EXAMINATION OF WEB-BASED TEACHING STRATEGIES AT THE UNIVERSITY OF NORTH TEXAS

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This study examined the degree to which University of North Texas (UNT) instructors involved in Web-based instruction are implementing teaching strategies as identified in Chickering and Gamson's (1987) model, seven principles for good practice in undergraduate education. In addition, the study examined training received by instructors in developing and delivering a Web-based course and the relationships between their training and reported use of the teaching strategies in the seven principles. The study also examined the relationship between the number of Web-based courses taught and the use of the teaching strategies.

Seventy-two surveys were distributed, with a return rate of 90.3%. Results of the first three research questions were as follows: (a) Self-taught (49%) and UNT Center for Distributed Learning (CDL) (31%) were the most frequently used types of training in preparation for teaching a Web-based course, whereas peer taught (17%) and conferences/workshops (3%) were the least used; (b) the average number of Web-based courses taught by the instructors was $M = 8.26$; and (c) the most frequently used principles were "Gives prompt feedback" and "Communicates high expectations."

UNT CDL assists faculty with the development and delivery of online courses, offering a series of training courses to better prepare faculty to use Web-CT.

The relationship between the training received and the instructors' reported use of the teaching strategies was examined using correlations and a MANOVA analysis. The correlations resulted in both positive and negative relationships between the four

types of training and three of the principles. The MANOVA procedure found significant differences between self taught instructors and instructors that received most of their training through the CDL in relation to the principle “Respects diverse talents and ways of learning.”

The final research question examined the relationship between the number of courses taught and instructors’ reported use of the teaching strategies, revealing that a positive correlation existed between the number of courses taught and four of the seven principles.

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CHAPTER 1

INTRODUCTION

Background

Distance learners are the fastest growing population of higher education students in the United States (Southern Regional Education Board [SREB], 2001). Byun, Hallett, and Essex (2000) contended that the largest growth area in distance education has been those programs that offer courses wholly or primarily online.

Indeed, accredited distance learning opportunities are growing at a rapid pace. The National Center for Education Statistics [NCES] (1999) revealed that the percentage of four-year institutions offering distance learning courses grew from 62% in fall 1995 to 79% in 1997 to 1998. More recent statistics available from NCES (2003) identified that, in 2000-2001, 89% of public four-year institutions offered distance education courses. From 1995 to 1998, enrollment in distance education courses approximately doubled for all postsecondary degree-granting institutions (NCES, 1999). In the academic year of 2000-2001, it was estimated that over 3 million students were enrolled in distance education courses offered by two-year and four-year institutions, with two-year public institutions having the largest enrollments, 48%. Four-year public institutions had 31% of the total enrollments (NCES, 2003). The NCES (2003) study further revealed that 48% of the four-year public institutions that offer distance education courses were likely to have degree programs totally through distance education.

Aoki and Pogroszewski (1998) reported three factors that fuel the growth of distance learning in higher education:

1. Institutions are looking to increase enrollment by attracting non-resident students;
2. There are growing needs of adult learners to acquire new skills and college credits while overcoming the constraints of time and distance; and
3. The development of new technologies is making the delivery of distance learning courses more attractive. (para. 1)

In addition, Wilson (1998) reported the following:

> There are many factors mandating the delivery of distance learning on the WWW (World Wide Web): school restructuring, the Federal government's commitment to the development of the NII (National Information Infrastructure) as well as the connection of every classroom to the Internet, and the creation of the virtual universities by state governments. (para. 3)

Howell, Williams, and Lindsay (2003) contended that distance education programs are becoming more necessary because the higher education infrastructure is unable to accommodate the growing college-aged population and enrollments.

According to a study of all postsecondary education institutes by NCES (2000), institutions believe that distance education increases student access to courses, increases enrollment, and improves the quality of courses offered. Butner, Smith, and Murray (1999) summarized the benefits of distance education as (a) being flexible in regards to when and where it can be accessed, (b) accessing more resources, (c) increasing learning and teaching strategies, and (d) individualizing the learning process.

In many universities, top-down pressure mandates the delivery of Web-based courses, and this creates a problem because the responsibility of developing and

delivering the courses is bottom-up – becoming the responsibility of many unprepared instructors (Wilson, 1998). Consequently, as universities move more of their courses to Web-based learning, it is important that instructors have the skills to design and deliver Web-based courses. In support of this, McKenzie, Mims, Bennett, and Waugh (2000) reported that faculty plays the critical role in successfully implementing Web-based courses. Indeed, “the need for faculty development, support and training is increasing” (Howell et al., 2003, p. 5).

Thus, online instructors need training and direction in how to use this form of distance learning. Rockwell, Furgason, and Marx’s study (2000) identified research and evaluation priorities for distance education in one midwestern state, and it concluded that teachers’ training needs ranked high as an area of concern.

> Emphasis needs to be placed on identifying effective teacher competencies, along with the training needed to support faculty development. Identifying the amount and type of support or assistance teachers need, as well as resources required for various distance teaching approaches and course development, is important. (para. 8)

In an interview, George Boggs, president of the American Association of Community Colleges, emphasized that leaders of institutions must remember that professional development should be offered for faculty and staff if the goal is for them to use technology (Foster, 2000). Boggs continued by stating that training could be as expensive as the technology, or even more expensive (Foster, 2000). In fact, the Texas Higher Education Coordinating Board (1997) included in their principles of good practice

that institutions offering electronic courses should “assure appropriate training for faculty who teach via the use of technology” (Institutional Context and Commitment section).

SREB’s policy report (2001) contended that it takes technical competence along with effective pedagogy to teach in an online environment.

> There are ample opportunities for faculty to learn how to use technology tools, but many do not address classroom management issues nor do they discuss teaching strategies. Faculty need training not only in their academic discipline and course development software, but also in instructional design. It is important for faculty to be able to apply appropriate pedagogy to determine student learning needs and the appropriate delivery format for meeting those needs. (p. 2)

Shin’s (2000) interview with Michael Moore, known as a pioneer in the study of distance education, stressed that, if distance education is done well, the instructor organizes and teaches differently. However, too often instructors add the Internet to their teaching without making changes and call themselves distance educators. An example of this is Web mounting as a common practice. “’Web mounted’ is defined here as converting text-based materials to HTML for Web-based delivery without significant redesign of the teaching and learning strategies” (Ellis & Phelps, 2000, p. 35). Another common practice is making the course “Web enhanced.” Ellis and Phelps defined Web enhanced as “adding email or Web-based interactivity to either a Web mounted course or paper-based distance education course without significant redesign of teaching and learning strategies” (p.35). Fraser (1999) strengthened this assertion in that some instructors view the Web as changing access to the course, not pedagogy. He

continued that there is little pedagogical value if the same course is distributed through a computer rather than paper.

Admittedly, for a course to be successful, the instructional needs of the students must be focused upon rather than the technology itself. Instructors need to move from "teacher-centered" to "student-centered," learning new skills such as (a) identifying learner characteristics; (b) adapting teaching strategies to deliver instruction; and (c) evaluating student achievement, attitudes, and perceptions (Sherry, 1996). Indeed, the transition can challenge instructors to develop new instructional approaches (League for Innovation in the Community College, 1999) that are "more learner-centered, non-linear, and self-directed" (Howell et al., 2003, p. 8).

A more comprehensive approach to online learning is applying Chickering and Gamson's (1987) seven principles for good practice in undergraduate education. Since the initial release of seven principles, several authors have applied the instructional practices to distance learning formats. These seven principles are reviewed briefly in the Theoretical Framework section of this chapter and more extensively in the chapter 2 literature review.

Statement of the Problem

This study has examined teaching strategies implemented by the University of North Texas (UNT) Web-based instructors as identified in Chickering and Gamson's (1987) "Seven Principles for Good Practice in Undergraduate Education." In addition, training received by faculty in developing and delivering a Web-based course and the relationships between their training and reported use of the teaching strategies in the

seven principles was examined. The study also examined the relationship between the number of Web-based courses taught and the use of the teaching strategies.

Theoretical Framework

The theoretical basis for this study followed Arthur Chickering and Zelda Gamson's (1987) model, seven principles for good practice in undergraduate education. These principles, developed as guidelines for faculty use in improving pedagogy in response to public outcomes of higher education, are grounded in over 50 years of research on good practices for college teaching. The American Association for Higher Education (AAHE) and the Johnson Foundation cosponsored the report. Chickering and Gamson wanted to produce principles that were "accessible, understandable, practical, and widely applicable" (Chickering & Gamson, 1999, p. 76). A summary of the seven principles as they relate to Web-based learning environment follows:

1. Encourages student-faculty contact: Frequent student-faculty contact both in and out of the classroom is an important factor in student motivation, intellectual commitment, and personal development. E-mail, chat rooms, bulletin board postings, and phone calls are common methods of practice to encourage student-faculty contact in a Web-based learning environment. Aoki and Pogroszewski (1998) recommended that the interaction between the instructor and student should not be limited to course materials. The instructor should serve as a mentor and advisor of students' academic progress.
2. Encourages cooperation among students: Instructors should create an environment of learning that is collaborative in nature. In a Web-based

environment, this can be accomplished through threaded discussions and chat rooms; group projects in pairs or teams; peer reviews; and asynchronous problem solving.

3. Encourages active learning: Students interact with the material they are learning by writing about it or verbally processing it. They are encouraged to relate the concepts being learned to their current and past experiences. In the Web-based environment, student-centered instruction should be practiced, allowing students to have a choice in assignments or even to design their own (League for Innovation in the Community College, 1999). Other approaches are peer debates, guest speakers (synchronous or asynchronous), and discussion forums.
4. Gives prompt feedback: Instructors should provide feedback to students on their knowledge and performance. Initially, students need help assessing their current knowledge and competence. Additionally, instructors need to provide frequent feedback regarding performance and suggestions for improvement. Having virtual office hours, returning graded work within a reasonable time, posting grades regularly, and acknowledging all students' questions are effective practices of instructors in a Web-based environment.
5. Emphasizes time on task: Learning takes place when time is used effectively and actively. Instructors should create opportunities for students to practice good time management. This includes posting course objectives, assignments, assessment criteria, and important dates for the

class on the course Website. Instructors are encouraged to follow up promptly with those students who are not participating in assigned discussions or turning in assignments on time.

6. Communicates high expectations: The self-fulfilling prophecy holds true in any learning environment; thus, the instructor should have high expectations for the students to perform well. This is communicated through postings of pertinent course information; clearly written expectations of both instructor and students; examples of excellent, average, and poor work; and frequently asked questions.
7. Respects diverse talents and ways of learning: Helping students recognize their own learning styles along with matching instructional methods and students' learning styles can lead to improved learning. Web-based instructors' courses should be designed to appeal to the different ways students learn. Designing more than one method of assessment and demonstration of achievement, allowing for different pacing, offering different modes of project presentations, and rewarding creativity are examples of respecting diverse ways of learning.

This study examined the use of Chickering and Gamson's (1987) seven principles and the teaching strategies instructors used in teaching Web-based courses at UNT. It is important to note that UNT uses WebCT® (WebCT, Inc., Peabody, MA, www.webct.com) as their provider for teaching Web-based courses. To help prepare instructors to teach in a Web-based environment, in 2003 UNT offered the following four

courses on developing and using a Web-based course through the Center for Distributed Learning (CDL):

1. CDL 100 WebCT® User Faculty Tutorial – teaches basics for navigating and using WebCT® Tools from the student's perspective.
2. CDL 101 Online Course Design – teaches effective instructional systems design so the faculty is using effective teaching methodologies that facilitate learning in a Web-based course.
3. CDL 102 WebCT® Xtreme – teaches the basics of organizing the online course, facilitating online communication, automating student assessment, and delivering instruction.
4. CDL 103 Interface Design and Multimedia for Online Courses – introduces faculty to Web design principles and multimedia tools.

Each of the courses is designed and delivered by incorporating the seven principles throughout; thus, the teaching strategies of the seven principles are used as a model for the participant (enrolled instructor). CDL 101 and 102 include reading sections and assignments on the seven principles so that the instructor can understand and implement these principles in his/her instructional techniques.

The CDL was established in 1998 to help faculty with the development and delivery of distributed learning at UNT. Distributed learning at UNT encompasses videoconferencing and Web-based learning. The courses for both mediums were initially delivered face-to-face in a classroom setting. Beginning in the spring 2002 semester, the courses for Web-based learning were delivered via the Web.

Enrollment for the CDL courses is optional, and participation in the training for Web-based learning has been minimal, with a low completion rate. Results of this study provide valuable insights into which teaching strategies of the seven principles are being used, as well as the degree and frequency of use. Consequently, the results will assist the UNT CDL in the identification of areas needed for future training, modification of the four CDL Web-based courses, or intervention.

Purpose of the Study

The purpose of this study was to examine the degree to which UNT instructors involved in Web-based instruction are implementing teaching strategies, as identified in Chickering and Gamson's (1987) model, seven principles for good practice in undergraduate education. In addition, the study examined training received by instructors in developing and delivering a Web-based course and the relationships between their training and reported use of the teaching strategies in the seven principles. The study also examined the relationship between the number of Web-based courses taught and the use of the teaching strategies.

Although the results of this study were confined to UNT, it is hoped the results will be useful for instructors who teach in other Web-based learning environments.

Research Questions

The research questions for this study are the following:

1. What are the most frequently used types of training received by UNT Web-based instructors in preparation for their teaching of a Web-based course?

2. How many times have UNT Web-based instructors taught Web-based courses?
3. To what extent do UNT Web-based instructors report using the teaching strategies in the seven principles?
4. What is the relationship between the training received and UNT Web-based instructors' reported use of the teaching strategies?
5. What is the relationship between number of times a Web-based course has been taught and UNT Web-based instructors' reported use of the teaching strategies?

