updated or removed every moment of the day and night (Kirschner & Paas, 2001). With the dramatic advances in networked technologies, especially the Internet and the World Wide Web (www), new kinds of instructional systems have arisen that emphasize the interactivity in learning (Retalis & Skordalakis, 2001).

Computers and information technology have changed the world more than any machine invented during the 200 years of the industrial revolution including the

automobile (Cobanoglu, Corbaci, & Ryan, 2002; Stern & Stern, 1993). The growth of computer technology in the past several years provides practically all faculty and students in higher education access to computing for most traditional academic applications (US Office of Technology Assessment, 1995; Stavredes, 2001). Software programs arm students and faculty with speed and storage capabilities in every aspect of academia. Faculty members appear to be interested in extending the application of computers into their courses. This is especially true with the growth of Internet access and the proliferation of the web-based courses (Stavredes, 2001).

Blended Technologies

Information systems and technology are increasingly important in higher education. There are many opportunities for educators to use blended technologies (Waldo, 1998). Blended or hybrid or web-enhanced instructional technique is when the faculty incorporates creative uses of technology, architecture and people. It is the use of technology add-ons to a course to teach concept or add supplemental information. The greatest potential of the hybrid campus is in the people dimension. Combining virtual learning with new kinds of physical spaces can restore the human moment in the educational process (Bleed, 2001).

Courseware

Institutions use courseware in creating their Internet or Web-based courses. A courseware is a type of software system/package/program designed to be used in an educational program (http://webopedia.Lycos.com/TERM/C/courseware.html).

Courseware definitions vary widely but most include some reference to computer-based instruction (CBI) and/or computer-assisted learning (CAL) (Marshall University

Multimedia, 2002). Courseware is the content and technique applied to instructional materials in electronic format. Thus, courseware may include the following categories of instructional material:

a. Class notes, scanned images, syllabi, textbooks, tutorials and assignments made available by instructors over the Internet/WWW.
b. Fully developed, interactive products available commercially or as shareware from publishers, educational consortia, or individual author/developers.
c. A diverse body of applications used to develop instructional materials in electronic format. These would include relatively simple tools such as HyperCard, Powerpoint, etc. as well as more complex authoring packages such as Macromedia Director, Toolbox, or Authorware (Marshall University Multimedia, 2002).

Within the Internet there are many courseware tools that are being utilized. Some of these courseware tools are: Blackboard, ColdFusion, Dreamweaver, eCollege, FirstClass, FrontPage, LearningSpace, University Proprietary Courseware, and WebCT (Moxley, 2001). The unique features of each of these are described below:

Blackboard:

Blackboard is an e-Learning software platform encompassing a course management system, customizable institution-wide portals, online campus communities, and an advanced architecture allowing easy integration of multiple administrative systems. While bringing courses online is still a critical component of online learning, the

Internet offers tremendous potential for enhancing academic programs and communities beyond the walls of the classroom or campus (Blackboard Inc., 2001).

ColdFusion:

ColdFusion is a complete Web application courseware for developing and delivering scalable e-business applications. ColdFusion is designed to deliver on the key requirements of e-commerce and enterprise Web applications:

- Rapid Development – Intuitive visual tools and an innovative tag-based programming environment make ColdFusion a highly productive platform for delivering applications.
- Scalable Deployment – A high performance, multithreaded architecture and advanced features such as just-in-time compiling, load balancing, and failover ensure that your applications will scale to handle the most demanding sites.
- Open Integration – Open integration with databases, email, directories, Java™ , XML, and enterprise systems means you can develop complex Web applications quickly and easily.
- Complete Security – The latest advanced Internet security technologies and clean integration with network and Web server security, give you the services to build secure systems.

ColdFusion includes an integrated suite of visual tools, powerful server technology, and an open language environment.

ColdFusion Studio – Tightly integrated with ColdFusion Server, ColdFusion Studio provides visual programming, database, and debugging tools for building sophisticated Web applications.

ColdFusion Server – ColdFusion Server offers all the runtime services for delivering your e-business applications built on a highly scalable and open architecture (Allaire, 2001).

Dreamweaver:

Macromedia Dreamweaver has the tools to develop a professional Web site. (Towers, 2000). It is a powerful WYSIWYG (what-you-see-is-what-you-get) site building tool, one just as respected for what it does do as what it does not. What it does offer is an intuitive environment for building cross-platform sites. What it does not do is alter existing HTML (hypertext mark-up language) by inserting esoteric tags that add nothing but weight. It is a favorite of multimedia designers, since it easily integrates with other Macromedia applications, like Flash and Shockwave. It is probably a less popular choice for small staffs or corporate sites, since it does not come with a library of Web-ready graphics, like FrontPage (Dreier, 2001; Macromedia, 2001).

eCollege.com

eCollege.com is a provider of technology and services that enable colleges and universities to offer an online environment for distance and on-campus learning. eCollege.com serves as an Application Service Provider (ASP) for its educational partners, giving them unparalleled performance and maximum availability for their online offerings. By remotely hosting online educational offerings using eCollege.com's ASP services, an institution does not have to invest in the hardware, software, and staffing resources that would be required to deliver your "mission-critical" education applications. As the institution continues to develop more and more online course and

campus content critical to their operation, it becomes imperative that their systems are available, dependable, scalable and secure (Bledsoe, 2001).

FirstClass:

According to Centrinity (2001), FirstClass has the award-winning and affordable products that bring people and projects together. From a collaborative learning project that gets kids, teachers and parents involved, to a complex commercial venture or construction of a knowledge-base, FirstClass enables better communication and increased productivity. The courseware is recognized worldwide for its unparalleled scalability and reliability. In addition, it is as easy to administer as it is to use. Access and sharing of resources anywhere, anytime is seamless. Regardless of team members' proximity, it can organize online chat, conferences and forums, and work on projects together.

In higher education, shared learning and collaborative experiences have lasting value beyond the core curriculum. The courseware is shaping the evolution of education with learning tools that are student-centered, cross platform, customizable, easy to implement and simple to use (Centrinity, 2001).

FrontPage:

The Microsoft FrontPage® Web site creation and management tool provides everything a developer needs to create and manage exactly the site designed, whether creating a personal Web page or a corporate Internet or intranet site. It is easy to learn and use. The multiple views in FrontPage allow users to see all the files in the Web, run reports to find slow pages and older files, set up the site's navigational structure, and keep track of Web tasks. Updating the Web and monitoring the site's performance and

condition is very easy in FrontPage. And the enhanced collaboration features make working together on Web content easier than ever (Microsoft, 2001).

LearningSpace:

LearningSpace is an open, best-of-breed, Web-based e-learning solution. It can be used to train one group or an entire enterprise. It is a complete learning management and delivery system that lets a user seamlessly integrate his/her course content, whether it is created or purchased from leading providers. It allows a user to reach the entire enterprise with timely training programs while providing a flexible framework that can handle any content. LearningSpace puts instructors in control of course content, creating a flexible, customizable approach that can respond to individual styles and changing priorities and now brings new capabilities to e-learning, providing the most complete, Web-based learning system available. It can create an advanced environment for online learning; helping the organization achieved an unbeatable competitive advantage. Two key modules enable organizations to choose the functionality that best matches their needs (LearningSpace, 2001).

- Core Module uses active server page technology and relational database structures to support the delivery and tracking of online self-paced learning content. Self-paced courses can be highly structured with controlled paths and prerequisite assessments, providing flexible learner access designed to suit individual learning needs.

- Collaboration Module combines the self paced learning capabilities of the core module with the extensive collaborative learning capabilities that enable learners

and instructors to work and learn together using discussion databases or real-time virtual classrooms. This capability makes it possible to bring together groups located throughout the world - such as a sales force or product team - and enable them to learn together.

University Proprietary Courseware:

University Proprietary Courseware are software created through the use of university computer systems software (other than educational courseware) that has been created or developed at least in part on the university's computer systems (University of Pittsburgh, 2002; Boysen, 2001; DCE Online, 2001).

WebCT:

WebCT is a flexible, integrated environment where faculty used technology as a lever to foster inquiry, encourage discourse, and inspire collaboration. By expanding the boundaries of the classroom, learners can integrate course experiences into the real world communities of work and play. WebCT's e-Learning environment integrates WebCT, the most popular course management system in the world, and WebCT.com, the e-Learning Hub. WebCT.com enables faculty and students to share materials, experiences, content reviews, and ideas with the global academic community. WebCT is also a key part of the first unified system for the campus environment (WebCT.com, 2001).

CHAPTER III

METHOD

Chapter Overview

This study solicited information from the faculty of the Great Plains Interactive Distance Education Alliance (Great Plains IDEA) to evaluate their courseware preferences for the delivery of distance education courses. The specific research questions were:

- What are the top three coursewares most preferred by faculty for blended/web-enhanced and totally online instruction?
- What are the perceptions of those faculty on those top three types of courseware relating to usability, navigability, portability, and file interface?
- Is there an association between the courseware features and its relationship with (a) usability; (b) navigability; (c) file interface; and (d) portability?
- What courseware features are preferred by faculty in creating and delivering courses using both blended/web-enhanced and totally online techniques?
- What are the demographic characteristics of the faculty who use the courseware for both blended/web-enhanced and totally online instruction?