Assumption

The following assumption was made regarding this study: The terms *Web-based, e-learning, Internet,* and *online learning* are synonymous.

Delimitations

This study was restricted by the following factors controlled by me:

1. The participation was limited to Web-based instructors from UNT who were teaching a course during the spring term of 2003.
2. Specific demographic information (gender, age, educational level, number of years as an instructor) was not considered as part of this study.
3. The departments or college of studies were not compared or reported.

Limitations

This study was restricted by the following factors not under the control of me: (a) the respondents' willingness, ability, and accuracy in completing the self-reported questionnaire; (b) the response rates of UNT Web-based instructors to the

questionnaire; (c) the possible bias of response from UNT Web-based instructors; for instance, instructors perhaps resisted admitting that they were not implementing a teaching strategy; (d) the fact that no instructor was required to participate; and (e) the fact that the study was subject to all the limitations of survey research using a questionnaire.

Definition of Terms

As related to this study, the following definitions apply:

Asynchronous communication: communication in which parties participate at different times. Asynchronous communication is a choice of where and when learning will be accessed. Web-based courses are generally asynchronous (Connick, 1999).

Distance education: a term that is often used interchangeably with distance learning. Distance learning might best be seen as what takes place as a result of distance education (Connick, 1999). “A formal educational process in which the majority of the instruction occurs when student and instructor are not in the same place” (The Commission on Colleges, 2000, para. 2).

Distance learning: takes place when the instructor and student are not in the same room but are separated by physical distance. They are connected to each other by video, voice, or computer technologies (Connick, 1999).

Distributed education: often used to describe programs in which courses are taught online and collaboration and “virtual interaction” among students in the same course are encouraged (Connick, 1999).

Online university: likely to be an offshoot of a traditional institution. Offers all its courses and programs via the Internet or World Wide Web (Connick, 1999).

Shovelware: “any content shoveled from one communication medium to another with little regard for the appearance, ease of use, or capabilities of the second medium” (Fraser, 1999, para. 8).

Synchronous communication: communication in which all parties participate at the same time. Communication occurs in “real time” (Connick, 1999).

Virtual university: has no campus and no faculty of its own. Makes available programs and courses offered by other colleges and universities using technology (Connick, 1999).

WebCT®: a tool that facilitates the creation of sophisticated Web-based courses by nontechnical users.

Web delivery: the vehicle through which content is made available, and it is most effective when informed by Web pedagogy (Stamm & Howlett, 2002).

Web enhanced: adding e-mail or Web-based interactivity to either a Web-mounted course or a paper-based distance education course without significant redesign of teaching and learning strategies (Ellis & Phelps, 2000).

Web mounted: converting text-based external materials to HTML for Web-based delivery without significant redesign of teaching and learning strategies (Ellis & Phelps, 2000).

Web pedagogy: the theories and goals that inform the instructional design process and harmonize content, delivery tool, and audience (Stamm & Howlett, 2002).

Summary

This chapter presented an overview of the growth of distance learning, primarily Web-based, and the reasons behind it. With this growth, most realize that different and

sometimes new teaching strategies must be implemented for the Web-based environment to become more student-centered and for learning to take place.

Chickering and Gamson's (1987) seven principles for good practice is an effective model for instructors to use as a guide in a Web-based environment. This study has examined teaching strategies implemented by UNT Web-based instructors as identified in the seven principles. Two relationships were examined: (a) a relationship between the teaching strategies and the training received by instructors; and (b) a relationship between the use of the teaching strategies and the number of Web-based courses taught.

CHAPTER 2

LITERATURE REVIEW

This chapter reviews and summarizes relevant literature on distance learning, specifically Web-based learning in three sections:(a) a brief history of distance learning including the growth of distance learning in higher education, Texas, the Metroplex region, and the University of North Texas (UNT); (b) the professional development and training of Web-based instructors in the postsecondary setting; and (c) Chickering and Gamson's (1987) seven principles and their use in Web-based courses.

Purpose of the Study

The purpose of this study was to examine the degree to which UNT instructors involved in Web-based instruction are implementing teaching strategies as identified in Chickering and Gamson's (1987) model, seven principles for good practice in undergraduate education. In addition, the study examined the training received by faculty in developing and delivering a Web-based course and the relationships between their training and reported use of the teaching strategies in the seven principles. The study also examined the relationship between the number of Web-based courses taught and the use of the teaching strategies.

Research Questions

The following are the research questions for this study:

1. What are the most frequently used types of training received by UNT Web-based instructors in preparation for their teaching of a Web-based course?

2. How many times have UNT Web-based instructors taught Web-based courses?
3. To what extent do UNT Web-based instructors report using the teaching strategies within the seven principles?
4. What is the relationship between the training received and UNT Web-based instructors' reported use of the teaching strategies?
5. What is the relationship between number of courses taught and UNT Web-based instructors' reported use of the teaching strategies?

History of Distance Learning

Distance education started at least 150 years ago as correspondence study. Initially, postal mail and, eventually, telephone were the predominant forms of delivery. This earliest form was used until the middle of the 20th century, when instructional radio and television became popular. The obvious limitation of radio and television as educational media is the one-way form of communication from teacher to student. Distance learning has evolved dramatically since its early days.

According to Connick (1999), the growth of distance education was due to developments in computers, telecommunications, the Internet, and the World Wide Web. At that time, the most popular media were computer-based communications and video conferencing. Currently, data available from the National Center for Education Statistics (NCES) (2003) revealed in the academic year 2000-2001, the Internet and two video technologies were the most often used modes of instructional delivery for distance education courses.

In 1987, fewer than 10 states were promoting distance education, and by 1989, almost all states were involved in distance learning programs (McIssac & Gunawardena, 1996). In little more than a decade, the growth of distance education has been extremely rapid, encompassing a range of technologies.

Common technologies used in distance education are the telephone (audio conferencing and audio graphics); voice mail; video (telecourses, videotapes, one-way video, interactive video); and the computer (CD-ROM, Internet, World Wide Web, electronic mail, interactivity – JAVA® (Sun Microsystems, Inc., Santa Clara, CA, www.java.com), streaming audio, and computer conferencing). More specifically, bulletin boards, e-mail, chat rooms, and online applications over the Internet are used extensively for Web-based courses. Aoki and Pogroszewski (1998) revealed that asynchronous and synchronous computer conferencing, slide presentations, and file transfer systems are common in Web-based courses.

The study has focused on Web-based learning; therefore, most of the information in relation to chapter 2 focuses on that form of distance learning. The terms *Web-based, online, Internet,* and *e-learning* are used interchangeably.

Distance Learning in Higher Education – Growth and Future Projections

The Internet is making it possible for more individuals than ever to access knowledge and to learn in new and different ways. “On college campuses, there is an influx of older, part-time students seeking skills vital to success in an Information Age. . . . The Internet is bringing learning to students instead of bringing students to learning” (Web-Based Education Commission, 2000, p. i).

Ben-Jacob and Levin (1998) revealed that the two main conditions that facilitate the growth of distance learning in higher education are the advancement of technology and the increasing nontraditional student population. Students' need "for convenient and flexible access to higher education [has] brought about the greatest change in education delivery since the first correspondence courses were made available in the early nineteenth century" (American Council on Education, 2000, p. 1). Not surprisingly, "students are shopping for courses that meet their schedules and circumstances" (Howell et al., 2003, p. 2).

A study conducted through NCES (2003) provided national estimates for the 2000-2001 academic year on distance education at 2-year and 4-year Title IV-eligible, degree-granting institutions. To date, these are the most comprehensive data available on distance educations programs of institutions in the United States. In that study, distance education was defined as "education or training courses delivered to remote (off-campus) sites via audio, video (live or prerecorded), or computer technologies, including both synchronous (i.e., simultaneous) and asynchronous (i.e., not simultaneous) instruction (NCES, 2003). The audience for the distance education courses included all types of students, "including elementary and secondary, college, adult education, continuing and professional education, etc." (NCES, 2003, Executive Summary section, para. 3).

The facts are below:

1. Fifty six percent (2,320) of all 2-year and 4-year Title IV-eligible, degree-granting institutions offered distance education courses.

2. Ninety percent of public 2-year institutions and 89% of public 4-year institutions offered distance education courses.
3. College-level, credit-granting distance education courses were offered at the undergraduate level by 48% of all institutions, and at the graduate level by 22% of all institutions.
4. Of the institutions that offered distance education courses, 27% offered 10 or fewer courses, and 25% offered 11-30 courses. In addition, 15% offered 31 to 50 courses, 19% offered 51 to 100, and 15% offered more than 100 distance education courses.
5. Among all 2- and 4-year institutions, 19% had degree or certificate programs designed to be completed totally through distance education. (NCES, 2003, Institutions Offering Distance Education Courses section)

The most current information to date regarding the different formats of distance learning in higher education is from NCES (2003) report. Ninety percent of the institutions that offered distance education courses offered Internet courses using asynchronous computer-based instruction, and 43% offered Internet courses using synchronous computer-based instruction. Furthermore, 88% of those institutions that offered or planned to offer distance education courses between 2001 and 2004 indicated plans to begin using or to increase the number of Internet courses using asynchronous computer-based instruction as the main mode of distance delivery, whereas 62% indicated the use or increase of Internet courses using synchronous computer-based instruction as the predominate mode of distance instructional delivery.

Other primary modes of instructional delivery for distance education courses by postsecondary institutions during the 2000-2001 academic year included the following: Fifty one percent used two-way video with two-way audio; 41% used one-way prerecorded video; 29% used CD-ROM; and 19% used multi-mode packages (NCES, 2003).

Whichever term is used, Internet, online, or Web-based learning, it is more dominant than all other distance-education media. Gallagher (2002) has proclaimed that online learning increases 40% annually (as cited in Howell et al., 2003).

According to a report produced by Merrill Lynch's Knowledge Enterprises Group (2000), it was predicted that in 2002, a total of 2.2 million students were expected to enroll in distributed-learning courses, up from 710,000 in 1998. This represents a compounded annual growth rate of 33%. Merrill Lynch also reported an expected increase of 4-year colleges offering distance learning courses in 2002 – 84%, up from 62% in 1998.

Texas

The Texas Higher Education Coordinating Board (THECB) (2000) reported a goal of enrolling 500,000 more students in higher education by 2015, along with increasing the number of certificates and degrees awarded by 50%. According to the most current data available, the THECB (2001) reported that, by 2005, enrollment in Texas public universities is expected to increase to approximately 446,000 students. Based on current participation trends of THECB, enrollment is expected to grow at a rate of 1.1% annually between 2005 and 2010, reflecting an additional 26,000 students, and from 2010 to 2015 growth is projected to remain strong, adding 27,000 more. Thus,

if the trend continues, Texas public universities can expect to enroll 498,000 more students by 2015.

Texas public higher education institutions will likely rely increasingly on distance education to help reach the goal of 500,000 students enrolled in higher education by 2015. Currently, “most public institutions of higher education in Texas provide and/or receive distance education courses” (THECB, 2000, p. 1). In addition, the number of sites off-campus that provides access to electronic courses is growing (THECB, 2000).

The most current data available THECB (2000) showed that the electronically delivered course offerings at public institutions of higher education make up about 4% of the total available. The board projected that “electronic delivery of educational services is likely to rise dramatically as the technology improves, more efficient delivery systems become established, and more people become technologically literate” (p. 1).

Metroplex

The THECB divides the state of Texas into 10 regions including the Metroplex. UNT is in the Metroplex region. Other universities included in this region are Tarleton State University, Texas A&M University – Commerce, Texas Woman’s University, The University of Texas at Arlington, and The University of Texas at Dallas. Sixteen community colleges are also included in the Metroplex. The Metroplex encompasses the following 18 counties: Collin, Cooke, Dallas, Denton, Ellis, Erath, Fannin, Grayson, Hood, Hunt, Johnson, Kaufman, Navarro, Palo Pinto, Parker, Somervell, Tarrant, and Wise.

According to THECB (2004), the Metroplex is the most highly populated and fastest growing region in Texas. The population is expected to increase by

approximately 2 million (47%) to 8 million by 2015. The region is one of three that will account for almost 77% of enrollment growth at public institutions in Texas from 2003 through 2015 (THECB, 2004). In the future, the Metroplex region will include institutions that require additional space, as well as some institutions that will be underutilized. UNT is projected to be one of those institutions needing additional space. In order to compensate, UNT is continually growing its distance learning program.

University of North Texas

UNT, a metropolitan research university, is the fourth largest in the state and the largest, most comprehensive university in the Metroplex region. In 2003, the university had nine colleges and schools, which offered a total of 99 bachelor's, 127 master's, and 48 doctoral degree programs. UNT is part of the University of North Texas System, which includes three more institutions: the UNT Health Science Center at Fort Worth, UNT Dallas Campus, and UNT at Dallas.

Of the 29,035 students attending UNT in spring 2003, approximately 4,911 students lived on-campus in residence halls, and approximately 24,124 commuted to the Denton campus or to one of the institution's off-site locations or took classes by distance learning. The enrollments by resident reflected the following: 90.4% from Texas (88% of these were from the Dallas-Fort Worth area); 4.2% from other states; and 5.4% from other countries (UNT, 2003).

According to THECB, Metroplex institutions of higher education will have the greatest increase in enrollment of all state institutions. This is due in part to the fact that the Metroplex is the fastest growing major economy in the nation because population is

growing and business is expanding (UNT, 2000). Undoubtedly, this growth and business expansion impacts UNT's plans for growing its distance learning programs.

Phil Turner, Associate Vice President for Academic Affairs for Distance Education at UNT, reported that 39% of the university's departments offered at least one Web-based course (Young, 2001). The state of Texas defines a Web-based course as one in which 50% or more of the instructional delivery occurs without the physical presence of the instructor. According to Jenny Jopling, Associate Director for Distance Education at UNT, many more departments are using Web-based learning, but less than 50% of the course content is Web-based. Jopling stated that 70% to 75% of departments are using some form of Web-based learning to supplement the face-to-face classes (personal communication, February 6, 2003).