This chapter includes the research design, instrumentation, data collection techniques, sampling plan, validity and reliability, and data analysis.

Research Design

Planning and development for this research study began in the spring of 2001 and continued through December 2001. During that time a review of literature was conducted, and data collection procedures were determined. A descriptive cross-sectional questionnaire survey research design was formulated, and data analysis techniques were selected.

Instrument

A Web-based self-administered questionnaire (See Appendix B) was created from the information obtained from the literature review.

The survey was developed as a self-administered instrument in three parts. The first part asked questions related to respondents' demographics that dealt with gender, age, annual income, and rank of the faculty. The second part asked questions about general information such as the length of time the faculty is teaching, whether he or she has taught online, how long, and the type of courseware used in creating his or her courses. The third section of the questionnaire asked questions about the important features, courseware components and the rationale for preference of the faculty relative to courseware. A five-point Likert scale response format (5 for strongly agree; 4 for agree; 3 for neutral; 2 for disagree; and 1 for strongly disagree; 8 is assigned for not applicable) was used in the courseware component and rationale for preferences of faculty. For the important features measurement, another five-point Likert scale response format (5 for strongly agree; 4 for agree; 3 for neutral; 2 for disagree; and 1 for strongly disagree; 8 is assigned for not applicable) was used. It was determined based on prior research that the

five-point scale format would reduce frustration and increase the quality of the response (Shifflet, 1992; Cobanoglu, 2001).

A pilot test of this questionnaire was conducted among selected subjects (10) to test the content and clarity of the questionnaire (see appendix B). Participants in the pilot study indicated that some demographics questions should be left open-ended. And they added not applicable in part three. Overall, the participants felt that the questions and topic were interesting, and the research had value and was significant. The questionnaire was modified based on this input.

Data Collection Techniques

As with other computer assisted testing programs, individuals may find Internet surveys less threatening and more interesting than traditional paper-and-pencil tests thus, the Internet was selected for data collection (Epstein, 2001; Stanton, 1998). The very nature of Internet surveys offers increased anonymity and decreased demand characteristics (Epstein, 2001; Davis, 1999; Pasveer & Ellard, 1998; Smith & Leigh, 1997). Because Internet surveys may be perceived as less threatening and more anonymous, they also facilitate greater honesty and self-disclosure (Epstein, 2001; Davis, 1999).

This study used a web-based survey created in FrontPage 2002. FrontPage 2002 software is used for designing web pages and web surveys. It is also easy and very user-friendly to those who have no knowledge of web page and web survey design (Microsoft, 2001; Causin & Martin, 2002). For this particular study, FrontPage 2002 was the software that had the capability of transforming the questionnaire into a web survey. It

was distributed to 100 faculty (n=100) of the ten partner-institutions of the Great Plains Interactive Distance Education Alliance (Great Plains IDEA). The Great Plains IDEA is a consortium of Human Sciences Colleges at ten universities. The participating universities are the: College of Applied Human Sciences of Colorado State University, College of Family and Consumer Sciences of Iowa State University, College of Human Ecology of Kansas State University, College of Human Ecology of Michigan State University, College of Education, Health, & Human Development of Montana State University, College of Human Resources and Family Sciences of the University of Nebraska-Lincoln, College of Human Development & Education of North Dakota State University, College of Human Environmental Sciences of Oklahoma State University, College of Family and Consumer Sciences of South Dakota State University, and College of Human Sciences of Texas Tech University. These institutions were chosen because they have experience with Web-based or Internet delivery of distance education courses and are members of Great Plains IDEA (Moxley, 2000).

It was mandatory that approval from the Institutional Review Board (IRB) for review of human subjects research was secured. After securing the IRB approval (please refer to appendix C), the data collection began. The questionnaire was published online from October 24, 2002 to November 24, 2002. Data collection began by sending an e-mail message along with a website address or the uniform resource locator (URL) to the campus coordinators or contact person of each campus. The URL was the address that defines the route to a file on the Web or any other Internet facility. URLs were typed into the browser to access Web pages, and URLS were embedded within the pages themselves to provide hypertext links to other pages (Techweb, 2002). The campus coordinator or

the contact person then sent the web address or the URL to the listserv of the college. The respondents were assured that their answers were kept confidential. After data collection and data input procedures were completed, the survey data were destroyed. Respondents filled out and submitted the questionnaire online. The data were stored in a database created in Notepad. When the survey ended, the data were converted to Excel and were coded before being imported to SPSS 11.0 (SPSS, 2002).

Sampling Plan

The number of individuals using the Internet was growing at an exponential rate. In April of 1999, there were approximately 92 million Internet users in the United States and Canada alone, representing an increase of about 13 million users in a period of just 9 months (Epstein & Klinkenberg, 2001; CommerceNet, 2000). But this growth was not limited to North America. In fact, even developing nations were showing similar patterns of expansion (Epstein & Klinkenberg, 2001; Schmidt, 1997). With such a huge population of users, the Internet allowed for access to large samples of individuals which had been inaccessible (Epstein & Klinkenberg 2001).

The target population of this study included the faculty of the human sciences colleges from the seven institutions mentioned above. The population was selected based upon their commonalities. This means that they belong to the same alliance or consortium, have common students, deliver their courses through the Internet or the Web and they use different types of courseware.

The size of the population was approximately 500 faculty (N=500) and the sample size was 20 percent of the population which is equivalent to 100 faculty (n=100). Forty-

three percent (43%) was the response rate. All the respondents were selected using purposive sampling. In purposive sampling, subjects are selected because of similar characteristics (Patton, 1990). Participation in this study was voluntary.

Data Analysis

Internet surveys allow participants to enter data at their own, not the experimenter's convenience (Davis, 1999). Web-based surveys can be designed to check responses before they are entered, thus assuring that the data are well–structured and free from missing values or out-of-range responses (Epstein, 2001). Furthermore, data entry errors are eliminated because respondents' answers may be entered directly into an analyzable database, completely eliminating the need for a separate process of data entry (Epstein, 2001; Michalak, 1998; Pasveer & Ellard, 1998).

The data collected were analyzed using descriptive statistics. Data were coded and analyzed with the Statistical Package for Social Sciences 11.0 (SPSS Inc, 2001). Frequencies, percentages, One-Way Analysis of Variance (ANOVA), and Cross-tabulations Chi-Square were used for the analysis of the data. One-Way ANOVA tests for differences between groups or levels of one independent variable on one dependent variable (Churchill, 2001). A crosstabulation is a joint frequency distributions of cases or subjects based on two or more categorical variables. The joint frequency distribution can be analyzed with the chi-square statistic (χ^2) to determine whether the variables are statistically independent or associated (Michael, 2002).

Validity and Reliability

The ideal in any scale is to "generate a score that reflects true differences in the characteristic one is attempting to measure, without interference from irrelevant factors" (Churchill, 1996, p. 402). Any measurement instrument that accurately measures what it was intended to measure may be considered as valid. Validity refers to the relationship between a concept and its indicators. The validity of a measuring instrument is defined as the extent to which differences in scores on a measuring instrument reflect true differences among individuals, groups, or situations in the characteristic that it seeks to measure, or true differences in the same individual, group, or situation from one occasion to another, rather than constant or random error (Churchill, 2001; Cobanoglu, 2001). Two validity checks were performed: content and construct validity.

Content Validity

If the measurement instrument adequately covers the most important aspects of the construct that is being measured, it has content validity (Churchill, 1996). According to Churchill (1996), the key to content validity lies in the procedures that are used to develop the instrument. One way would be to search the literature and see how other researchers defined and investigated the concept. After this stage, the researcher may add and delete some items from the previous instruments. This study utilized the procedures suggested by Churchill (1996) to develop an instrument that had content validity by adopting measures used by many previous studies which proved to be reliable and valid.

Construct Validity

The measurement of construct is a vital task, and construct validity is the most difficult type of validity to establish (Churchill, 1996). Not only must the instrument be internally consistent, but it must also measure what it was intended to measure. Each item in the instrument must reflect the construct and must also show a correlation with other items in the instrument. The instrument used in this study had operational variables that proved to be relative to the construct of the faculty of the Great Plains IDEA.

Reliability

Reliability concerns the extent to which a measurement of a phenomenon provides stable and consistent results. Reliability refers to the ability to obtain similar results by measuring an object, trait, or construct with independent but comparable measures (Churchill, 2000). Reliability establishes an upper bound on validity because an unreliable measure cannot be valid (Keppel, 1991). Internal validity issues were addressed for importance and preference scales in the instrument. Internal consistency between the items in the measures was estimated using the Cronbach's coefficient alpha. Cronbach's (1951) Alpha is a measure of internal consistency (reliability), generally used to assess the reliability of items in an index. Alpha ranges from 0 to 1.0 and indicates how much the items in an index are measuring the same thing. A common rule of thumb is that an Alpha of .70 or greater indicates acceptable internal consistency (Foster, 2001; Babbie, Halley & Zaino, 2000). It is the most widely used reliability measure to estimate the degree to which the items on a measure are representative of the domain of the construct being measured. Multiple authors (Babbie, Halley & Zaino,2000; Nunnaly,

1978) had indicated 0.70 to be an acceptable reliability coefficient for social sciences research but lower thresholds were sometimes used in the literature.