For the purposes of this study, spring 2003 semester data were viewed and captured. According to UNT's *Spring 2003 Schedule of Classes* (2002), 25% of the departments were offering at least one Web-based course in the spring 2003 semester. A total of 126 courses taught by 72 instructors were Web-based. Of these 126 courses, 43 were undergraduate (34%), and 83 were graduate-level courses (66%).

"The basic mission of the University of North Texas is to help educate the workforce of Texas and further the development and application of knowledge" (UNT, 2000, Section II, para. 3). A portion of UNT's vision is that of "advancing innovations in the enhancement of learning" (UNT, 2000, Vision section). To achieve the vision, UNT is committed to nine strategies, and three of the strategies relate to Web-based learning:

1. Promote excellent, accessible, and affordable higher education to the region's growing and demographically diverse population through partnerships with educational entities and the business, public, and not-for-profit communities;
2. Lead in offering learners access to education through satellite locations, the Internet and other electronic resources, and partnerships with other institutions;
3. Serve as an important source for lifelong learning, professional education, and outreach activities. (UNT, 2000, Achieving the Vision section)

The university's goal is for Web-based courses to bring in new students rather than take current students out of the classrooms. The hope is that, by moving courses and entire degree programs to a Web-based format, UNT will attract and retain more part-time students, who currently comprise one third of the student population (Young, 2001).

In the spring 1998 semester, eight students were enrolled in a Web-based course. Five years later, the number of students enrolled in the spring 2003 semester had grown to 5,898; of these, 54% were undergraduate, and 46% were graduate students. Of the 5,898 students enrolled, 68% were enrolled exclusively in Web-based courses.

University of North Texas Center for Distributed Learning

In 1998, UNT established the Center for Distributed Learning (CDL) to help faculty with the development and delivery of distributed learning at UNT. The university has defined distributed learning as follows: "Distributed (or distance) learning is a type

of education where students complete courses and programs at home or work, communicating with faculty and other students via e-mail, electronic forums, videoconferences and other forms of computer-based communication" (UNT, 2002, Distributed Learning, para 1). Web-based and videoconferencing are the two approaches to distance learning at UNT. For the purposes of this study, Web-based information was shared.

The mission of CDL is to assist UNT faculty in the development and delivery of high-quality instruction through distributed learning technology. The mission supports the university's goal to enhance learning-centered environments that help students receive the most from their academic experience. The CDL supports this mission by offering courses to better prepare faculty to use the university's course platform – WebCT®.

The CDL offers courses that lead to a UNT Excellence in Teaching Online certificate upon completion. Below is a brief description of each course.

1. CDL 100 WebCT® User Faculty Tutorial – basics for navigating and using WebCT® Tools from the student's perspective. This is a prerequisite for CDL 102 WebCT® Xtreme.
2. CDL 101 Online Course Design – teaches effective instructional systems design so that the faculty is using effective pedagogy for the online learner. This course includes the seven principles as its foundation, which encompasses teaching strategies that are included in this study's survey instrument.

3. CDL 102 WebCT® Xtreme – teaches the basics of organizing the online course, facilitating communication online, automating student assessment, and delivering instruction. This course also includes the seven principles as its foundation, which encompasses teaching strategies that are included in this study's survey instrument.
4. CDL 103 Interface Design and Multimedia for Online Courses – introduces faculty to Web design principles and multimedia tools.

The CDL began tracking enrollment numbers for their Web-based training courses in 1999. Jenny Jopling (personal communication, October 29, 2002) shared the numbers of courses offered each year and the number of faculty members who enrolled (also see Table 1) from 1999 to 2001. These figures do not represent course completion. In 1999, 29 courses were offered, and 324 faculty members enrolled. In 2000, 25 courses were offered, and enrollment went down by more than 100 individuals, to 216 enrolled faculty members. In 2001, 23 courses were offered, and 220 faculty members enrolled. Enrollments almost doubled in 2002, up to 418 faculty members, with one additional course offering. In 2003, course offerings were reduced to 21, although enrollment increased by more than 100 people, to 521 (J. Himmell, personal communication, February 17, 2005).

Table 1

Center for Distributed Learning Faculty Enrollment Numbers

Year	Number of courses offered	Number of faculty enrolled
1999	29	324
2000	25	216
2001	23	220
2002	24	418
2003	21	521

In addition to the CDL courses that lead to a UNT Excellence in Teaching Online certificate, continuous improvement consultation is offered. The purpose is to improve the quality of Web-based courses and assist the instructors in building confidence in teaching with this method of delivery.

> The consultation involves having a 'hidden set of eyes' by allowing an Instructional Consultant to login to the faculty member's WebCT® course and observe how the faculty member's experience with teaching online is progressing, making suggestions for ways to ensure smooth course management, and give warning of potential problems that might result from online student activities. (UNT, Annual Report, New Advising and Mentoring section, 2002)

Training

In the literature, many reports and findings emphasized the need for training instructors who teach Web-based courses (Buchanan, 1999; Compack, 2001; Foster,

2000; Granger & Benke, 1998; Luchini, 1998; Rockwell et al., 2000; SchWeber, Kelly, & Orr, 1998; Sherry, 1996; Southern Regional Education Board [SREB], 2001; THECB, 1997; Web-Based Education Commission, 2000; Williams, 2000; Wilson, 1998; Young, 1999). In the literature, the terms *professional development*, *staff development*, and *training* are used interchangeably, but ultimately mean the same thing. If distance learning is going to be successful as a learning medium and advance in the long-term, instructors need to be trained in a variety of areas: design/development of Web-based courses; delivery of Web-based courses; and use of the technology (Crumpacker, 2001; Wilson, 1998).

The first phase for many online instructors involves developing the course. This is usually more time consuming than anticipated and requires a working knowledge on how to use the technology. Harrison and Bergen (2000) emphasized that training should be provided in the delivery system being used, as well as techniques of designing an effective online course. Rockwell et al. (2000) concurred, stating that training is needed to support instructors' development and resources must be identified to assist in course development. SchWeber et al. (1998) noted that instructors teaching in an online environment need to master the technology.

Many accrediting agencies have policies for distance learning; two such agencies affect Texas. In 1997 THECB published its principles, with one of the key principles being that "the institution assures appropriate training for faculty who teach via the use of technology" (Faculty Support section). The first recommendation of SREB Distance Learning Policy Laboratory (2001) was that "faculty need and should expect state and institutional commitment to development and support structures that improve their

productivity and effectiveness as teachers" (p. 2). This implies the need for training instructors in the use of technology and in the pedagogical practices to make them effective in teaching in a Web-based environment.

Some institutions purchase previously created courses, and the instructor implements the course; however, skills are still needed for instructional strategies (teaching strategies) as well as how to use the technology. Not surprisingly, the literature emphasized the need for Web-based instructors to be trained in new pedagogical approaches or instructional approaches when teaching online (Buchanan, 1999; Ellis & Phelps, 2000; League for Innovation in the Community College, 1999; Rockwell et al., 2000; SchWeber et al., 1998; SREB, 2001). Specifically, Ellis, O'Reilly, and Debreceny (1998) found in their survey of individuals in charge of staff development in the university environment that pedagogical issues in online course design were among the top three topics focused on in training.

Specifically, some literature emphasized the need for faculty to relearn the art of teaching (SREB, 2001), and it was suggested that training teachers how to teach may be necessary (National Education Association [NEA], 2001). One-way lecturing does not transfer well to an online medium (Yeung, 2001). Instructors need to know how to make the learning more student-centered (Husmann & Miller, 2001). Students have been accustomed to faculty-led and directed learning, but they are finding the need to participate actively in the process when taking a Web-based course (SREB, 2001), because group interaction and student/teacher dialogue change (Ellis & Phelps, 2000). In an online environment, the challenges of communicating with students differ from those in a face-face teaching environment. Instructors need to learn new strategies and

skills in order to communicate in the absence of visual and oral cues (Web-Based Education Commission, 2000).

Husmann and Miller's (2001) survey of distance education administrators in higher education showed agreement in the need to provide pre-service faculty development for distance education teaching. According to the SREB (2001), the Council of Graduate Schools asserted that in preparing future faculty, graduate programs should include the special training needed to teach Web-based courses.

Teaching online should not be "learn as you go" (Buchanan, 1999). Findings from Husmann and Miller's (2001) study supported the need for advanced faculty planning and for learning pedagogical strategies applicable to Web-based learning in order to have program quality. The Web-based course should improve each time an instructor teaches it, because the instructor continues to learn what works, what does not, and what needs changing. Developing a successful Web-based course is an ongoing process, and it is logical that, as instructors gain experience, they learn more effective ways to present the material (Harrison & Bergen, 2000), becoming more comfortable teaching online (Carr, 2000). In an interview, a Texas college professor summarized, "The more experience the instructor has the better. When we stop bringing in first-timers, the rates will improve" (Carr, 2000, p. 4).

Tomball College in Texas requires that full-time and adjunct professors take a 40-hour training program for distance education. Student dropout rates in the distance education courses declined, and complaints decreased by 78% after the training program was implemented (Young, 1999).

Chickering and Gamson's

Seven Principles for Good Practice in Undergraduate Education

The seven principles for good practice in undergraduate education were inspired by Arthur W. Chickering and Zelda F. Gamson in response to the education reform movement in the 1980s. The discussion on creation of the principles began at a 1985 board meeting of the American Association for Higher Education (AAHE). A few months later, Chickering and Gamson, with help from the Johnson Foundation, created a task force of scholars "who had contributed much of the research over the last five decades on the impact of the college experience, as well as other students of higher education" (Chickering & Gamson, 1991, p. 6). Their goal was to identify key principles that characterized practices of successful undergraduate institutions and to identify research that supported the principles. Chickering and Gamson drafted a list of eight principles in advance, using those to begin the discussion.

The task force was adamant about compiling a list of principles that "not only convey the research evidence on which they rested but also provide a framework for practical examples. . . . We insisted that whatever we produced be accessible, understandable, practical, and widely applicable" (Chickering & Gamson, 1991, p. 7).

In March 1987, the final version of the "Seven Principles for Good Practice in Undergraduate Education" was published in the *AAHE Bulletin*. The response was so overwhelmingly positive that the Johnson Foundation republished them in a more appealing, user-friendly format in their June 1987 issue of *Wingspread Journal*. Included at the bottom were instructions on how to order in quantity at no cost. Over the next 18 months, over 150,000 copies were ordered.

This success sparked the idea to create a self-assessment instrument for faculty members, with examples and indicators of each principle. In addition, the desire to create an institutional inventory with indicators of campus practices and policies in support of the seven principles also evolved. Louis M. Barsi, a graduate student at George Mason University, worked with Chickering and Gamson to create the inventories.

After several rounds of testing, the inventories were published in the fall of 1989, and since then, a student inventory has been created. Duplication and use of these inventories is acceptable because none are copyrighted.

In 1996, Chickering and Ehrmann described “some of the most cost-effective and appropriate ways to use computers, video, and telecommunications technologies to advance the seven principles” (para. 3). Many researchers and scholars have used the seven principles and adapted them to reflect more current situations in their institutions, with their faculty and students. In the literature, numerous examples of teaching strategies reflect how the seven principles are implemented. The remaining section of this chapter gives overviews of each principle and cites teaching strategies used in each principle.

Principle 1: Encourages Contact Between Students and Faculty

Frequent student-faculty contact is the most important factor in student motivation, intellectual commitment, and personal development (Chickering & Gamson, 1987). Aoki and Pogroszewski (1998) paralleled the finding that “teachers and instructors play the most significant role in providing quality education” (Faculty Services section, para. 1). Granger and Benke (1998) contended that a program is only as good

as its ability to connect with the learners. Davis and Murrell (1993) reported the significance of students' interaction with faculty and peers in shaping college outcomes. Indeed, regional accrediting associations (Commission on Colleges, 2000) and THECB (1997) stated that programs should provide for appropriate interaction between faculty and students.

Students making the shift from the traditional classroom environment to more self-directed learning need support and direction (Sherry, 1996). Learners new to distance learning can be uncertain about this approach, and they require "encouragement, referrals, and intellectual guidance from their instructors. Many underestimate their abilities and report being afraid of the challenges in distance learning. These needs of distance learners have clear implications for instructors who wish to enable student success" (League for Innovation in the Community College, 1999, p. 68).

The instructor is critical in creating a supportive, responsive climate because little face-to-face interaction takes place (Verduin & Clark, 1991). Online learning should not follow the model of a correspondence course (Young, 2000), which is independent study, relying upon the student to be totally autonomous. Connectivity and two-way communication between instructor and student (Sherry, 1996) are necessary for learning. Rath (1999), as cited in Buchanan (1999), wrote that the instructors who thrive in the distance education environment "engage students and spark their curiosity, and are also responsive, well-organized, courteous, patient, and flexible" (para 5).

Aoki and Pogroszewski (1998) contended the following:

> As in a traditional educational setting, the interaction between a faculty member and students should not be limited to those related to the class materials. There is a larger educational environment than a regular class setting; a faculty member serving as a mentor, an advisor, and a supervisor of the student's academic progress. In this sense, additional communication channels between faculty member and students need to be established for advising and mentoring students. (Faculty Services section, para. 5)

The role of the instructor changes in a distance learning environment. The teacher becomes a mentor (Wilson, 1998) and a facilitator of learning (Teles, Ashton, Roberts, & Tzoneva, 2001) guiding discussions in the chat rooms. NEA (2001) revealed that the quality of chats can be better than class discussions. It is not uncommon for students who would normally not contribute to an in-class discussion to contribute to an online chat or threaded discussion. "The literature is full of stories of students from different cultures opening up in and out of class when email became available" (Chickering & Ehrmann, 1996, para. 9). Web-based learning is more self-directed, yet the students "need to know that a 'human,' who knows the subjects and is capable of replying in an articulate, professional manner, is on the receiving end of their materials" (Buchanan, 1999, para. 6).