The coefficient alpha reliability on the perceptions of the faculty on the top three types of courseware relating to usability, navigability, portability, and file interface yielded a reliability estimate of .80 with 20 items. The questions on the courseware features yielded a moderate reliability estimate of .72 with 18 items. This indicated internal consistency of the scales of the instrument used.

CHAPTER IV

RESULTS AND DISCUSSION

This chapter reports the results of the courseware survey and discusses the answers to the research questions. This chapter will answer the following research questions: (1) What are the top three courseware most preferred by faculty for blended/web-enhanced and totally online instructions? (2) What are the perceptions of the faculty on the types of courseware relating to usability, navigability, portability, and file interface? (3) Is there an association between the courseware features and their relationship with (a) usability; (b) navigability; (c) file interface; and (d) portability? (4) What features are preferred by faculty in creating and delivering courses using both blended/web-enhanced and totally online techniques? (5) What are the characteristics of the faculty who used the courseware for both blended/web-enhanced and totally online instruction?

Research Question 1: What are the top three coursewares most preferred by faculty for blended/web-enhanced and totally online instructions?

Results from descriptive frequencies of the courseware most preferred by faculty for blended and totally online instructions showed that Blackboard, First Class and Learning space were the top three courseware most preferred by faculty for the totally online instruction. Blackboard, First Class and University Proprietary Courseware were preferred for the blended/web-enhanced instruction (refer to Table 1).

Table 1

Frequency Distribution of the Top Three Courseware Most Preferred by Faculty for Blended/Web-Enhanced and Totally Online Instructions

Courseware	Frequency	Percentage
Blended or Web-enhanced:		
Blackboard	38	88.4
Cold Fusion	4	9.3
Dreamweaver	1	2.3
e-College	0	0
First Class	35	81.4
FrontPage	3	7.0
LearningSpace	2	4.7
University Proprietary Courseware	36	83.7
WebCT	1	2.3
Totally Online:		
Blackboard	40	93
Cold Fusion	1	2.3
Dreamweaver	0	0
e-College	2	4.7
First Class	40	93
FrontPage	3	7.0
Learning Space	39	91
University Proprietary Courseware	0	0
WebCT	1	2.3

Note. n = 43

Research Question 2: What are the perceptions of the faculty on the types of courseware relating to usability, navigability, portability, and file interface?

Most of the respondents preferred Blackboard, First Class, Learning Space and University Proprietary Courseware in relation to usability, navigability, file interface and portability. Usability referred to the user-friendly ability of the courseware and the ease in creating the course content. Navigability meant that the instructor was able to navigate the courseware program easily while creating the course. File interface referred to the convenience of importing files such as word, excel, access, clip art, Powerpoint and others within the courseware environment. Portability meant that the faculty was able to check and update his/her course/lessons anytime, anywhere.

Analysis of Variance (ANOVA) was the statistical tool used in the analysis of the data. The independent variables were the levels of the different courseware environments such as Blackboard, First Class, Learning Space, and University Proprietary Courseware. Each independent variable had five levels: strongly disagree, disagree, neutral, agree and strongly agree. The dependent variables were usability, navigability, file interface, and portability.

Results from the One-way Analysis of Variance (ANOVA) revealed no significant differences on the dependent variables for each level of the independent variable. This means that there is no significant difference in the scores of usability, navigability, file interface, and portability for each level of the courseware environment -- Blackboard, First Class, Learning Space, and University Proprietary Courseware (see Table 2).

Table 2

Perceptions of the Faculty on the Types of Courseware Relating to Usability, Navigability, Portability, and File Interface using One-Way Anova

	Blackboard		First Class		Learning Space		University Proprietary Courseware	
Variables	**Mean**	**Sig.**	**Mean**	**Sig.**	**Mean**	**Sig.**	**Mean**	**Sig.**
Usability	5.00	.278	4.91	.220	4.97	.340	4.85	.262
Navigability	4.94	.370	4.88	.354	4.97	.270	5.00	1.00
File Interface	4.88	.354	4.97	.379	4.83	.430	5.00	1.00
Portability	4.82	.747	4.86	.281	5.00	1.00	4.94	.310

Note. n = 43. Means were calculated on the basis of the Likert scale 1-5, where 1=strongly disagree, 2=disagree, 3=neutral, 4=agree, and 5=strongly agree.

Research Question 3: Is there an association between the courseware features and their relationship with usability, navigability, file interface and portability?

Cross-tabulation Chi Square revealed that there was a significant relationship between some of the courseware features in association with usability, navigability, file interface and portability at the .05 level of significance. For the **Blackboard** courseware environment, there was an association among the following features (refer to Table 3):

Navigability and:

- it can automatically grade true/false choice tests (p=.025);
- it can automatically grade for multiple choice tests (p=.025);
- the courseware is capable of asynchronous delivery (delayed time) of the course content (p=.025);

File interface versus:

- the courseware creates a gradebook (p=.050);
- it can post assignments (p=.014);
- it can post student information (p=.046);
- it can create tests and quizzes (p=.025);
- it can automatically grade true/false choice tests (p=.014);
- it can automatically grade for multiple choice tests (p=.014);
- the courseware is capable of asynchronous delivery (delayed time) of the course content (p=.050);
- the courseware is capable of synchronous (real time) delivery of course content (p=.050);

Portability and:

- the courseware creates a gradebook (p=.040).

First Class had the following significant associations (refer to table 3):

Navigability versus:

- the courseware creates a gradebook (p=.050);

File interface versus:

- the courseware is capable of retrieving video files (p=.046);

Portability versus:

- the courseware is capable of web board discussion (p=.014);
- and the courseware is capable of synchronous delivery (p=.014).

Learning Space showed significant associations between the following features (see Table 3): Navigability versus:

- the courseware is capable of retrieving video files (p=.046);
- it can store my lectures (p=.018);
- it can create tests and quizzes (p=.030);

File interface versus:

- the courseware is capable of retrieving Powerpoint files (p=.018).

University Proprietary Courseware indicated significant association among the following features (see Table 3):

Usability versus:

- the courseware creates a gradebook (p=.002);
- it is easy to post announcements/updates (p=.035);
- it can automatically grade for multiple choice tests (p=.046);

- the courseware is capable of asynchronous delivery (delayed time) of the course content (p=.046);

Portability versus:

- the courseware creates a gradebook (p=.025).

Table 3

Crosstabulation Chi-Square Analysis of the Courseware Features and its Relationship with Usability, Navigability, File Interface and Portability

		Blackboard				First Class				Learning Space				University Proprietary Courseware			
	FEATURES	Usability	Navigability	File Interface	Portability	Usability	Navigability	File Interface	Portability	Usability	Navigability	File Interface	Portability	Usability	Navigability	File Interface	Portability
a.	The courseware create a gradebook	.083	.082	.050*	.040*	.235	.050*	.180	.926	.576	710	.424	1.0	.002*	1.0	1.0	.025*
b.	The courseware is password protected	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1 0	1.0	1.0	1.0	1.0	1.0	1.0	1.0
c.	The courseware is capable of retrieving Powerpoint files	1.0	1.0	.624	1.0	1.0	.121	064	.641	.576	064	.018*	1.0	.598	1.0	1.0	.576
d.	The courseware is capable of retrieving audio files	.083	.576	.549	.235	.659	.301	.180	.469	.392	.180	.547	1.0	.767	1.0	1.0	.392
e.	The courseware is capable of retrieving video files	.083	.576	.439	.082	.659	.112	.046*	.632	.361	.046*	.185	1 0	.767	1.0	1.0	.171
f	The courseware is capable of Web board discussion	1.0	1.0	1.0	1.0	1.0	1.0	1.0	.018*	1.0	1.0	.710	1.0	.725	1 0	1.0	1.0
g.	The courseware is capable of Virtual chat	.223	.172	.494	.125	.125	.301	.330	.596	.172	767	.797	1.0	148	1.0	1.0	.172
h.	It is easy to post Announcements/Updates	.386	.361	.439	.329	.329	.439	.537	.641	.171	.537	449	1.0	.035*	1.0	1.0	.171
i.	It can store my Lectures	386	.171	273	.329	.082	.549	.565	.809	.171	.018*	.345	1.0	.292	1.0	1.0	.361
j.	I can post assignments	1.0	.171	.014*	.082	.329	1.0	.686	1.0	1.0	1 0	1.0	1.0	1.0	1.0	1.0	1.0
k	I can post student information	1.0	.083	.046*	.223	.083	.505	.549	.173	1.0	301	.083	1.0	.321	1.0	1.0	1.0
l.	Students can submit assignments	1.0	1.0	1.0	1.0	1 0	1.0	1.0	1.0	1.0	.686	1.0	1.0	.185	1.0	1.0	1.0
m.	It can create tests and quizzes	1.0	.135	.025*	135	.135	.576	.792	.792	1.0	.030*	.233	1.0	.105	1.0	1.0	1.0
n.	It can automatically grade true/false choice tests	1.0	.025*	.014*	.082	.082	1.0	.686	1 0	1.0	.686	1.0	1.0	1.0	1.0	1.0	1.0
o.	It can automatically grade for multiple choice tests	1.0	.025*	.014*	082	.082	1.0	.686	1.0	1.0	.686	1.0	1.0	.046*	1.0	1.0	1.0
p.	The courseware is capable of asynchronous delivery (delayed time) of the course content	1.0	.025*	.050*	.082	.082	1.0	.686	1.0	.576	.686	1.0	1.0	.046*	1.0	1.0	.576
q.	The courseware is capable of synchronous delivery (real time) of course content	.386	.392	.050*	.155	.504	.439	565	.014*	361	.565	.109	1.0	.353	1.0	1.0	.361
r.	The courseware is capable of threaded discussion	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	.767	1.0	1.0	1.0

Note. * shows statistical significance at α .05

delivering courses using both blended/web-enhanced and totally online techniques?