The following are teaching strategies for connecting the faculty and students:

1. Send individual e-mail messages to students who are not regular contributors to the discussion (Graham, Cagiltay, Craner, Lim, & Duffy, 2000; NEA, 2001; Spears & Saks, n.d.).

2. Use a warm tone in course content and all forms of communication (League for Innovations in the Community College, 1999).
3. Provide personal contact from the instructor at the time of the first assignment (League for Innovations in the Community College, 1999) through a phone call or personal e-mail.
4. Refer to students by name (Spears & Saks, n.d.; Young, 2000).
5. Establish virtual office hours (Byun et al., 2000; Carr, 2000; League for Innovation in the Community College, 1999; Spears & Saks, n.d.).
6. Regularly send general messages to the whole class (Spears & Saks, n.d.).
7. Get to know students as individuals and let them get to know the instructor as an individual (Buchanan, 1999; Spears & Saks, n.d.).
8. Instructor posts a photograph and/or biography on course Web page (Carr, 2000).
9. Have a structured questionnaire to learn about the students (League for Innovation in the Community College, 1999).
10. Invite students to have unscheduled face-to-face meetings (Graham et al., 2000).

Principle 2: Develops Reciprocity and Cooperation Among Students

Chickering and Gamson (1987) found that learning is enhanced when it is collaborative and social versus competitive and isolated. They noted that working with others often increases involvement in learning. In addition, they observed that sharing ideas and responding to others' reactions sharpens thinking and deepens

understanding. According to Brace-Govan and Clulow (2000), “Student to student communication is seen to be crucial to the educational process. . . . (Garrison, 1992; Jonassen, 1991; Laurillard, 1993), particularly in terms of consolidating learning and moving on to metacognitive understanding of the subject area” (p. 120). McGiven (1994) wrote that “success in distance education is directly related to the student’s ability to critically analyze, to interpret information and to interact with peers to elaborate on the concept” (as cited in Parker, 1996, para. 5).

Harrison and Bergen (2000) noted the importance of fostering a learning community for the students in a Web-based course. This fostering can be initiated by having students post an introduction of themselves as part of a first online assignment. Students will find commonalities with classmates, and this helps break down the sense of isolation. According to Graham et al. (2000), “In at least two courses students were asked to introduce themselves informally, but participation was not required. Our overall impression was that traffic on the listserv during the semester was quite sparse” (p. 5).

According to Cross (1998), a true community of learners is one in which “participants are interactive, challenging, respectful, cooperative, and sharing in the common goal of learning” (p. 6). Young’s (2000) interview with Ken White, author of “The Online Teaching Guide” recommended that norms and rules be established at the beginning of the course to create a foundation for respectful communication during electronic communications between peers.

Hiltz (1998) claimed that collaborative learning strategies are necessary “in order for Web-based course to be as effective as traditional classroom course” (Abstract section). Johnson’s (1981) research on collaborative learning methods showed that

student satisfaction with learning and the classroom experience increases when collaborative techniques are implemented (as cited in Hiltz, 1998). Luchini (1998) reasoned that discussion forums, online group work, and interactions via email and the Web provide the student-to-student relationship that is essential for effective learning.

Additional support for interactivity includes Yeung's (2001) survey of distance learning instructors in higher education institutions in Hong Kong. They rated interactivity as being very important (91.1% and 94.1%), stating that student interaction with faculty and other students is an essential characteristic.

Strengthening the assertion that interactivity is central to the quality of a Web-based course, Otto Peters (1999), leader in distance learning wrote,

> If we take distance education seriously and understand it to be something more than the mere distribution and reading of study materials, we must provide sufficient opportunities for dialogues. If, in addition, we understand academic studies as a process in which the aim is education through knowledge, we cannot do without a considerable proportion of dialogical learning and teaching in distance education. (as cited in Yeung, 2001, Teaching/Learning Process section)

The following are teaching strategies for engaging students to work together:

1. Have students critique each other's work before submitting it to the instructor (League for Innovation in the Community College, 1999).
2. Implement threaded discussions as a method for guiding class discussions. Organize them around study questions, major course topics,

or assigned readings (League for Innovation in the Community College, 1999).

3. In pairs or teams, work on projects, case studies, and problem-based assignments (Chickering & Ehrmann, 1996).

Principle 3: Encourages Active Learning

Students interact with the material they are learning by writing about it or verbally processing it. They are encouraged to relate the concepts being learned to their current and past experiences (Chickering & Gamson, 1987). “Course activities are the vehicle through which students may become more fully engaged with academic material” (Davis & Murrell, 1993, Responsible Student Behavior section, para. 2). Cross (1998) may have stated it best: “No matter how brilliant the message delivered, it does not result in learning until it is integrated into a unique mental structure” (Conclusion, para. 3). According to Smith (2001), “Educational research consistently has proven that retention increases as learners apply information through a variety of inputs (such as reading, discussions and ultimately, practice)” (para. 4). A dean at the LeCroy Center in Dallas asserted that keeping students engaged is the key to low attrition and successful completion rates in the online courses (Carr, 2000).

“Through the content, in the various forms of text, images, video, or other multimedia platforms, reflection and engagement take place on a scale much different than traditional environments” (Buchanan, 1999, Developing Assessment Measures section, para. 5). In a Web-based environment, the response may be immediate (chat room), or it could be delayed (bulletin board); either way, it allows the student to process and interact with the concepts or discussion occurring.

Some researchers noted that the constructivist approach is an active approach to learning “in that each student is responsible for discovering, constructing, practicing, and validating acquired knowledge via active exploration and interactive social collaboration with others” (Hiltz, 2000, as cited by Crumpacker, 2001, Background Literature section, para. 5). Jonassen, Myers, and McKillop (1996), as cited by McDonald and Postle (1999), observed that development of the constructivist learning environment allows students actively to participate in the construction of their own understanding versus teachers interpreting and transmitting knowledge.

In the Web-based environment, student-centered instruction should be practiced, allowing students to have a choice in assignments or even to design their own (League for Innovation in the Community College, 1999). Gresh and Mrozowski (2000) described students taking turns leading the online discussions. They also reported the practice of having students first reply to bulletin board postings by other students before the faculty responded.

The following are teaching strategies for encouraging active learning:

1. Identify and share Web sites found helpful while doing an assignment or project (Harrison & Bergen, 2000; Spears & Saks, n.d.).
2. Conduct problem-based activities (Chickering & Gamson, 1987; Crumpacker, 2001; Hiltz, 1998; League for Innovation in the Community College; Parker, 1996).
3. Conduct live talks with a guest speaker (Spears & Saks, n.d.).
4. Pose discussion questions that foster critical thinking and problem solving (Spears & Saks, n.d.).

5. Use open-ended questions to encourage extended and wide-ranging dialogue (Spears & Saks, n.d.).
6. Select real-world, relevant, and practical assignments that allow students to apply and practice the concepts learned (Chickering & Gamson, 1987; Crumpacker, 2001; Graham et al., 2000; Matthews, Bunn, Gustafon, Megill, & O'Connor, 1987; Parker, 1996; Spears & Saks, n.d.).
7. Ask students to reflect on their learning (Spears & Saks, n.d.).

Principle 4: Gives Prompt Feedback

Instructors should provide feedback to students on their knowledge and performance. Initially, students need help in assessing their current knowledge and competence, and then, instructors need to provide frequent feedback regarding performance and suggestions for improvement throughout the course (Chickering & Gamson, 1997).

As cited in Winegar (2000), "Black and William (1998) reported research findings indicating a direct and positive correlation between frequency of feedback and learning" (p. 14). Aoki and Pogroszewski (1998) concurred that timely feedback to students on their completed assignments is critical to their learning process. Howard (1987), as cited in McIsaac and Gunawardena (1996), identified feedback as the most significant element in his model for effective course design. Graham et al. (2000) asserted that students' stress is reduced when instructors communicate a clear feedback response policy.

Verduin and Clark (1991) reasoned that adult learners want to know how they are doing; therefore, feedback that includes praise and suggestions for improvement is

important. Harrison and Bergen's (2000) strategies for developing an online course described giving feedback to students after the first online quiz given early in the semester. Students then receive guidelines on how to improve their performance before substantial time has elapsed in the semester. Sorcinelli (1991) concluded, based on research on innovative teaching methods, that "immediate, corrective, and supportive feedback is central to learning" (p. 19).

The literature repeatedly supported the need for prompt feedback (Granger & Benke, 1998) to students in response to their emails (Carr, 2000; Graham et al., 2000; Gresh & Mrozowski, 2000; Matthews et al., 1987; Young, 2000) and phone calls (Clay, 1999). Many suggested that the response should be within 24 to 48 hours. One study regarding PLATO® (PLATO, Inc., Bloomington, MN, www.plato.com) on the Internet, an Internet-based mathematics curriculum, discovered that the students had a higher level of satisfaction with the course when questions or issues were resolved via e-mail (Foshay & Perez, 2000). Byun et al. (2000) revealed that "e-mail communications on a regular basis with the instructor will give students a greater sense of security and confidence, yet this amount of contact with students can also quickly overwhelm an instructor" (p. 60). It is common for instructors to have virtual office hours in Web-based courses (Byun, et al., 2000; Carr, 2000; League for Innovation, 1999; Spears & Saks, n.d.). The students have the advantage of knowing they will be able to get an immediate response to their e-mail or posting.

The League for Innovation in the Community College (1999) and Graham et al. (2000) recommended that instructors acknowledge messages or receipt of assignments, even if they need to respond in more detail later. This timely initial

response reduces student uncertainty about whether or not his/her assignment was received. Spears and Saks (n.d.) suggested that the instructor differentiate the response time in regards to the type of inquiry (personal question, content question, assignment feedback, etc.).

Additional teaching strategies for giving prompt feedback include the following:

1. Post answers to common questions in the “frequently asked questions” (FAQ) portion of the Web-based course (Chickering & Ehrmann, 1996; League for Innovation, 1999; Matthews, 1997).
2. Return graded work within a reasonable amount of time (and define that timeframe for the students) (Web-Based Education Commission, 2000).

Principle 5: Emphasizes Time on Task

Learning takes place when time is used effectively and actively; thus, instructors should create opportunities for students to practice good time management. Web-based courses lend themselves to independence; thus, the flexibility of working at “one’s own pace” allows the student to postpone reading and assignments when they feel the need to focus on their more immediate responsibilities. Therefore, instructors have an obligation to provide students with information in advance to help them be successful in the Web-based course and manage their time efficiently. Spears and Saks (n.d.) recommended that the following be provided: (a) learning objectives for each unit/module; (b) due dates and/or timelines for assignments, milestones on long-term projects, and other expected participation (Graham et al., 2000); (c) suggested time-on-task for each task; (d) assessment criteria; (e) clear criteria or expectations regarding online discussions; and (f) points awarded for all work.

In addition to these strategies, instructors are encouraged to follow up promptly with those students who are not participating in assigned discussions or turning in assignments on time. Sorcinelli (1991) noted that the consensus of the research showed that, the more time students are engaged in learning, the more their learning increases.

Principle 6: Communicates High Expectations

The self-fulfilling prophecy holds true in any learning environment; thus, the instructor should have high expectations for students to perform well – for the poorly prepared as well as for the bright and well motivated (Chickering & Gamson, 1987). Cross (1987) wrote, “If teachers set high but attainable goals, academic performance usually rises to meet expectations” (p. 4). This is known as the “Pygmalion effect.” Sorcinelli (1991) reasoned that “the literature consistently shows, contrary to faculty belief, that students give higher ratings to difficult courses in which they have to work hard” (p. 21).

Defining what it takes to be successful in a Web-based course requires more detail than instructors may think (League for Innovation in the Community College, 1999). Often, students bring misconceptions to the course. Examples of misconceptions include thinking the course will be easy or not as time consuming as a face-face class.

The following should be made clear (Spears & Saks, n.d.):

1. Prerequisites
2. Required materials
3. Learning objectives
4. Course outline

5. Assignments
6. Expectations: for example, “every student should post to the bulletin board at least twice a week” is better than saying “be sure to use the bulletin board for interaction”; be clear on frequency of interaction and the “quality, quantity, depth, and breadth”; define “regular basis.”
7. Participation requirements
8. Assessment criteria for participation, testing, projects, learning activities, etc.
9. Testing procedures
10. Direction and guidelines for all required work that includes examples of excellent, average, and poor work
11. Grading scale
12. Timeline that includes due dates
13. Criteria for success

Principle 7: Respects Diverse Talents and Ways of Learning

Helping students recognize their own learning styles along with matching instructional methods and students’ learning styles can lead to improved learning. According to Chickering and Gamson (1987), students need the opportunity to display their talents and learn in ways that work best for them. They also need to be pushed to learn in new ways that may not come as easily. Therefore, Web-based courses should be designed to appeal to the different ways students learn.

Smith (2001) noted individual learning style differences and suggested that instructors should have students assess their own preferred learning style. “Faculty who

show regard for their students' unique interests and talents are likely to facilitate student growth and development in every sphere – academic, social, personal, and vocational" (Sorcinelli, 1991, p. 21).

Going a step further, understanding and flexibility in regards to the distance learners' lifestyle (full-time job, traveling, parent, etc.) can affect the learning experience (League for Innovation in the Community College, 1999). Therefore, it is suggested that the instructor be flexible and treat each situation individually.

The following are teaching strategies for respecting diverse talents and ways of learning:

1. Design more than one method of assessment and demonstration of achievement (Spears & Saks, n.d.).
2. Allow for different pacing (Graham et al., 2000; League for Innovation, 1999; Spears & Saks, n.d.).
3. Offer different modes of project presentations (Spears & Saks, n.d.).
4. Allow students to exercise control over the chat room sessions (Gresh & Mrozowski, 2000; Spears & Saks, n.d.).
5. Allow students to "shape their own coursework by choosing project topics" (Graham et al., 2000).
6. Reward creativity (Spears & Saks, n.d.).
7. Encourage students to express their points of views (Graham et al., 2000).
8. Include learning exercises that are real-world, relevant, and practical for students to apply to past or current experiences (Chickering & Gamson,

1987; Crumpacker, 2001; Graham et al., 2000; Matthews et al., 1997; Parker, 1996; Spears & Saks, n.d.).

9. Use a variety of instructional media, such as text, images, videos, animations, and sounds (Buchanan, 1999; Chickering & Ehrmann, 1996).

Summary

Chapter 2 covered a brief history of distance learning and the growth of distance learning in higher education in Texas, the Metroplex region, and UNT. Professional development and the training of instructors in the postsecondary setting were discussed, stressing the necessity for universities to provide structured training for instructors teaching a Web-based course. The chapter included an in-depth look at Chickering and Gamson's model (1987) seven principles for good practice and various teaching strategies supporting each principle.

CHAPTER 3

METHODOLOGY

To fulfill the purposes of this study, descriptive data were collected from Web-based instructors at the University of North Texas (UNT). This chapter describes the design of the study, population, instrumentation, and procedures that were employed in collecting and treating the data.

Statement of the Problem

This study has examined teaching strategies implemented by UNT Web-based instructors as identified in Chickering and Gamson's (1987) model, seven principles for good practice in undergraduate education. In addition, the training received by faculty in developing and delivering a Web-based course and the relationships between their training and reported use of the teaching strategies in the seven principles was examined. The study was also an examination of the relationship between the number of Web-based courses taught and the use of the teaching strategies.

Research Questions

The following are the research questions for this study:

1. What are the most frequently used types of training received by UNT Web-based instructors in preparation for their teaching of a Web-based course?
2. How many times have UNT Web-based instructors taught Web-based courses?
3. To what extent do UNT Web-based instructors report using the teaching strategies within the seven principles?

4. What is the relationship between the training received and UNT Web-based instructors' reported use of the teaching strategies?
5. What is the relationship between number of courses taught and UNT Web-based instructors' reported use of the teaching strategies?

Design of the Study

The type of design used in this study was survey research, a form of descriptive research. This study examined the degree to which teaching strategies, as identified in Chickering and Gamson's (1987) model seven principles for good practice, were being implemented by UNT instructors teaching Web-based courses. In addition, a multivariate analysis of variance (MANOVA) analysis was applied to examine the relationships between the training received by instructors in developing and delivering a Web-based course and reported use of the teaching strategies in the seven principles. Lastly, the number of Web-based courses taught by the instructors was correlated to the use of the teaching strategies in the seven principles using Pearson product moment correlation.

It was expected that the results would show a higher frequency of use with the teaching strategies if the instructor received training through UNT Center for Distributed Learning (CDL). I also expected that there would be a higher frequency of use with the teaching strategies the more Web-based courses the instructor had taught.

I met with two people on the leadership team of UNT CDL to discuss the structure of the study, obtain their insights on communicating with the Web-based instructors and providing needed CDL data for inclusion in this study.

Population

The research population for this study included all of the instructors in UNT who taught a Web-based course during the spring term of 2003. The population was identified by reviewing UNT's *Spring 2003 Class Schedule*. Seventy-two instructors were identified as teaching a Web-based course. These instructors taught at all levels of undergraduate and graduate education.

Sample

Random sampling was not used due to the size of the population and the voluntary nature of participation. It is recommended that entire populations be surveyed if it is 100 or less (Gay, 1996 as cited in Leedy, 1997). All instructors in UNT who taught a Web-based course for the spring 2003 term were surveyed, totaling 72. Sixty-five participated, yielding a 90.3% response rate.

Instrumentation

The instrument used measured the number of Web-based courses taught by UNT Web-based instructors; the majority of the training received in preparation to teach a Web-based course; the extent to which the instructors report using the teaching strategies with the seven principles; the relationship between the training received and instructors' reported use of the teaching strategies; and the relationship between the number of courses taught and the instructors' reported use of the teaching strategies.

As discussed previously in this study, the seven principles for good practice are as follows:

1. Encourages student-faculty contact
2. Encourages cooperation among students

3. Encourages active learning
4. Gives prompt feedback
5. Emphasizes time on task
6. Communicates high expectations
7. Respects diverse talents and ways of learning

A subsection of a tested instrument developed by Winegar (2000) with his permission (Winegar, personal communication, November 11, 2002) was used. The subsection, titled Pedagogical Practices, contained 39 practices or teaching strategies within the seven principles. I ultimately modified and included 17 of the 39 items from Winegar's instrument for the Web-based Teaching Strategies survey to use in this study. Appendix A includes a table of Winegar's original survey items and the modified version of these items included in the instrument I used. The remaining sections of Winegar's instrument did not relate directly to the research conducted.

The instrument used, titled Web-based Teaching Strategies, is in Appendix B. Section A of the survey captured demographic information. As a write-in response, the first question asked how many Web-based course sections the instructor had taught in a college/university setting. The write-in response reflected that the number of courses taught was a linear number likely ranging from 1 to 50. The second question was a rank order measurement from 1 to 4 (one is *most*) asking the instructor how the majority of the training to teach a Web-based course was received. The four choices were: (a) UNT CDL; (b) self taught (i.e., Internet, articles, books); (c) peer taught; and (d) attended conferences/ workshops. Only those trainings that were applicable needed to be ranked.

Section B of the survey opened with brief instructions, including a request for the instructors to have a specific course in mind that was the most fully developed or had gone through the most revisions as they completed the survey. Two fill-in-the blank questions followed: How many times have you taught this course? How many times has this course gone through significant revisions?

The remainder of section B listed a series of 30 items exploring the frequency of use of specific teaching strategies using a 4-point Likert scale ranging from 1=*never*; 2=*rarely*; 3=*sometimes*; and 4=*frequently*. This scale was modified from Winegar's (2000) instrument, which used a 5-point Likert scale ranging from *not used* to *frequently used,* with no descriptors in between these two ranges. I chose to modify and improve the measurement properties of the scale to provide clearer descriptors.

Winegar's (2000) questionnaire was field tested by the University of South Dakota faculty experienced in teaching with computer-mediated instruction and who were familiar with the seven principles. I modified the instrument by combining and modifying items in addition to adding new items; therefore, the survey was expert validated for face and content validity and field tested by five people: (a) two representatives from the UNT CDL; (b) one Web-based instructor identified by CDL as an expert; and (c) two novice Web-based instructors identified by CDL.

The field testers were asked to review all instructions, statements, and questions for clarity, comprehensiveness, and logical flow. Additionally, they were asked to recommend combining items that were closely related. Based on the feedback, the list of items decreased from 35 to 30, and wording was revised.

Next, the field testers identified which principle(s) related to each teaching strategy and the response percentage. This provided content validity along with capturing the strategies within the seven subscales (principles) for data treatment analysis related to research questions 3, 4, and 5. An item was identified as a teaching strategy of a principle(s) based on the following criteria: (a) 60% or more of the field testers identified one or more principles as matching a strategy/item; (b) Winegar's study identified the same or very similarly worded strategy/item as matching a principle; (c) 40% or more of the field testers identified one or more principles as matching a strategy/item in addition to me identifying the same principle matching a strategy/item that was supported in the literature. Appendix C includes the details on the validation of the survey.

To further ensure content validity, references were cited from the literature for each teaching strategy on the survey (see Appendix D).

Data Collection

The Web-based Teaching Strategies Survey (Appendix B) was in hard-copy form, three and half pages in length with a cover memo. On the back of every survey in the upper left corner above the staple, was a written pre-coded number between 1 and 72. Each instructor identified as teaching a Web-based course in the spring 2003 semester was assigned one of those numbers in order for me to track and follow up the nonreturns.

All 72 instructors received a packet consisting of the survey, a cover memo, a pre-stamped, self-addressed return envelope, and a $5 gift card to Starbucks® (Starbucks U.S. Brands, Minden, NV, www.starbucks.com) in hopes of increasing the

return rate. These packets were hand delivered to the instructors on April 8, 2003. If an instructor was unavailable, I left the packet with the department secretary.

On April 10, 2003, individualized emails were sent to each instructor to thank them for their time (if I was able to meet the instructor) or to let them know that a packet was left for them and what it contained. Phone calls were made to the nonrespondents the week of April 14, 2003. For the few that had not responded, I hand delivered another survey, cover memo, and pre-paid, self-addressed stamped envelope on April 21, 2003.

A total of 72 surveys were distributed to all of the instructors in UNT who taught a Web-based course during the spring term of 2003. I received 65 survey responses, for a return rate of 90.3%.

Treatment and Analysis

All data gathered were reported in the aggregate form to protect anonymity. The completed surveys were analyzed using the statistical software program Advanced Statistical Package for the Social Sciences 11.5 (SPSS, 2003). A level of significance of .05 was specified. However, due to the exploratory nature of this study, findings significant at the $p = .10$ level were noted to suggest trends for possible future research.

Five research questions were addressed through quantitative data analysis. The first research question captured categorical data that identified the most to least frequently received type of training in preparing to teach a Web-based course. The instructors rank ordered only those training methods that applied to them. The choices were UNT CDL; self taught (i.e., Internet, articles, books); peer taught; and attendance at conference/workshops. The responses were reported as frequencies and

percentages. Standard deviation is not used with interval data; therefore, it was not included.

Through a write-in response, the second research question identified the number of Web-based course sections taught by the instructors in a college/university setting. These responses were reported as frequencies and percentages as well as means and standard deviations.

The third research question sought to determine the extent to which instructors reported using the teaching strategies consistent with the seven principles. Survey items were combined creating seven subscales (scores) as they relate to each individual principle. The responses were analyzed using means and standard deviations. In addition, the 30 items were ranked by highest mean and presented in a table.

A survey item (teaching strategy) may fall within one or more principles. Table 2 captures the principles and the associated item numbers. A more detailed version can be found in Appendix E listing each teaching strategy and its matching principle(s).

Table 2

Principle and Matching Survey Item Number

Principle	Survey item number	Total item numbers
1 – Encourages student-faculty contact	4, 5, 9, 12, 13, 22, 27, 29, and 30	9
2 – Encourages cooperation among students	1, 7, 10, 19, 23, 24, and 30	7
3 – Encourages active learning	1, 2, 10, 14, 16,19, 21, 23, 24, and 26	10
4 – Gives prompt feedback	3, 4, 5, 12, 13, 22, and 29	7
5 – Emphasizes time on task	5, 7, 17, 20, 21, 24, and 28	7
6 – Communicates high expectations	1, 3, 6, 7, 15, 17, 20, 23, 28, and 29	10
7 – Respects diverse talents and ways of learning	8, 11, 14, 16, 18, 19, 21, 25, and 26	9

The fourth research question sought to determine whether or not there was a relationship between the type of training instructors received to teach Web-based courses (independent variable), which consisted of four levels (UNT CDL, self taught, peer taught, and conferences/workshops) and their reported summative scores on the seven subscales (seven principles). The seven principles' summative scores were the seven dependent variables, and the training received was the independent variable consisting of the three most common types of training (CDL, self taught and peer taught). The fourth type of training, conferences/workshops, was not included due to the small sample size.

A one-way MANOVA was used to determine whether the best linear combination of the seven dependent variables was different between the groups of instructors. The MANOVA model was followed up with a series of one-way ANOVA tests and Tukey post hoc tests. The logic for MANOVA was to minimize the likelihood of a Type I error.

As an additional statistical approach to address research question 4, Pearson product-moment correlations were performed between the frequency ratings for each of the four types of training (0= *method not used*; to 4=*method most used*) with the seven subscales (seven principles).

The fifth research question sought to determine whether or not there was a relationship between the number of courses taught (independent variable) and their reported scores on the seven subscales (seven principles). The statistical procedure chosen was the Pearson product-moment correlation coefficient. The Pearson determined the extent to which values of the variables are proportional to one another, describing the strength of the relationship. A level of significance of .05 was specified.

Summary

This research study examined frequency of use of teaching strategies by Web-based instructors, training received to prepare to be a Web-based instructor, and the number of Web-based courses taught. In addition, the research explored whether there was a relationship between the training received and the frequency of use of teaching strategies and whether there was a relationship between the number of courses taught and the frequency of use of teaching strategies.

CHAPTER 4

RESULTS

Introduction

The purpose of this study was to examine the degree to which University of North Texas (UNT) instructors involved in Web-based instruction are implementing teaching strategies as identified in Chickering and Gamson's (1987) model, seven principles for good practice in undergraduate education. In addition, the study examined training received by instructors in developing and delivering a Web-based course and the relationships between their training and reported use of the teaching strategies in the seven principles. The study also examined the relationship between the number of Web-based courses taught and the use of the teaching strategies. A total of 65 university instructors participated in this study.

The study used the following research questions:

1. What are the most frequently used types of training received by UNT Web-based instructors in preparation for their teaching of a Web-based course?
2. How many times have UNT Web-based instructors taught Web-based courses?
3. To what extent do UNT Web-based instructors report using the teaching strategies within the seven principles?
4. What is the relationship between the training received and UNT Web-based instructors' reported use of the teaching strategies?

5. What is the relationship between the number of courses taught and UNT Web-based instructors' reported use of the teaching strategies?