Descriptive frequencies revealed that the majority of the respondents strongly agreed that the most preferred features present in Blackboard, First Class and LearningSpace and University Proprietary Courseware were (see Table 4):

1) the courseware is password protected,
2) the courseware is capable of retrieving Powerpoint files,
3) the courseware is capable of Web board discussion,
4) the courseware is capable of posting announcements/updates,
5) the courseware is capable of posting assignments,
6) students can submit assignments,
7) the courseware can create tests and quizzes,
8) the courseware can automatically grade true/false choice tests,
9) the courseware can automatically grade for multiple choice tests,
10) the courseware is capable of asynchronous delivery (delayed time) of the course content, and
11) the courseware is capable of threaded discussion.

The features examined were limited to Blackboard, First Class, Learning Space and University Proprietary because these were the coursewares identified by respondents as the most preferred (see Table 1).

Table 4

Distribution of the Features Preferred by the Faculty from the Courseware Package

FEATURES	Mean	SD
a) The courseware create a gradebook	4.53	.834
b) The courseware is password protected	5.00	.000
c) The courseware is capable of retrieving Powerpoint files	4.80	.414
d) The courseware is capable of retrieving audio files	4.47	.743
e) The courseware is capable of retrieving video files	4.47	.915
f) The courseware is capable of Web board discussion	4.93	.258
g) The courseware is capable of Virtual chat	4.00	1.069
h) It is easy to post Announcements/Updates	4.87	.352
i) It can store my Lectures	4.40	.910
j) I can post assignments	5.00	.000
k) I can post student information	4.54	.776
l) Students can submit assignments	4.67	.816
m) It can create tests and quizzes	4.64	.633
n) It can automatically grade true/false choice tests	4.87	.516
o) It can automatically grade for multiple choice tests	4.87	.516
p) The courseware is capable of asynchronous delivery (delayed time) of the course content	4.80	.516
q) The courseware is capable of synchronous delivery (real time) of course content	4.20	1.014
r) The courseware is capable of threaded discussion	4.80	.775

Note. n = 43. Means were calculated on the basis of the Likert scale 1-5, where 1=strongly disagree, 2=disagree, 3=neutral, 4=agree, and 5=strongly agree. SD = Standard Deviation

Research Question 5: What are the characteristics of the faculty who used the coursewares for both blended/web-enhanced and totally online instruction?

Descriptive frequencies showed that the majority (53.4%) of the respondents indicated that they had been teaching more than ten years. Fifty one percent of the respondents had used blended/web-enhanced instructional methods. The average number of years that the respondents (16.3%) had used blended/web-enhanced instructional technique was 2 years. Twenty eight percent of the respondents had experienced teaching totally online. Sixty five percent had no experience in teaching totally online. The average length of time that the respondents taught totally online was 1 year. Fifty eight percent of the respondents were female. Most of the respondents were between the ages of 40 to 59 years old (29%). The majority (51.2%) had an income level between $40,001.00 to $70,000.00 with the rank of assistant (27.9%) or associate professor (23.3%) (refer to Table 5).

Table 5

Frequency Distribution of Demographic Characteristics

Characteristic	Frequency	Percent
Number of years teaching, in general		
Less than 1 year	7	16.3
1-5 years	8	18.6
6-10 years	4	9.3
11-15 years	5	11.6
16-20 years	8	18.6
21-25 years	5	11.6
26 years or more	5	11.6
Usage of blended instructional technique		
Yes	22	51.2
No	21	48.8
Length of time teaching using blended instructional technique		
Less than 1 year	8	18.6
1 year	3	7.0
2 years	7	16.3
4 years	1	2.3
5 years	2	4.7
6 years or more	1	2.3
Usage of totally online instructional technique		
Yes	12	27.9
No	28	65.1
Length of time in teaching using totally online technique		
Less than 1 year	3	7.0
1 year	5	11.6
2 years	1	2.3
3 years	2	4.7
4 years	1	2.3
Gender		
Male	18	41.9
Female	25	58.1
Age range (in years)		
Less than 30 years old	1	2.3
30-39 years old	9	20.9
40-49 years old	15	34.9
50-59 years old	14	32.6
60 years old and above	2	4.7
Income level of the respondents		
$35,000 or less	9	20.9
$35,001 to $40,000	1	2.3
$40,001 to $50,000	8	18.6
$50,001 to $60,000	7	16.3
$60,001 to $70,000	7	16.3
$70,001 to $80,000	1	2.3
$80,001 or more	6	14.0
Rank		
Teaching assistant	7	16.3
Lecturer	1	2.3
Instructor	1	2.3
Assistant Professor	12	27.9
Associate Professor	10	23.3
Full Professor	7	16.3

Note. n = 43

CHAPTER V

SUMMARY, CONCLUSIONS, RECOMMENDATIONS

Summary

This study examined the importance of identifying and understanding courseware features that were best for supporting learning. This study reports information that may be useful for using technologies in the delivery of instruction. The specific research questions in this study were:

- What are the top three courseware most preferred by faculty for blended/web-enhanced and totally online instruction?
- What are the perceptions of the faculty on the top three types of courseware relating to usability, navigability, portability, and file interface?
- Is there an association between the courseware features and their relationship with (a) usability; (b) navigability; (c) file interface; and (d) portability?
- What features are preferred by faculty in creating and delivering courses using both blended/web-enhanced and totally online techniques?
- What are the characteristics of the faculty who use the courseware for both blended/web-enhanced and totally online instruction?

Distance Education Alliance (Great Plains IDEA) member-institutions. The faculty of the Great Plains IDEA institutions used the courseware for their online degrees, and they supported this study.

The questionnaire was designed by the researcher to get information that can be used to answer the research questions, obtain general information and answer demographics questions. The survey instrument consisted of three parts: important features, and courseware components along with faculty rationale for preferences; general information; and demographics. A total of 43 surveys were returned. This is 43% response rate. All the surveys were returned online.

Summary of Findings and Conclusion

The respondents agreed that Blackboard, First Class and Learning Space were the top three coursewares preferred for totally online course delivery. Blackboard, First Class and University Proprietary Courseware were the top three coursewares preferred for the blended/web-enhanced course delivery.

There was no significant differences in terms of usability, navigability, file interface and portability for each level of the top three courseware environments (Blackboard, First Class, Learning Space and University Proprietary Courseware) for both the blended and totally online instructional techniques. This means that respondents had an overwhelmingly positive response regarding these courseware features. The faculty unanimously responded that usability, navigability, file interface and portability were present in Blackboard, First Class, Learning Space and University Proprietary Courseware.

There was a statistically significant relationship between the courseware features and usability, navigability, file interface, and portability. The respondents agreed that Blackboard was easy to navigate particularly in an asynchronous (delayed time) mode. Blackboard can also grade true/false choice tests and multiple choice tests automatically. In addition, Blackboard can import or create a gradebook, post assignments, post student information, create tests and quizzes, and is capable of synchronous (real time) delivery of course content. Furthermore, the respondents agreed that course content can be checked and updated anytime, anywhere.

First Class can create a gradebook, retrieve video files, is capable of web board discussion, and is capable of synchronous (real time) delivery. Learning Space is capable of retrieving video files, archiving lectures, creating tests and quizzes, and is capable of importing Powerpoint files.

University Proprietary Courseware can create a gradebook, post announcements/updates, grade for multiple choice tests automatically and is capable of asynchronous delivery of the course content.

Regarding the features most preferred by respondents in creating and delivering courses using both blended/web-enhanced and totally online, the majority of the respondents strongly agreed that the courseware should have the following features: is password protected, capable of retrieving Powerpoint files, capable of Web board discussions, capable of posting announcements/updates, capable of posting assignments, students ability to submit assignments, ability to create tests and quizzes, ability to automatically grade for multiple choice tests, and capable of asynchronous (delayed time) delivery of the course content, and capable of threaded discussion.

The average respondent in this study was female (58.1%) with an age range between 40 to 59 years old (80%). The majority of the respondents (51.2%) had an income level between $40,001 and $70,000. In terms of rank or position, thirty percent (30%) were assistant professors. The study revealed that the average respondent had been teaching less than one year to five years (36%). The majority (51.2%) of the respondents used blended/hybrid/web-enhanced instructional techniques. Furthermore, the respondents had started using these techniques less than two years (54%) ago. Only thirty percent of the respondents used totally online instructional techniques. Of these respondents, ninety percent started using the totally online course delivery barely two years ago.