Survey Findings

A total of 72 surveys were distributed to all of the instructors at UNT who taught a Web-based course during the spring term of 2003. I received 65 survey responses for a return rate of 90.3%.

Research Question 1

Research question 1 asked, "What are the most frequently used types of training received by UNT Web-based instructors in preparation for their teaching of a Web-based course?" Table 3 displays the frequency counts for the types of training received. The two most common were self taught (49.2%) and taught by UNT Center for Distributed Learning (CDL) (30.8%). When combining the two scale choices of *"most used"* and *"often used,"* self taught remained the highest at 81.5%, and the CDL as a training choice increased to 55.4%.

A large majority of the instructors either did not use conferences and workshops as a training method (42%), or it was the least used (32%) method. Interestingly, only two of the 65 instructors identified attending conferences and workshops as the way in which they received the majority of their training.

Table 3 also includes the specific frequency counts for use of the four types of training which were CDL $n = 20$, self taught $n = 32$, peer taught $n = 11$, and conferences/workshops $n = 2$.

Table 3

*Frequency of Types of Training Used (*N = *65)*

	n	%
Most frequently used type of training		
CDL	20	30.8
Self taught	32	49.2
Peer taught	11	16.9
Conferences/workshops	2	3.1
CDL		
Method not used	9	13.8
Least used	10	15.4
Sometimes used	10	15.4
Often used	16	24.6
Most used	20	30.8
Self taught		
Method not used	4	6.2
Least used	2	3.1
Sometimes used	6	9.2
Often used	21	32.3
Most used	32	49.2

(*table continues*)

Table 3 *(continued)*

	n	%
Peer taught		
Method not used	18	27.7
Least used	5	7.7
Sometimes used	19	29.2
Often used	12	18.5
Most used	11	16.9
Attended conferences/workshops		
Method not used	27	41.5
Least used	21	32.3
Sometimes used	7	10.8
Often used	8	12.3
Most used	2	3.1

Research Question 2

Research question 2 asked, “How many times have UNT Web-based instructors taught Web-based courses?” Inspection of Table 4 revealed the mean number of Web-based courses taught was *M* = 8.26 (*SD* = 5.81). Table 4 also displays the mean number times that course was taught (*M* = 6.37, *SD* = 4.32) and the mean number of times that course was revised (*M* = 3.15, *SD* = 2.43).

Table 4

*Descriptive Statistics for Web-based Instructional Experience (*N = *65)*

	n	%
Number of times taught Web-based course sections [a]		
1 – 4 times	23	35.4
5 – 9 times	19	29.2
10 – 19 times	15	23.1
20 or more times	8	12.3
Number of times taught this course [b]		
1 – 4 times	27	41.5
5 – 9 times	23	35.4
10 – 14 times	7	10.8
15 or more times	8	12.3
Number of revisions on this course [c]		
No revisions	8	12.3
1 – 4 times	43	66.7
5 – 9 times	11	16.9
10 or more times	3	4.6

[a] *M* = 8.26, *SD* = 5.81.

[b] *M* = 6.37, *SD* = 4.32.

[c] *M* = 3.15, *SD* = 2.43.

Research Question 3

Research question 3 asked, “To what extent do UNT Web-based instructors report using the teaching strategies within the seven principles?” Table 5 displays the descriptive scale scores for the seven principle scales. Most frequently used principles were “Gives prompt feedback” (*M* = 3.48) and “Communicates high expectations” (*M* = 3.33).

Table 5

*Extent Instructors Use the Teaching Strategies in the Seven Principles. Sorted by Most Frequent Principle (*N = *65)*

	M	*SD*	Low	High
4. Gives prompt feedback	3.48	0.34	2.71	4.00
6. Communicates high expectations	3.33	0.38	2.50	4.00
5. Emphasizes time on task	3.31	0.42	2.29	4.00
1. Encourages student-faculty contact	3.28	0.44	2.00	4.00
7. Respects diverse talents and ways of learning	2.90	0.44	1.78	3.67
3. Encourages active learning	2.75	0.63	1.40	3.90
2. Encourages cooperation among students	2.67	0.88	1.00	3.86

Note. Frequency scale: 1 = *never* to 4 = *frequently.*

“Gives prompt feedback” as the most frequently used principle can be viewed as positive in light of Winegar’s (2000) citation that “Black and William (1998) reported research findings indicating a direct and positive correlation between frequency of

feedback and learning" (p. 14). Furthermore, Sorcinelli's (1991) research concluded that "immediate, corrective, and supportive feedback is central to learning" (p. 19).

"Gives prompt feedback" as the most frequently used principle includes many strategies, at a minimum, that are expectations (if not requirements) of instructors, such as: respond to students' e-mails; ensure accountability with quizzes, tests, peer evaluations, discussions or other mechanisms; provide positive and/or constructive feedback; make contact with students who are not regular contributors to the discussion; acknowledge messages or receipt of assignments; and hold virtual office hours. There are nuances between classroom instructors and Web-based instructors regarding the two last strategies. Classroom instructors would more than likely follow up with students who are not attending class or who are not submitting assignments versus following up with them if they are not contributing to class discussions. In a Web-based course, it is common practice to assign points (thus, an assignment) based on discussion participation. In addition, classroom instructors are usually required to have scheduled office hours, and it is a recommended practice for Web-based instructors to have scheduled virtual office hours.

Three of the seven principles were very close in their frequency of use: "Communicates high expectations" (*M* = 3.33); "Emphasizes time on task" (*M* = 3.31); and "Encourages student-faculty contact" (*M* = 3.28). Again, many of the strategies that fall within these principles are commonly and consistently used by instructors in their courses, and are, in fact, often expected or required by universities. For example, eight of the 10 strategies for the second most frequently used principle, "Communicates high expectations," are: use collaborative learning methods; ensure student accountability

with quizzes, etc.; specify the amount, substance, and times required for participation in online class; require a portion of the grade be allocated to the online discussion portion of the course; provide directions and guidelines for work that includes examples of excellent, average, and poor work; publish the course assessment criteria, prerequisites, and grading scale in the syllabus; publish the course learning objectives and schedule in the syllabus; and provide constructive feedback to students in a timely manner.

The third most frequently used principle, “Emphasizes time on task,” included a total of seven teaching strategies. Four of the seven strategies are also included in the principle presented in the paragraphs above, “Communicates high expectations;” therefore, it is understandable that the mean scores are so close (.02 difference). The identical strategies were: specify the amount, substance, and times required for participation in online class; require a portion of the grade be allocated to the online discussion portion of the course; publish the course assessment criteria, prerequisites, and grading scale in the syllabus; and publish the course learning objectives and schedule in the syllabus. These strategies are similar to those of a classroom instructor, indicating the understandably high implementation of the strategies related to these principles.

The three least used principles were: “Respects diverse talents and ways of learning,” (*M* = 2.90); “Encourages active learning,” (*M* = 2.75); and “Encourages cooperation among students,” (*M* = 2.67). The inclusion of some of the teaching strategies for these principles in a Web-based course requires more planning and experience in the development stage, and more of the instructor’s time in the delivery

stage. These factors may reflect why these were the least used principles. Examples of teaching strategies that fall within at least two of these principles are: use collaborative learning methods that require participation in pairs or a group learning activity, i.e. problem-based, project-based and/or case studies; guide students by asking questions and encourage them to find solutions rather than giving them an immediate answer; when using electronic chat sessions or discussion groups, allow students to exercise some control over the sessions (i.e. students take turns being the discussion leader); allow students to have a choice in assignments or design own assignments; use discussions and organize them into folders (i.e. assignments, study questions, major course topics, etc.); and use expert guests to actively involve students in Internet chat sessions or discussions.

Table 6 displays information as another way to address the research question, "To what extent do UNT Web-based instructors report using the teaching strategies within the seven principles?" Table 6 displays the means for the 30 individual teaching strategies sorted by the highest mean score. The three most frequently used teaching strategies were Item 17, "Publish the course assessment criteria, prerequisites, and grading scale in the syllabus" (*M* = 3.95), Item 25, "Present course content on Web pages" (*M* = 3.94), and Item 20 "Publish the course learning objectives and schedule in the syllabus" (*M* = 3.88).

Table 6

*Frequency of Use of Teaching Strategies. Sorted by Highest Frequency (*N = *65)*

	M	*SD*
17. Publish the course assessment criteria, prerequisites, and grading scale in the syllabus	3.95	0.28
25. Present course content on Web pages	3.94	0.30
20. Publish the course learning objectives and schedule in the syllabus	3.88	0.55
28. Establish learning objectives for my Web-based course	3.88	0.41
4. Respond to student e-mail within 24-48 hours	3.86	0.43
3. Ensure student accountability with quizzes, tests, peer evaluations	3.85	0.36
5. Provide positive and supportive feedback to students in a timely manner	3.82	0.43
29. Provide constructive feedback to students in a timely manner	3.72	0.48
14. Provide the majority of the course instructional material and interaction	3.72	0.63
2. Select real-world, relevant, and practical assignments	3.69	0.68

(table continues)

Table 6 *(continued)*

	M	*SD*
8. Use a variety of instructional media such as text, images, videos	3.46	0.79
12. Acknowledge messages or receipt of assignments	3.43	0.85
6. Specify the amount, substance, and times required for participation	3.34	0.89
11. Accommodate self-paced learning	3.32	1.00
16. Guide students by asking questions and encourage them to find solutions	3.17	0.88
9. Get to know the students as individuals and let them get to know me as an individual	3.15	0.87
27. Use personal touches-posting my photograph and/or including a biography of myself.	3.02	1.17
13. Hold virtual office hours	2.88	1.11
10. Require students to suggest and critique URLs or Web sites	2.86	1.12
15. Provide directions and guidelines for work	2.83	0.99
30. Require students to post an introduction of themselves	2.83	1.38
22. Make contact with students who are not regular contributors	2.82	1.09
7. Require a portion of the grade be allocated to the online discussion portion	2.82	1.29
24. Use discussions and organize them into folders	2.66	1.28

(table continues)

Table 6 *(continued)*

	M	*SD*
23. Require students to publish work for other students to read on the Web	2.57	1.33
19. When using electronic chat sessions or discussion groups, allow students to exercise some control over the sessions	2.49	1.11
1. Use collaborative learning methods that require participation in pairs or a group activities	2.46	1.24
21. Allow students to have a choice in assignments or design own assignments	2.20	1.19
18. Use an assessment instrument to learn about students' learning styles	2.06	1.18
26. Use expert guests to actively involve students in Internet chat sessions	1.71	1.00

Note. Frequency scale: 1 = *never* to 4 = *frequently.*

It does not come as a surprise that the three teaching strategies most frequently used were: “Publish the course assessment criteria, prerequisites, and grading scale in the syllabus” (*M* = 3.95); “Present course content on Web pages” (*M* = 3.94); and “Publish the course learning objectives and schedule in the syllabus” (*M* = 3.88). These are traditional strategies that almost all instructors would include in their courses (face-to-face or Web-based).

The three least used teaching strategies were: “Use expert guests to actively involve students in Internet chat sessions” (*M* = 1.71); “Use an assessment instrument to learn about students’ learning styles” (*M* = 2.06); and “Allow students to have a choice in assignments or design own assignments” (*M* = 2.20). This was not too surprising, since two strategies, “Use expert guests to actively involve students in

Internet chat sessions" and "Allow students to have a choice in assignments or design own assignments," are associated with the two principles that had the lowest means: "Encourages active learning" and "Encourages cooperation among students." The strategy to "Use an assessment instrument to learn about students' learning styles" is within the principle, "Respects diverse talents and ways of learning," which reflected the third lowest mean among the principles.

Research Question 4

Research question 4 asked, "What is the relationship between the training received and UNT Web-based instructors' reported use of the teaching strategies?" This research question was examined two ways: (a) correlations between the frequency of the training method used with the seven principle scales (Table 7); and (b) comparison of strategy scores for the three most frequent training types based on a MANOVA analysis (Table 8).

Table 7 displays the correlations between the frequency of the four types of training received and the seven principle scales. The more frequently the respondent received training from the CDL, the lower his/her score was for "Respects diverse talents and ways of learning" (r = -.26). Frequency of being self taught corresponded to higher scores for "Gives prompt feedback" (r = .22) and "Respects diverse talents and ways of learning" (r = .33). Respondents who learned more from peers were less likely to "Encourage student-faculty contact" (r = -.24) and "Give prompt feedback" (r = -.26). Respondents with more training gained from workshops and conferences had lower scores for "Gives prompt feedback" (r = -.30).

Table 7

*Correlations for Training Received With Use of Seven Principles (*N = *65)*

	CDL	Self taught	Peer taught	Workshops/ conferences
1. Encourages student-faculty contact	.08	.14	-.24 **	-.11
2. Encourages cooperation among students	.02	.04	-.06	.19
3. Encourages active learning	-.13	.11	-.03	.15
4. Gives prompt feedback	.03	.22 *	-.26 **	-.30 **
5. Emphasizes time on task	.01	.05	.02	.08
6. Communicates high expectations	.03	-.06	.08	.18
7. Respects diverse talents and ways of learning	-.26 **	.33 ***	-.02	.01

* p = .10. ** p = .05. *** p = .01.

The three most common types of training (CDL, self taught, and peer taught) were compared for differences in their seven principle scale scores. This analysis used a one-way MANOVA followed by one-way ANOVA tests. The Wilks' Lambda statistic was significant for the overall model, F (14, 108) = 2.79, p = .001. The follow-up ANOVA models found significant differences (p = .05) among the three groups for principle (scale) 7, "Respects diverse talents and ways of learning" (Table 8). Tukey post hoc

tests found significant differences between self taught instructors (*M* = 3.01) and instructors who received most of their training through the CDL (*M* = 2.71) (*p* = .04).

These results relate to the previous findings stated in this chapter regarding the negative relationship between instructors who predominantly used the CDL training and the principle, “Respects diverse talents and ways of learning.” In contrast, a positive relationship was found between instructors who were self taught and that principle.

A minor contributing factor to the lack of significant differences between the training received and the instructors’ use of teaching strategies may be due to the large differences in the size of the subsamples (CDL *n* = 20; self taught *n* = 32; and peer taught *n* = 11).

Table 8

Use of Seven Principles Based on Most Frequent Training Received

*One Way ANOVA With Tukey Post Hoc Tests (*N = *65)*

Principle scale	Training [a]	*M*	*SD*	*F*	*p*
1. Encourages student-faculty contact	1. CDL	3.40	0.41	0.97	.387
	2. ST	3.27	0.46		
	3. PT	3.18	0.43		
2. Encourages cooperation among students	1. CDL	2.88	0.85	0.87	.423
	2. ST	2.58	0.92		
	3. PT	2.51	0.90		

(Table continues)

Table 8 (*continued)*

3. Encourages active learning	1. CDL	2.77	0.67	0.11	.899
	2. ST	2.76	0.64		
	3. PT	2.66	0.61		
4. Gives prompt feedback	1. CDL	3.55	0.29	1.66	.198
	2. ST	3.52	0.35		
	3. PT	3.34	0.30		
5. Emphasizes time on task	1. CDL	3.38	0.46	0.31	.738
	2. ST	3.29	0.42		
	3. PT	3.30	0.38		
6. Communicates high expectations	1. CDL	3.41	0.37	0.89	.418
	2. ST	3.27	0.40		
	3. PT	3.36	0.36		
7. Respects diverse talents and ways of learning [b]	1. CDL	2.71	0.44	3.22	.047
	2. ST	3.01	0.40		
	3. PT	2.86	0.50		

[a] Training: CDL = *center for distributed learning* (*n* = 20); ST = s*elf taught* (*n* = 32); PT = *peer taught* (*n* = 11).

[b] Tukey post hoc test: ST > CDL (*p* = .04).

Research Question 5

Research question 5 asked, “What is the relationship between number of courses taught and UNT Texas Web-based instructors’ reported use of the teaching strategies?” Table 9 displays the Pearson product-moment correlations between number of Web-courses taught and the seven principle scales. Number of Web-courses taught was positively correlated with four of the seven principle scales. Also in Table 9, the seven principle scales were correlated with number of times the instructors had taught the course and the number of times they had revised their course. None of those 14 correlations were significant at the $p = .05$ level.

Table 9

*Relationship of Instructional Experience and Principles Used (*N = *65)*

	Times taught Web course	Times taught course	Times course revised
1. Encourages student-faculty contact	.27 **	-.17	-.12
2. Encourages cooperation among students	.26 **	-.08	.08
3. Encourages active learning	.34 ****	-.02	.14
4. Gives prompt feedback	.19	-.08	-.01
5. Emphasizes time on task	.17	-.16	.09
6. Communicates high expectations	.13	-.06	.13
7. Respects diverse talents and ways of learning	.36 ****	.05	.19

* $p = .10$. ** $p = .05$. *** $p = .01$. **** $p = .005$.

According to the literature, developing a successful Web-based course is an ongoing process. Therefore, it is logical that as instructors gain experience, they learn more effective ways to present the material (Harrison & Bergen, 2000), and become more comfortable teaching online (Carr, 2000). I had the perception that as the number of Web-based courses taught increased the frequency of use of the teaching strategies would also increase. The findings support this perception to a degree; there is a positive correlation between over half of the seven principles with the number of Web-based courses taught and the implementation of the teaching strategies.

Three of the four positively correlated principles, “Respects diverse talents and ways of learning,” “Encourages active learning,” and “Encourages cooperation among students,” revealed a pattern of qualities that instructors must be willing to embrace if the strategies within these principles are to be implemented successfully. Time management is one of those qualities – making time to plan, create, and design a course that is interactive, diverse in appealing to various learning styles, and incorporates teamwork. In addition, the instructor must be skilled in delivering the Web-based course and in facilitating the learning process (Teles, Ashton, Roberts, & Tzoneva, 2001). This facilitation includes establishing teams, managing group projects, and allowing more student control and choices in assignments.

Even though students are accustomed to faculty-led and faculty-directed learning in a classroom setting, they realize the need to participate actively when taking a Web-based course (Southern Regional Education Board [SREB], 2001), in light of the fact that group interaction and student/teacher dialogue has changed (Ellis & Phelps, 2000). As a result, instructors need to know how to make the learning process more student-

centered (Husmann & Miller, 2001). Three of the positively correlated principles, "Respects diverse talents and ways of learning," "Encourages active learning," and "Encourages cooperation among students," include numerous strategies that reflect the student-centered approach.

It should be noted that the three principles that were positively correlated to the number of Web-based courses taught are more closely related to instructional design and delivery than the principles that did not show a positive correlation.

Summary

The data analysis presented in this chapter included the results of the five tested research questions in this study, providing a basis for developing the conclusions and recommendations that follow in chapter 5. Using tables and narrative, the five sections of this chapter focused upon 65 Web-based instructors responses to (a) frequency of types of training received in preparation of teaching in a Web-based environment; (b) number of times Web-based course sections taught; (c) frequency of teaching strategies being implemented; (d) relationship between training and use of teaching strategies; and (e) relationship between number of times Web-based courses taught and use of the teaching strategies.

CHAPTER 5

DISCUSSION, CONCLUSIONS, AND RECOMMENDATIONS

Introduction

This descriptive study examined the degree to which Web-based instructors implemented teaching strategies as identified in Chickering and Gamson's (1987) model, seven principles for good practice in undergraduate education. The study also examined the training received by instructors in preparation for developing and delivering a Web-based course, and the relationships between their training and the reported use of the teaching strategies. Lastly, the study examined the relationship between the number of Web-based courses taught and the use of the teaching strategies. Participants (*N* = 65) were Web-based instructors at the University of North Texas (UNT).

The research questions for this study are the following:

1. What are the most frequently used types of training received by UNT Web-based instructors in preparation for their teaching of a Web-based course?
2. How many times have UNT Web-based instructors taught Web-based courses?
3. To what extent do UNT Web-based instructors report using the teaching strategies in the seven principles?
4. What is the relationship between the training received and UNT Web-based instructors' reported use of the teaching strategies?

5. What is the relationship between number of times a Web-based course has been taught and UNT Web-based instructors' reported use of the teaching strategies?

The purpose of this chapter is to provide a discussion of the results and the limitations of the study. In addition, implications of findings and recommendations for further study and potential action regarding Web-based learning are included.

Interpretation of Findings and Discussion

Research question 1, "What are the most frequently used types of training received by UNT Web-based instructors in preparation for teaching a Web-based course?," revealed almost half (49%, *n* = 32) of the instructors taught themselves more than any other method of training listed. The four training options were UNT Center for Distributed Learning (CDL), self taught, peer taught, and conferences/workshops. Almost a third of the instructors (31%, *n* = 20) used the CDL as their preferred choice of training.

The literature repeatedly supported the need for instructors to be trained in the design, development, and delivery of Web-based courses (Crumpacker, 2001; Wilson, 1998) in addition to being trained in the use of the delivery system (Harrison & Bergen, 2000). The accrediting agency, the Texas Higher Education Coordinating Board (THECB) (1997), provided further support by stating that institutions must provide training for instructors who teach via distance learning.

Through the CDL of UNT, instructors had the opportunity to utilize a training option that is well developed and structured; yet the vast majority chose to teach themselves. In some ways, it may not be surprising that most of the instructors taught

themselves due to time constraints and the challenges of attending training classes while balancing their work loads.

A large majority of the instructors either did not use conferences and workshops as a training method (42%), or it was the least used (32%) method. Interestingly, only two of the 65 instructors identified attending conferences and workshops as the way in which they received the majority of their training.

Developing and delivering a Web-based course is a several step process that takes time. For instructors teaching in this environment, training in new pedagogical approaches or instructional approaches specific to Web-based teaching is needed (Buchanan, 1999; Ellis & Phelps, 2000; League for Innovation in the Community College, 1999; Rockwell et al., 2000; SchWeber et al., 1998; SREB, 2001). Therefore, such a process cannot be adequately taught or learned in a few hours. This point may indicate that conferences and workshops are not the most logical training choice in preparing to teach in a Web-based environment.

Research question 2, “How many times have UNT Web-based instructors taught Web-based courses?,” resulted in a mean of 8.26. The majority of the instructors (65%, *n* = 42) had taught nine or less Web-based courses, and very few (12%, *n* = 8) had taught 20 or more. The numbers alone are not significant; however, they do provide information useful to research question 5 later in this section.

Research question 3, “To what extent do UNT Web-based instructors report using the teaching strategies within the seven principles?,” revealed a range of responses from *“never used*” to “*frequently used*.” Of the 65 instructors, principle 4, “Gives prompt feedback,” (*M* = 3.48) was reported as the most frequently used principle,

which is not surprising due to the fact it includes many strategies that are either requirements or expectations of instructors.

The second, third, and fourth most frequently used principles were very close in their frequency of use: “Communicates high expectations” (*M* = 3.33); “Emphasizes time on task” (*M* = 3.31); and “Encourages student-faculty contact” (*M* = 3.28). Again, many of the strategies that fall within these principles are commonly used consistently by instructors in their courses, and are, in fact, often expected or required by universities.

The least used principles were “Respects diverse talents and ways of learning,” (*M* = 2.90); “Encourages active learning,” (*M* = 2.75); and “Encourages cooperation among students,” (*M* = 2.67). The number of students enrolled in a Web-based course can far exceed the number of students enrolled in a course on campus. Therefore, the large number of students can limit the instructor’s ability to implement some of the strategies within these principles. In fact, even though a comment section was not provided in the survey, four instructors related that more than 100 students were enrolled in their Web-based courses, thereby inhibiting their use of certain teaching strategies included in one or more of the principles.

As a matter of fact, Winegar (2000) wrote:

> Web-based courses should be kept small because student-faculty interaction is a critical contributor to successful learning. Schrum (1998) stated that class enrollments within the range of 15 to 20 students are manageable. A team-teaching approach may allow larger class sizes without sacrificing quality of instruction. (p. 25)

Research question 4, “What is the relationship between the training received and UNT Web-based instructors’ reported use of the teaching strategies?,” revealed both positive and negative relationships. Specifically, if the instructors received most of their training through the CDL, there was a negative relationship (r = -.26) with the principle, “Respects diverse talents and ways of learning.” In contrast, if the instructors chose self taught as their primary training choice, the relationship with the same principle was positive (r = .33). This may reflect that the type of strategies instructors employ and learn in their training pursuits are the same strategies they use in their teaching practices. CDL training is more structured with boundaries and timelines; therefore, there is less room for choices. On the other hand, the self taught process provides many options under the learner’s control concerning how and when the learning occurs.

Principle 4, “Gives prompt feedback,” correlated negatively with instructors who received the majority of their training from peers (r = -.26) or who attended workshops/conferences (r = -.30). Conversely, those instructors who were self taught for the majority of their training correlated positively (r = .33) with the principle, “Gives prompt feedback.”

The last significant finding with respect to the relationship between the four types of training received and the use of the seven principles is related to the principle, “Encourages student-faculty contact.” Instructors who learned more from their peers in preparing to teach a Web-based course were less likely to “Encourage student-faculty contact” (r = -.24).

Using a MANOVA analysis, the three training types (CDL, self taught, and peer taught) were compared for differences in their seven principle scale scores. The Tukey

post hoc found significant differences between self taught instructors (*M* = 3.01) and instructors who received most of their training through the CDL (*M* = 2.71) (*p* = .04) in relation to principle 7, “Respects diverse talents and ways of learning.”

Prior to the study, I believed that the training the instructors received through the CDL would more positively correlate with the principles and the frequency in which the teaching strategies were implemented. This belief was based on the fact that the CDL teaches and role models the seven principles in its courses to prepare instructors to develop and deliver Web-based learning.

Research question 5, “What is the relationship between number of courses taught and UNT Web-based instructors’ reported use of the teaching strategies?,” resulted in the positive correlation of four of the seven principles with the number of Web-based courses instructors taught. These principles included: “Respects diverse talents and ways of learning” (*r* = .36, *p* = .005); “Encourages active learning” (*r* = .34, *p* = .005); “Encourages student-faculty contact” (*r* = .27, *p* = .05); and “Encourages cooperation among students” (*r* = .36, *p* = .05).

The first of the three principles that demonstrated a positive correlation is principle 7, “Respects diverse talents and ways of learning.” The strategies this principle includes are: use a variety of instructional media such as text, images, videos, animations, and sound; provide self-paced learning (i.e. provide students access to more than one lesson at a time); provide the majority of the course instructional material and interaction so that students can participate at their own convenience; guide students by asking questions and encourage them to find solutions rather than giving them an immediate answer; use an assessment instrument to learn about students’

learning styles; allow students to exercise some control over the electronic chat sessions (i.e. taking turns being the leader); allow students to have a choice in assignments or design own assignments; and use expert guests to actively involve students in Internet chat sessions or discussions. One might conclude that most of these strategies require the instructor to be more flexible, allow more options, and prepare the course with all learning styles in mind. Such requirements can be very time consuming in preparing for the course and in delivering it. Another time consuming teaching strategy in the course development stage is the creation and posting of multimedia presentations. This also requires instructor expertise that may be acquired over time as more and more Web-based courses are taught.

The principles, “Encourages cooperation among students” and “Encourages active learning,” are closely related, sharing five of the same teaching strategies. Of these five strategies, the two most time consuming strategies for an instructor to implement are: use collaborative learning methods that require participation in pairs or a group learning activity, i.e. problem-based, project-based, and/or case studies; and use discussions and organize them into folders (i.e. assignments, study questions, major course topics, etc.).