Overall Summary

The findings of this study suggest that the various types of coursewares in this study had many features that support learning however there was not one that stood out over the other because they did offer different things to different people. Three were definitely preferred for each delivery technique and some features within these courseware environments showed better usability, navigability, file interface and portability. More and more, courseware will become the vehicle on which educational institutions rely to support enhanced learning experiences for the distant students. Its features, capabilities, and availability have the potential to enrich all facets of the teaching and learning process. There were preferred coursewares, and there were definite features that teachers needed. The various coursewares provided strength in varying areas. As more teachers utilized courseware these features would become universal.

Recommendations

1. The Great Plains Interactive Distance Education Alliance should consider using more than one courseware.
2. This study should be replicated using students as the sample and should be replicated using a larger sample size of educators.
3. It would be interesting to also see secondary educators' preferences in contrast to baccalaureate educators' preferences relative to courseware features/preferences.
4. Conduct a study on the comparison of the cost of obtaining software on faculty and student preferences.
5. Conduct a study comparing two course management tools, Blackboard and WebCT.
6. The Great Plains IDEA should consider conducting a study on the interest in an inter-institutional online baccalaureate degree.

Conclusion

The findings that multiple coursewares supported learning relate to the findings of Kirschner and Paas (2001) and Stern (1993), there is not one single "silver bullet" distance technology that is ideal for all educational and training needs and learner requirements. One size does not fit all. The choice of technology and the mode of interaction depend upon the needs of the organization and the design requirements for the distance learning program. Information systems and technology are increasingly important in higher education. The Great Plains Interactive Distance Education Alliance could offer online undergraduate studies. There is definitely a need for this type of learning, and many institutions are already doing it well (Bleed, 2001). This presents tremendous opportunities for the school of hotel and restaurant administration including,

for instance, offering a Web-based master's degree in hotel and restaurant administration. Another potential opportunity is utilizing the Internet for the delivery of the courses taught for the students in HongKong and other parts of Asia, and any student who is bound by geography.

Blended technologies may be useful for the college considering the increasing enrollment and the limited classroom space. Classes may be scheduled in such a way that students do not have to come to campus everyday. Instruction may more frequently become a combination of traditional face-to-face instructional techniques and Web-based delivery. This may allow institutions to maximize the usage of available classroom space given today's economic environment. This may be the only way colleges and universities can keep up with the continuing population growth and the demands for lifelong learning (Bleed, 2001).

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APPENDIX A

ONLINE QUESTIONNAIRE

OKLAHOMA STATE UNIVERSITY

Evaluation of Courseware for the Online Delivery of Courses

October 24, 2002

Greetings:

The purpose of this study is to assess the important features, courseware components and rationale for preferences of the faculty of the Great Plains Interactive Distance Education Alliance (GPIDEA). It also examines the demographic characteristics of the faculty who delivered courses on the Internet using the courseware specified. Would you please take 5 minutes of your time and complete this survey by the November 10, 2002? Your input is extremely important to the outcome of this study.

Gina Fe G. Causin, a Master's candidate in the School of Hotel and Restaurant Administration, is conducting this study along with Dr. Lynda J. Martin, Assistant Professor of the School of Hotel and Restaurant Administration at Oklahoma State University. Your response is completely **voluntary** and will be kept strictly **confidential**. There is a code in the survey for tracking purposes only. The responses will be reported in aggregate form.

To participate in this survey, please go to: http://fp.okstate.edu/cheshrad/courseware.htm or scroll down to get the questionnaire. If you would like to receive the results of this study, please send an email to causin@okstate.edu with your name and e-mail address. If you have any questions or need further assistance, please call me at (405) 744-4582, or contact Sharon Bacher, Institutional Review Board Secretary, 204 Whitehurst, Oklahoma State University, Stillwater, OK 74078: (405) 744-5700.

I look forward to receiving your response. Thank you very much for participating in this study.

Sincerely,

Gina Fe G. Causin
Master's Candidate
School of Hotel and Restaurant Adm.
Oklahoma State University
E-mail: causin@okstate.edu

Lynda J. Martin, Ph.D
Assistant Professor
School of Hotel and Restaurant Adm.
Oklahoma State University
E-mail: lmartin@okstate.edu

Part I. Demographic Information

1.) Gender

- ○ Male
- ○ Female

2.) What is your age?

[ ]

3.) Which of the following broad categories best describes your annual income?

- ○ $35,000 or less
- ○ $35,001 to $40,000
- ○ $40,001 to $50,000
- ○ $50,001 to $60,000
- ○ $60,001 to $70,000
- ○ $70,001 to $80,000
- ○ $80,001 or more

4.) What is your rank?

- O Teaching Assistant
- O Visiting Professor
- O Adjunct Professor
- O Lecturer
- O Instructor
- O Assistant Professor
- O Associate Professor
- O Full Professor

Other, please specify [ ]

Part II. General Information

5.) How long have you been teaching?

[ ]

6.) Have you ever used a blended/hybrid/web-enhanced (using both the face-to-face and the Internet/Web) instructional technique?

- O Yes
- O No. ***If the answer is <u>No</u>, please proceed to question #10.***

7.) If yes, select the top 3 courseware that you used for your blended/hybrid/web-enhanced instruction.

☐ Blackboard	☐ Cold Fusion	☐ Dreamweaver
☐ ECollege	☐ First Class	☐ FrontPage
☐ LearningSpace	☐ University Proprietary Courseware	
☐ WebCT	Other, please specify [ ]	

8.) How long have you taught using the blended/hybrid/web-enhanced instructional technique?

[ ]

9.) What courses have you taught using the blended/hybrid/web-enhanced instructional technique?

[ ]

10.) Have you ever taught totally online (online means using only the computer and the Internet in delivering the course)?

- O Yes
- O No. ***If the answer is <u>No</u>, please click the submit button at the bottom of this page.***

11.) If yes, select the top 3 courseware that you used in creating your Internet/Web-based courses.

☐ Blackboard ☐ Cold Fusion ☐ Dreamweaver
☐ ECollege ☐ First Class ☐ FrontPage
☐ LearningSpace ☐ University Proprietary Courseware
☐ WebCT Other, please specify

12.) How long have you taught totally online?

13.) What Internet/Web-based courses have you taught?

14.) How did you first learn about Internet/Web-based instruction?

Part III. Important Features, Courseware Components and Rationale for Preferences of Faculty

15.) What are your perceptions of these types of courseware relating to usability, navigability, portability and file transfer? In the drop-down box for each courseware, please select one answer from the following choices: *5 for strongly agree; 4 for agree; 3 for neutral; 2 for disagree; 1 for strongly disagree; and 8 for not applicable.*

Features	Blackboard	Cold Fusion	Dream Weaver	ECollege	First Class	Front Page	Learning Space	University Proprietary Courseware	WebCT
Example: If you have used Blackboard and Dreamweaver: *The courseware is very user-friendly (usability. 8 is N/A for the others you have not used. You believe Blackboard is very user-friendly and Dreamweaver is not.*	8	8	8	5	8	8	2	8	8
a. The courseware is very user-friendly (usability)	5	5	5	5	5	5	5	5	5
b. It is easy to put the course content (usability)	5	5	5	5	5	5	5	5	5
c. The instructor can navigate the courseware program easily in creating the course (navigability)	5	5	5	5	5	5	5	5	5
d. It is easy to import files such as word, excel, access, clip art, Powerpoint, etc. within the courseware (file interface)	5	5	5	5	5	5	5	5	5
e. The faculty can check/update his/her course/lessons anytime, anywhere (portability)	5	5	5	5	5	5	5	5	5

16.) Please indicate whether you strongly agree or strongly disagree if the following features present in the courseware environments are important for the online delivery of your course?

Features	Strongly Agree	Agree	Neutral	Disagree
a. The courseware create a grade book	O	O	O	O
b. The courseware is password protected	O	O	O	O
c. The courseware is capable of retrieving Powerpoint files	O	O	O	O
d. The courseware is capable of retrieving audio files	O	O	O	O
e. The courseware is capable of retrieving video files	O	O	O	O
f. The courseware is capable of Web board discussion	O	O	O	O
g. The courseware is capable of virtual chat	O	O	O	O
h. It is easy to post announcements/updates	O	O	O	O
i. It can store my lectures	O	O	O	O
j. I can post assignments	O	O	O	O
k. I can post student information	O	O	O	O
l. Students can submit assignments	O	O	O	O
m. It can create tests and quizzes	O	O	O	O
n. It can automatically grade true/false choice tests	O	O	O	O
o. It can automatically grade for multiple choice tests	O	O	O	O
p. The courseware is capable of asynchronous delivery (delayed time) of course content	O	O	O	O
q. The courseware is capable of synchronous delivery (real time) of course content	O	O	O	O
r. The courseware is capable of threaded discussion	O	O	O	O

Thank you very much for your participation!

[redacted]

Gina Fe G. Causin; causin@okstate.edu

Revised: 11/01/02

APPENDIX B

PILOT QUESTIONNAIRE

PILOT QUESTIONNAIRE

Part I. General Information

1. How many years have you been teaching?
    a. 1 year below
    b. 2 –6 years
    c. 7 – 11 years
    d. 12 – 16 years
    e. More than 16 years

2. How many years have you been teaching online?
    a. 1 year below
    b. 2 – 6 years
    c. 7 – 11 years
    d. 12 – 16 years
    e. More than 16 years

3. What courseware did you use in creating your classes online? (Select all that apply)
    a. WebCT
    b. ClassNet
    c. K-State Online
    d. First Class
    e. Blackboard
    f. eCollege
    g. FrontPage 2000
    h. Dream Weaver
    i. Cold Fusion
    j. LearningSpace

Part II. Please select/check the box of the appropriate answer. Where:

1 = Strongly disagree
2 = Disagree
3 = Neutral
4 = Agree
5 = Strongly agree

4. Courseware Management

Courseware Tools	1	2	3	4	5
a. Easy to develop					
b. easy to put the course content					
c. The instructor can navigate easily while creating the course					
d. The instructor owns the course created					

5. What are the features present in the courseware selected in question #3?

Courseware Features	1	2	3	4	5
a. Can create gradebook					
b. Password protected					
c. Multimedia: Powerpoint					
d. Multimedia: audio					
e. Multimedia: video					
f. Web board discussion					
g. Virtual chat					
h. Announcements/Updates					
i. Lecture storage					
j. Post assignments					
k. Post student information					
l. Web interface					
m. Submit assignments					
n. Create tests and quizzes					
o. Automatic grading for true/false choice tests					
p. Automatic grading for multiple choice tests					
q. Asynchronous delivery (delayed time)					
r. Synchronous delivery (real time)					
s. Threaded discussion capability					

Part III. Demographic Information

6. Gender
   a. Male
   b. Female

7. Which of the following age category describes you?
   a. 35 or younger
   b. 36 – 65 years old
   c. 66 or older

8. Which of the following broad categories best describes your annual income?
   a. $35,000 or less
   b. $35,001 to $50,000
   c. $50,001 to $65,000
   d. $65,001 to $80,000
   e. $80,001 or more

Thank you very much for your participation!

APPENDIX C

APPROVAL FORM FOR RESEARCH INVOLVING HUMAN SUBJECTS

Oklahoma State University
Institutional Review Board

Protocol Expires: 10/23/2003

Date: Thursday, October 24, 2002 **IRB Application No** HE0322

Proposal Title: EVALUATION OF COURSEWARE FOR THE ONLINE DELIVERY OF COURSES

Principal Investigator(s):

Gina Causin
101 HES
Stillwater, OK 74078

Lynda J. Martin
210 HESW
Stillwater, OK 74078

Reviewed and Processed as: Exempt

Approval Status Recommended by Reviewer(s): Approved

Dear PI :

Your IRB application referenced above has been approved for one calendar year. Please make note of the expiration date indicated above. It is the judgment of the reviewers that the rights and welfare of individuals who may be asked to participate in this study will be respected, and that the research will be conducted in a manner consistent with the IRB requirements as outlined in section 45 CFR 46.

As Principal Investigator, it is your responsibility to do the following:

1. Conduct this study exactly as it has been approved. Any modifications to the research protocol must be submitted with the appropriate signatures for IRB approval.
2. Submit a request for continuation if the study extends beyond the approval period of one calendar year. This continuation must receive IRB review and approval before the research can continue.
3. Report any adverse events to the IRB Chair promptly. Adverse events are those which are unanticipated and impact the subjects during the course of this research; and
4. Notify the IRB office in writing when your research project is complete.

Please note that approved projects are subject to monitoring by the IRB. If you have questions about the IRB procedures or need any assistance from the Board, please contact Sharon Bacher, the Executive Secretary to the IRB, in 415 Whitehurst (phone: 405-744-5700, sbacher@okstate.edu).

Sincerely,

Carol Olson, Chair
Institutional Review Board

APPENDIX D

CODEBOOK

Evaluation of Selected Courseware For Online Delivery of Distance Education Courses

Codebook

Variable Name: Responum
Variable Label: Respondent Number
Values and Values Label: Range

Variable Name: q1gender
Variable Label: Gender
Values and Values Label:
1 = Male
2 = Female
9 = Missing/No Answer

Variable Name: q2age
Variable Label: What is your age?
Values and Values Label:
1 = Less than 30 years old
2 = 30-39 years old
3 = 40-49 years old
4 = 50-59 years old
5 = 60 years and above
9 = Missing/No Answer

Variable Name: q3income
Variable Label: Which if the following broad categories best describes your income?
Values and Values Label:
1 = $35,000 or less
2 = $35,001 to $40,000
3 = $40,001 to $50,000
4 = $50,001 to $60,000
5 = $60,001 to $70,000
6 = $70,001 to $80,000
7 = $80,001 or more
9 = Missing/No Answer

Variable Name: q4rank
Variable Label: What is your rank?
Values and Values Label:
1 = Teaching Assistant
2 = Visiting Professor
3 = Adjunct Professor
4 = Lecturer
5 = Instructor
6 = Assistant Professor
7 = Associate Professor
8 = Full Professor
9 = Missing/No Answer

Variable Name: q4other
Variable Label: Other, please specify
Values and Values Label: String

Variable Name: q5length
Variable Label: How long have you been teaching?
Values and Values Label:
1 = Less than 1 year
2 = 1-5 years
3 = 6-10 years
4 = 11-15 years
5 = 16-20 years
6 = 21-25 years
7 = 26 years or more
9 = Missing/No Answer

Variable Name: q6blend
Variable Label: Have you ever used a blended/hybrid/web-enhanced instruction?
Values and Values Label:
1 = No
2 = Yes
9 = Missing/No Answer

Variable Name: q7bb
Variable Label: Blackboard
Values and Values Label:
0 = Not Selected
1 = Selected
9 = Missing/No Answer

Variable Name: q7cf
Variable Label: Cold Fusion
Values and Values Label:
0 = Not Selected
1 = Selected
9 = Missing/No Answer

Variable Name: q7dw
Variable Label: Dreamweaver
Values and Values Label:
0 = Not Selected
1 = Selected
9 = Missing/No Answer

Variable Name: q7ec
Variable Label: eCollege
Values and Values Label:
0 = Not Selected
1 = Selected
9 = Missing/No Answer

Variable Name: q7fc
Variable Label: First Class
Values and Values Label:
0 = Not Selected
1 = Selected
9 = Missing/No Answer

Variable Name: q7fp
Variable Label: FrontPage
Values and Values Label:
0 = Not Selected

1 = Selected
9 = Missing/No Answer

Variable Name: q7ls
Variable Label: LearningSpace
Values and Values Label:
0 = Not Selected
1 = Selected
9 = Missing/No Answer

Variable Name: q7upc
Variable Label: University Proprietary Courseware
Values and Values Label:
0 = Not Selected
1 = Selected
9 = Missing/No Answer

Variable Name: q7wct
Variable Label: WebCT
Values and Values Label:
0 = Not Selected
1 = Selected
9 = Missing/No Answer

Variable Name: q7other
Variable Label: Other courseware
Values and Values Label: String

Variable Name: q8ltblnd
Variable Label: How long have you taught using the blended/web-enhanced instruction?
Values and Values Label:
0 = Less than 1 year
1 = 1 year
2 = 2 years
3 = 3 years
4 = 4 years
5 = 5 years
6 = 6 years or more
9 = Missing/No Answer

Variable Name: q9course
Variable Label: What courses have you taught using the blended/hybrid/web-enhanced?
Values and Values Label: String

Variable Name: q10nline
Variable Label: Have you ever taught totally online?
Values and Values Label:
1 = No
2 = Yes
9 = Missing/No Answer

Variable Name: q11bb
Variable Label: Blackboard
Values and Values Label:
0 = Not Selected
1 = Selected
9 = Missing/No Answer

Variable Name: q11cf
Variable Label: Cold Fusion
Values and Values Label:
0 = Not Selected

1 = Selected
9 = Missing/No Answer

Variable Name: q11dw
Variable Label: Dreamweaver
Values and Values Label:
0 = Not Selected
1 = Selected
9 = Missing/No Answer

Variable Name: q11ec
Variable Label: eCollege
Values and Values Label:
0 = Not Selected
1 = Selected
9 = Missing/No Answer

Variable Name: q11fc
Variable Label: First Class
Values and Values Label:
0 = Not Selected
1 = Selected
9 = Missing/No Answer

Variable Name: q11fp
Variable Label: FrontPage
Values and Values Label:
0 = Not Selected
1 = Selected
9 = Missing/No Answer

Variable Name: q11ls
Variable Label: LearningSpace
Values and Values Label:
0 = Not Selected
1 = Selected
9 = Missing/No Answer

Variable Name: q11upc
Variable Label: University Proprietary Courseware
Values and Values Label:
0 = Not Selected
1 = Selected
9 = Missing/No Answer

Variable Name: q11wct
Variable Label: WebCT
Values and Values Label:
0 = Not Selected
1 = Selected
9 = Missing/No Answer

Variable Name: q11other
Variable Label: Other courseware
Values and Values Label: String
Variable Name: q12ltonl
Variable Label: How long have you taught using the totally online instruction?
Values and Values Label:
0 = Less than 1 year
1 = 1 year
2 = 2 years
3 = 3 years

4 = 4 years
5 = 5 years
6 = 6 years or more
9 = Missing/No Answer

Variable Name: q13course
Variable Label: What courses have you taught using the totally online technique?
Values and Values Label: String

Variable Name: q14learn
Variable Label: How did you first learn about Internet/Web-based instruction?
Values and Values Label: String

Variable Name: q15abb
Variable Label: The courseware is user-friendly (usability).
Values and Values Label:
1 = Strongly Disagree
2 = Disagree
3 = Neutral
4 = Agree
5 = Strongly Agree
9 = Missing/No Answer

Variable Name: q15bbb
Variable Label: It is easy to put the course content (usability).
Values and Values Label:
1 = Strongly Disagree
2 = Disagree
3 = Neutral
4 = Agree
5 = Strongly Agree
9 = Missing/No Answer

Variable Name: q15cbb
Variable Label: The instructor can navigate the courseware program easily (navigability).
Values and Values Label:
1 = Strongly Disagree
2 = Disagree
3 = Neutral
4 = Agree
5 = Strongly Agree
9 = Missing/No Answer

Variable Name: q15dbb
Variable Label: It is easy to import files such as word, excel, access, etc. (navigability).
Values and Values Label:
1 = Strongly Disagree
2 = Disagree
3 = Neutral
4 = Agree
5 = Strongly Agree
9 = Missing/No Answer

Variable Name: q15ebb
Variable Label: The faculty can check course/lessons anytime, anywhere (portability).
Values and Values Label:
1 = Strongly Disagree
2 = Disagree
3 = Neutral
4 = Agree
5 = Strongly Agree
9 = Missing/No Answer

Variable Name: q15acf
Variable Label: The courseware is user-friendly (usability).
Values and Values Label:
1 = Strongly Disagree
2 = Disagree
3 = Neutral
4 = Agree
5 = Strongly Agree
9 = Missing/No Answer

Variable Name: q15bcf
Variable Label: It is easy to put the course content (usability).
Values and Values Label:
1 = Strongly Disagree
2 = Disagree
3 = Neutral
4 = Agree
5 = Strongly Agree
9 = Missing/No Answer

Variable Name: q15ccf
Variable Label: The instructor can navigate the courseware program easily (navigability).
Values and Values Label:
1 = Strongly Disagree
2 = Disagree
3 = Neutral
4 = Agree
5 = Strongly Agree
9 = Missing/No Answer

Variable Name: q15dcf
Variable Label: It is easy to import files such as word, excel, access, etc. (navigability).
Values and Values Label:
1 = Strongly Disagree
2 = Disagree
3 = Neutral
4 = Agree
5 = Strongly Agree
9 = Missing/No Answer

Variable Name: q15ecf
Variable Label: The faculty can check course/lessons anytime, anywhere (portability).
Values and Values Label:
1 = Strongly Disagree
2 = Disagree
3 = Neutral
4 = Agree
5 = Strongly Agree
9 = Missing/No Answer

Variable Name: q15adw
Variable Label: The courseware is user-friendly (usability).
Values and Values Label:
1 = Strongly Disagree
2 = Disagree
3 = Neutral
4 = Agree
5 = Strongly Agree
9 = Missing/No Answer

Variable Name: q15bdw

Variable Label: It is easy to put the course content (usability).
Values and Values Label:

1 = Strongly Disagree
2 = Disagree
3 = Neutral
4 = Agree
5 = Strongly Agree
9 = Missing/No Answer

Variable Name: q15cdw
Variable Label: The instructor can navigate the courseware program easily (navigability).
Values and Values Label:

1 = Strongly Disagree
2 = Disagree
3 = Neutral
4 = Agree
5 = Strongly Agree
9 = Missing/No Answer

Variable Name: q15ddw
Variable Label: It is easy to import files such as word, excel, access, etc. (navigability).
Values and Values Label:

1 = Strongly Disagree
2 = Disagree
3 = Neutral
4 = Agree
5 = Strongly Agree
9 = Missing/No Answer

Variable Name: q15edw
Variable Label: The faculty can check course/lessons anytime, anywhere (portability).
Values and Values Label:

1 = Strongly Disagree
2 = Disagree
3 = Neutral
4 = Agree
5 = Strongly Agree
9 = Missing/No Answer

Variable Name: q15aec
Variable Label: The courseware is user-friendly (usability).
Values and Values Label:

1 = Strongly Disagree
2 = Disagree
3 = Neutral
4 = Agree
5 = Strongly Agree
9 = Missing/No Answer

Variable Name: q15bec
Variable Label: It is easy to put the course content (usability).
Values and Values Label:

1 = Strongly Disagree
2 = Disagree
3 = Neutral
4 = Agree
5 = Strongly Agree
9 = Missing/No Answer

Variable Name: q15cec
Variable Label: The instructor can navigate the courseware program easily (navigability).
Values and Values Label:

1 = Strongly Disagree
2 = Disagree
3 = Neutral
4 = Agree
5 = Strongly Agree
9 = Missing/No Answer

Variable Name: q15dec
Variable Label: It is easy to import files such as word, excel, access, etc. (navigability).
Values and Values Label:
1 = Strongly Disagree
2 = Disagree
3 = Neutral
4 = Agree
5 = Strongly Agree
9 = Missing/No Answer

Variable Name: q15eec
Variable Label: The faculty can check course/lessons anytime, anywhere (portability).
Values and Values Label:
1 = Strongly Disagree
2 = Disagree
3 = Neutral
4 = Agree
5 = Strongly Agree
9 = Missing/No Answer

Variable Name: q15afc
Variable Label: The courseware is user-friendly (usability).
Values and Values Label:
1 = Strongly Disagree
2 = Disagree
3 = Neutral
4 = Agree
5 = Strongly Agree
9 = Missing/No Answer

Variable Name: q15bfc
Variable Label: It is easy to put the course content (usability).
Values and Values Label:
1 = Strongly Disagree
2 = Disagree
3 = Neutral
4 = Agree
5 = Strongly Agree
9 = Missing/No Answer

Variable Name: q15cfc
Variable Label: The instructor can navigate the courseware program easily (navigability).
Values and Values Label:
1 = Strongly Disagree
2 = Disagree
3 = Neutral
4 = Agree
5 = Strongly Agree
9 = Missing/No Answer

Variable Name: q15dfc
Variable Label: It is easy to import files such as word, excel, access, etc. (navigability).
Values and Values Label:
1 = Strongly Disagree
2 = Disagree

3 = Neutral
4 = Agree
5 = Strongly Agree
9 = Missing/No Answer

Variable Name: q15efc
Variable Label: The faculty can check course/lessons anytime, anywhere (portability).
Values and Values Label:
1 = Strongly Disagree
2 = Disagree
3 = Neutral
4 = Agree
5 = Strongly Agree
9 = Missing/No Answer

Variable Name: q15afp
Variable Label: The courseware is user-friendly (usability).
Values and Values Label:
1 = Strongly Disagree
2 = Disagree
3 = Neutral
4 = Agree
5 = Strongly Agree
9 = Missing/No Answer

Variable Name: q15bfp
Variable Label: It is easy to put the course content (usability).
Values and Values Label:
1 = Strongly Disagree
2 = Disagree
3 = Neutral
4 = Agree
5 = Strongly Agree
9 = Missing/No Answer

Variable Name: q15cfp
Variable Label: The instructor can navigate the courseware program easily (navigability).
Values and Values Label:
1 = Strongly Disagree
2 = Disagree
3 = Neutral
4 = Agree
5 = Strongly Agree
9 = Missing/No Answer

Variable Name: q15dfp
Variable Label: It is easy to import files such as word, excel, access, etc. (navigability).
Values and Values Label:
1 = Strongly Disagree
2 = Disagree
3 = Neutral
4 = Agree
5 = Strongly Agree
9 = Missing/No Answer

Variable Name: q15efp
Variable Label: The faculty can check course/lessons anytime, anywhere (portability).
Values and Values Label:
1 = Strongly Disagree
2 = Disagree
3 = Neutral
4 = Agree

5 = Strongly Agree
9 = Missing/No Answer

Variable Name: q15als
Variable Label: The courseware is user-friendly (usability).
Values and Values Label:
1 = Strongly Disagree
2 = Disagree
3 = Neutral
4 = Agree
5 = Strongly Agree
9 = Missing/No Answer

Variable Name: q15bls
Variable Label: It is easy to put the course content (usability).
Values and Values Label:
1 = Strongly Disagree
2 = Disagree
3 = Neutral
4 = Agree
5 = Strongly Agree
9 = Missing/No Answer

Variable Name: q15cls
Variable Label: The instructor can navigate the courseware program easily (navigability).
Values and Values Label.
1 = Strongly Disagree
2 = Disagree
3 = Neutral
4 = Agree
5 = Strongly Agree
9 = Missing/No Answer

Variable Name: q15dls
Variable Label: It is easy to import files such as word, excel, access, etc. (navigability).
Values and Values Label:
1 = Strongly Disagree
2 = Disagree
3 = Neutral
4 = Agree
5 = Strongly Agree
9 = Missing/No Answer

Variable Name: q15els
Variable Label: The faculty can check course/lessons anytime, anywhere (portability).
Values and Values Label:
1 = Strongly Disagree
2 = Disagree
3 = Neutral
4 = Agree
5 = Strongly Agree
9 = Missing/No Answer

Variable Name: q15aupc
Variable Label: The courseware is user-friendly (usability).
Values and Values Label:
1 = Strongly Disagree
2 = Disagree
3 = Neutral
4 = Agree
5 = Strongly Agree
9 = Missing/No Answer

Variable Name: q15bupc
Variable Label: It is easy to put the course content (usability).
Values and Values Label:
1 = Strongly Disagree
2 = Disagree
3 = Neutral
4 = Agree
5 = Strongly Agree
9 = Missing/No Answer

Variable Name: q15cupc
Variable Label: The instructor can navigate the courseware program easily (navigability).
Values and Values Label:
1 = Strongly Disagree
2 = Disagree
3 = Neutral
4 = Agree
5 = Strongly Agree
9 = Missing/No Answer

Variable Name: q15dupc
Variable Label: It is easy to import files such as word, excel, access, etc. (navigability).
Values and Values Label:
1 = Strongly Disagree
2 = Disagree
3 = Neutral
4 = Agree
5 = Strongly Agree
9 = Missing/No Answer

Variable Name: q15eupc
Variable Label: The faculty can check course/lessons anytime, anywhere (portability).
Values and Values Label:
1 = Strongly Disagree
2 = Disagree
3 = Neutral
4 = Agree
5 = Strongly Agree
9 = Missing/No Answer

Variable Name: q15awct
Variable Label: The courseware is user-friendly (usability).
Values and Values Label:
1 = Strongly Disagree
2 = Disagree
3 = Neutral
4 = Agree
5 = Strongly Agree
9 = Missing/No Answer

Variable Name: q15bwct
Variable Label: It is easy to put the course content (usability).
Values and Values Label:
1 = Strongly Disagree
2 = Disagree
3 = Neutral
4 = Agree
5 = Strongly Agree
9 = Missing/No Answer

Variable Name: q15cwct

Variable Label: The instructor can navigate the courseware program easily (navigability).
Values and Values Label:

1 = Strongly Disagree
2 = Disagree
3 = Neutral
4 = Agree
5 = Strongly Agree
9 = Missing/No Answer

Variable Name: q15dwct
Variable Label: It is easy to import files such as word, excel, access, etc. (navigability).
Values and Values Label:

1 = Strongly Disagree
2 = Disagree
3 = Neutral
4 = Agree
5 = Strongly Agree
9 = Missing/No Answer

Variable Name: q15ewct
Variable Label: The faculty can check course/lessons anytime, anywhere (portability).
Values and Values Label:

1 = Strongly Disagree
2 = Disagree
3 = Neutral
4 = Agree
5 = Strongly Agree
9 = Missing/No Answer

Variable Name: q16a
Variable Label: The courseware create a gradebook
Values and Values Label:

1 = Strongly Disagree
2 = Disagree
3 = Neutral
4 = Agree
5 = Strongly Agree
8 = Not Applicable (NA)
9 = Missing/No Answer

Variable Name: q16b
Variable Label: The courseware is password-protected
Values and Values Label:

1 = Strongly Disagree
2 = Disagree
3 = Neutral
4 = Agree
5 = Strongly Agree
8 = Not Applicable (NA)
9 = Missing/No Answer

Variable Name: q16c
Variable Label: The courseware is capable of retrieving Powerpoint files
Values and Values Label:

1 = Strongly Disagree
2 = Disagree
3 = Neutral
4 = Agree
5 = Strongly Agree
8 = Not Applicable (NA)
9 = Missing/No Answer

Variable Name: q16d
Variable Label: The courseware is capable of retrieving audio files
Values and Values Label:
1 = Strongly Disagree
2 = Disagree
3 = Neutral
4 = Agree
5 = Strongly Agree
8 = Not Applicable (NA)
9 = Missing/No Answer

Variable Name: q16e
Variable Label: The courseware is capable of retrieving video files
Values and Values Label:
1 = Strongly Disagree
2 = Disagree
3 = Neutral
4 = Agree
5 = Strongly Agree
8 = Not Applicable (NA)
9 = Missing/No Answer

Variable Name: q16f
Variable Label: The courseware is capable of web-board discussion
Values and Values Label:
1 = Strongly Disagree
2 = Disagree
3 = Neutral
4 = Agree
5 = Strongly Agree
8 = Not Applicable (NA)
9 = Missing/No Answer

Variable Name: q16g
Variable Label: The courseware is capable of virtual chat
Values and Values Label:
1 = Strongly Disagree
2 = Disagree
3 = Neutral
4 = Agree
5 = Strongly Agree
8 = Not Applicable (NA)
9 = Missing/No Answer

Variable Name: q16h
Variable Label: It is easy to post announcements/updates
Values and Values Label:
1 = Strongly Disagree
2 = Disagree
3 = Neutral
4 = Agree
5 = Strongly Agree
8 = Not Applicable (NA)
9 = Missing/No Answer

Variable Name: q16i
Variable Label: It can store my lectures
Values and Values Label:
1 = Strongly Disagree
2 = Disagree
3 = Neutral
4 = Agree

5 = Strongly Agree
8 = Not Applicable (NA)
9 = Missing/No Answer

Variable Name: q16j
Variable Label: I can post assignments
Values and Values Label:
1 = Strongly Disagree
2 = Disagree
3 = Neutral
4 = Agree
5 = Strongly Agree
8 = Not Applicable (NA)
9 = Missing/No Answer

Variable Name: q16k
Variable Label: I can post student information
Values and Values Label:
1 = Strongly Disagree
2 = Disagree
3 = Neutral
4 = Agree
5 = Strongly Agree
8 = Not Applicable (NA)
9 = Missing/No Answer

Variable Name: q16l
Variable Label: Students can submit assignments
Values and Values Label:
1 = Strongly Disagree
2 = Disagree
3 = Neutral
4 = Agree
5 = Strongly Agree
8 = Not Applicable (NA)
9 = Missing/No Answer

Variable Name: q16m
Variable Label: It can create tests and quizzes
Values and Values Label:
1 = Strongly Disagree
2 = Disagree
3 = Neutral
4 = Agree
5 = Strongly Agree
8 = Not Applicable (NA)
9 = Missing/No Answer

Variable Name: q16n
Variable Label: It can automatically grade true/false choice tests
Values and Values Label:
1 = Strongly Disagree
2 = Disagree
3 = Neutral
4 = Agree
5 = Strongly Agree
8 = Not Applicable (NA)
9 = Missing/No Answer

Variable Name: q16o
Variable Label: It can automatically grade multiple choice tests
Values and Values Label:

1 = Strongly Disagree
2 = Disagree
3 = Neutral
4 = Agree
5 = Strongly Agree
8 = Not Applicable (NA)
9 = Missing/No Answer

Variable Name: q16p
Variable Label: The courseware is capable of asynchronous delivery of course content
Values and Values Label:
1 = Strongly Disagree
2 = Disagree
3 = Neutral
4 = Agree
5 = Strongly Agree
8 = Not Applicable (NA)
9 = Missing/No Answer

Variable Name: q16q
Variable Label: The courseware is capable of synchronous delivery of course content
Values and Values Label:
1 = Strongly Disagree
2 = Disagree
3 = Neutral
4 = Agree
5 = Strongly Agree
8 = Not Applicable (NA)
9 = Missing/No Answer

Variable Name: q16r
Variable Label: The courseware is capable of threaded discussion
Values and Values Label:
1 = Strongly Disagree
2 = Disagree
3 = Neutral
4 = Agree
5 = Strongly Agree
8 = Not Applicable (NA)
9 = Missing/No Answer

APPENDIX E

VITA

(2)

VITA

Gina Fe Garcia-Causin

Candidate for the Degree of

Master of Science

Thesis: EVALUATION OF COURSEWARE FOR ONLINE DELIVERY OF DISTANCE EDUCATION COURSES

Major Field: Hospitality Administration

Biographical:

Personal Data: Born in Malaybalay, Bukidnon, Philippines. November 28, 1969; daughter of Bernardo and Elsie Garcia. Married to Robert Raymund D. Causin, July 20, 1996.

Education: Received Bachelor of Science degree on Hotel and Restaurant Management from Mindanao State University, Marawi City, Philippines in April 1991. Completed the academic requirements in Master in Public Administration from Ateneo de Cagayan Xavier University. Completed the requirements for the Master of Science degree with a major in Hospitality Administration at Oklahoma State University in May, 2003.

Experience: Business center operator and a front desk assistant at Philtown Hotel. Municipal Trade and Industry Officer, Department of Trade and Industry. Project Officer of the Talakag Resettlement Project and Odiongan Hydro Project, Xavier Science Foundation. Office Manager GEM Project, LBII - USAID. In-country Coordinator of the worldwide Farmer-to-Farmer Program in the Philippines, Land O'Lakes IDD. Part-time instructor of the Department of Hotel and Restaurant Management, Southern de Oro Philippines College. Campus Coordinator of the OSU Great Plains IDEA

Professional Organizations: President of the Graduate Students in Human Environmental Sciences, Treasurer of the HRAD Graduate Students Association, Secretary of the Eta Sigma Delta, Representative to the GPSGA, Member of the Kappa Omicron Nu, International CHRIE.