The fourth principle that was positively correlated with the number of Web-based courses taught was “Encourages student-faculty contact.” From the literature, it appeared that this principle was highly important to student success. For instance, Chickering and Gamson (1987) contended that frequent student-faculty contact is the most important factor in student motivation, intellectual commitment, and personal development, which paralleled the finding of Aoki and Pogroszewski (1998) that

“teachers and instructors play the most significant role in providing quality education” (Faculty Services section, para. 1).

In light of this result, I recommend limiting the number of new Web-based instructors teaching at the freshman level. Retention of incoming students, especially freshmen, is highly important to UNT. Given the positive relationship between the number of Web-based courses taught and the principle, “Encourages student-faculty contact,” Web-based instructors with more experience may positively impact a student’s learning and success to a higher degree than those instructors with limited Web-based teaching experience.

It should be noted that the three principles that were positively correlated to the number of Web-based courses taught are more closely related to instructional design and delivery than the principles that did not show a positive correlation.

The principles that did not show a relationship with the number of Web-based courses taught were, “Gives prompt feedback,” “Emphasizes time on task,” and “Communicates high expectations.” It is worthwhile to note that these principles include teaching strategies that are more commonly used and applied in most classroom or instructional settings. Appendix E provides a cross reference of teaching strategies and matching principle(s).

Limitations

The current study had flaws that should be corrected in future studies. Issues concerning survey design and methodological processes are explored in the paragraphs to follow.

The research design did not set out to infer to a larger population because a random sample was not used. The population (*N* = 65) in this study constituted Web-based instructors at UNT. Because of the specificity of the population, generalizations should not be made.

The survey instrument combined a portion of a previously developed survey (17 items) and 13 additional items created by me that reflected effective teaching strategies supported in the literature. In reviewing the dissertation study that included the original survey, the process that the initial researcher took in validating the original instrument for content or face validity was unclear. In the methodology chapter, it was stated that the instrument was developed by the researcher and "critiqued by University of South Dakota faculty experienced in teaching with CMC and who are familiar with the seven principles" (Winegar, 2000, p. 38).

Admittedly, this study's survey could have been more rigorously validated for content and face validity by including additional experienced Web-based instructors instead of the single participant that was part of the team of five field testers (two novice Web-based instructors and two staff from UNT CDL). In addition, 11 of the 30 teaching strategies included as survey items had two or fewer relevant literature citations supporting the strategies and their use, possibly indicating that they were not the most appropriate strategies to include as representing one (or more) of the seven principles.

It may be worth considering the inclusion of *"always"* as an additional scale choice to the survey. An instructor commented on the survey that many of the "required" responses could be answered as "always." An example is Item 20, "Publish the course learning objectives and schedule in the syllabus."

It could be argued that the inferential statistical analysis (MANOVA) was used on data (teaching strategies as survey items) that is ordinal in nature. However, the combining of the number of survey items as they were related to each principle was then averaged to achieve the seven subscales in an effort to create more stability. Further, the results are not inferred beyond the population (*N* = 65) due to the entire population used in the study.

Several of the same teaching strategies were included in two or more of the seven principles resulting in a high correlation between many of the principles. This impacted the results for research questions three, four and five, possibly inhibiting a more accurate picture of the relationships reported. A factor analysis would help identify the interrelationships and guide changes needed in the listing of teaching strategies as identified within the principles.

The survey was self report, and it is not uncommon for respondent bias to influence the way a question is answered. In this study, there could have been a tendency by the instructors to favorably reflect the degree of strategy implementation, therefore disproportionately specifying responses of four (4) for *"frequently"* or of three (3) for *"sometimes."*

I discovered that some instructors varied the implementation of teaching strategies depending upon the level of the course, specifically undergraduate versus graduate. This impacted how some of the instructors responded. A revised instrument could ask instructors to not only have a specific course in mind as they complete the survey, but to specify whether it is a graduate or undergraduate course on the survey. It

may be interesting to compare the two course levels and the degree of implementation of the teaching strategies in each.

Additional demographic data that could be collected for comparison purposes include age, number of years teaching in a university or college setting, level of education, and professor level (tenured, adjunct, etc.).

Lastly, instructors ranked how they received the majority of their training to teach Web-based courses. The choices were: UNT CDL, self taught, peer taught, and conferences/workshops. In an attempt to better understand why self taught was the most used training option over CDL, an additional question exploring “why” they chose the particular training option would provide additional information useful to the CDL, whose core responsibility is training instructors in how to teach Web-based courses.

Recommendations

Web-based learning will continue to grow at UNT, as it will in many post-secondary institutions. As a result of this study, the following recommendations are made. These are not listed in order of importance.

1. Survey students on instructors’ effectiveness in implementing the teaching strategies and their perceived frequency of use; then compare the students’ perceptions to the instructors’ perceptions.
2. Instructors report a percentage in regards to each of the four categories on how they received the majority of their training versus rank order from one (1) to four (4).
3. Replicate this study (with modifications as suggested in Limitations section) in K-12 systems, community colleges, private colleges, and other universities.

4. Perform an importance ranking process on the teaching strategies and on the seven principles with instructors, students, or both.
5. Conduct instructor focus groups to identify successful Web-based teaching strategies, obstacles regarding implementation of strategies, and suggested solutions.
6. Explore further the positive correlation between self taught and principle 7, “Respects diverse talents and ways of learning,” and the negative correlation between the CDL and principle 7.
7. Conduct additional quantitative research about effective teaching strategies in a Web-based environment.
8. Conduct additional quantitative research regarding the comparison of training methods.
9. Compare student retention rates of those instructors whose survey results (or student survey results) report a higher frequency of implementation of teaching strategies.
10. UNT CDL might consider conducting a survey of those instructors who did not complete the training in preparation for teaching in a Web-based environment to explore their reasons for not completing the course.

Conclusions

This descriptive study examined the degree to which Web-based instructors implemented teaching strategies as identified in Chickering and Gamson’s (1987) model, seven principles for good practice in undergraduate education. The study also examined training received by instructors in preparation for developing and delivering a

Web-based course, and the relationships between their training and the reported use of the teaching strategies. Lastly, the study examined the relationship between the number of Web-based courses taught and the use of the teaching strategies. Participants (*N* = 65) were Web-based instructors at UNT who taught a Web-based course in spring 2003.

The results revealed that out of the four training options available in preparing to teach in a Web-based environment (UNT CDL; self taught; peer taught; and workshops/conferences), almost half of the instructors were self taught, and about one-third used the CDL as their primary training choice.

When the relationship between the most frequently used training received and the use of teaching strategies was explored, four negative correlations and two positive correlations emerged. However, no clear pattern was detected for interpretations or recommendations.

Survey results captured that the average number of Web-based courses taught by instructors was 8.26. Analysis revealed that the number of Web-based courses taught was positively correlated with four of the seven principles. These four principles were: “Respects diverse talents and ways of learning,” “Encourages active learning,” “Encourages student-faculty contact,” and “Encourages cooperation among students.”

One last finding from the research reported the most to least used principles were: “Gives prompt feedback,” “Communicates high expectations,” “Emphasizes time on task,” “Encourages student-faculty contact,” “Respects diverse talents and ways of learning,” “Encourages active learning,” and “Encourages cooperation among students.”

The chapter included observations and recommendations on improvements in the survey design and methodological processes, and concluded with numerous recommendations for future studies.

APPENDIX A

WINEGAR (2000) SURVEY ITEMS MODIFIED FOR

WEB-BASED TEACHING STRATEGIES SURVEY

Winegar (2000) Survey Items Modified for Web-based Teaching Strategies Survey

Winegar's Survey Item Wording	**Item Revised for Web-based Teaching Strategies Survey**
Respond to student e-mail on a daily basis. Q12	Respond to student e-mail within 24-48 hours (during work week). Q4
When using electronic chat sessions, regularly allow students to exercise some control over the session. Q14	When using electronic chat sessions or discussion groups, allow students to exercise some control over the sessions (i.e. students take turns being the discussion leader). Q19
Regularly use expert guests to actively involve students in Internet chat sessions. Q15	Use expert guests to actively involve students in Internet chat sessions or discussions. Q26
Regularly require participation in group projects. Q17	Use collaborative learning methods that require participation in pairs or a group learning activity i.e. problem-based, project-based, and/or case studies. Q1
Regularly ensure student accountability with tests, peer evaluations, or other mechanisms. Q19	Ensure student accountability with quizzes, tests, peer evaluations, discussions, or other mechanisms. Q3
Regularly assign challenging and interesting group activities. Q21	Use collaborative learning methods that require participation in pairs or a group learning activity i.e. problem-based, project-based, and/or case studies. Q1
Regularly present course content on web pages. Q23	Present course content on web pages (WebCT®). Q25
Regularly accommodate self-paced learning. Q25	Accommodate self-paced learning (i.e. provide students access to more than one lesson at a time). Q11

Winegar's Survey Item Wording	**Item Revised for Web-based Teaching Strategies Survey**
Regularly require students to publish work for other students to read on the web. Q26	Require students to publish work for other students to read on the web. Q23
Regularly provide feedback to student work in a timely manner. Q28	Provide positive and supportive feedback to students in a timely manner. Q5
Regularly provide constructive criticism in feedback to student work. Q29	Provide constructive feedback to students in a timely manner. Q29
Regularly publish the course learning objectives and schedule in the syllabus. Q30	Publish the course learning objectives and schedule in the syllabus. Q20
Regularly establish learning objectives for my CMC course that are equally rigorous as those for corresponding face-to-face courses. Q31	Establish learning objectives for my web-based course that are equally as rigorous as those for corresponding face-to-face courses. Q28
Regularly publish the course assessment criteria, prerequisites, and grading scale in the syllabus. Q34	Publish the course assessment criteria, prerequisites, and grading scale in the syllabus. Q17
Regularly provide students freedom to select learning activities that match their individual learning styles. Q35	Allow students to have a choice in assignments or design own assignments. Q21
Regularly provide the majority of the course presentation and interaction so that students can participate at their own convenience. Q38	Provide the majority of the course instructional material and interaction so that students can participate at their own convenience. Q14
Regularly allow students to participate in self-directed inquiry. Q39	Guide students by asking questions and encourage them to find solutions rather than giving them an immediate answer. Q16

APPENDIX B

WEB-BASED TEACHING STRATEGIES SURVEY

AND COVER MEMO

Web-based Teaching Strategies

Thank you in advance for participating in this study. Included in your envelope is a $5 gift card for Starbucks® to show my appreciation for your time.

The survey will take about 10 minutes to complete.

Your responses will be confidential.

For the purposes of this study, UNT defines a web-based course as a course in which 50 percent of the instructional materials and class interaction are conducted on the Internet.

Section A—Demographics

Please answer the following questions as it applies to you.

1. Including this semester, how many web-based course sections (where you were the primary instructor) have you taught in a college/university setting?

   _____
   Write in the number

2. Rank 1-4 how you have received the **majority of your training** to teach a web-based course. One (1) is MOST, four (4) is LEAST. **Only rank those that apply**.

   UNT's Center for Distributed Learning ___
   Self taught (i.e. Internet, articles, books) ___
   Peer taught ___
   Attended conferences/workshops ___

Section B—Teaching Strategies

Please answer the following 30 items about your teaching strategies by checking the answer that best describes the extent you use (or used) the identified teaching strategy in the delivery of your web-based course.

Please have a specific course in mind that is the most fully developed course or has gone through the most revisions.

1. How many times have you taught this course? _____
   Write in the number

2. How many times has this course gone through significant revisions? _____
   Write in the number

TEACHING STRATEGY	1 NEVER	2 RARELY	3 SOMETIMES	4 FREQUENTLY
1. Use collaborative learning methods that require participation in pairs or a group learning activity (i.e. problem-based, project-based, and/or case studies.				
2. Select real-world, relevant, and practical assignments that allow students to apply and practice the concepts learned.				
3. Ensure student accountability with quizzes, tests, peer evaluations, discussions, or other mechanisms.				
4. Respond to student e-mail within 24-48 hours (during work week).				
5. Provide positive and supportive feedback to students in a timely manner.				
6. Specify the amount, substance, and times required for participation in online class.				
7. Require a portion of the grade be allocated to the online discussion portion of the course.				
8. Use a variety of instructional media such as text, images, videos, animations, and sound.				
9. Get to know the students as individuals and let them get to know me as an individual.				
10. Require students to suggest and critique URLs or Web sites.				
11. Accommodate self-paced learning (i.e. provide students access to more than one lesson at a time).				
12. Acknowledge messages or receipt of assignments even if I plan on responding in more detail at a later time.				

TEACHING STRATEGY	1 NEVER	2 RARELY	3 SOMETIMES	4 FREQUENTLY
13. Hold virtual office hours—times I am available for online chats, phone calls, or email.				
14. Provide the majority of the course instructional material and interaction so that students can participate at their own convenience.				
15. Provide directions and guidelines for work that includes examples of excellent, average, and poor work.				
16. Guide students by asking questions and encourage them to find solutions rather than giving them an immediate answer.				
17. Publish the course assessment criteria, prerequisites, and grading scale in the syllabus.				
18. Use an assessment instrument to learn about students' learning styles.				
19. When using electronic chat sessions or discussion groups, allow students to exercise some control over the sessions (i.e. students take turns being the discussion leader).				
20. Publish the course learning objectives and schedule in the syllabus.				
21. Allow students to have a choice in assignments or design own assignments.				
22. Make contact with students who are not regular contributors to the discussion.				
23. Require students to publish work for other students to read on the web.				
24. Use discussions and organize them into folders (i.e. assignments, study questions, major course topics, etc.).				
25. Present course content on web pages (WebCT®).				

TEACHING STRATEGY	1 NEVER	2 RARELY	3 SOMETIMES	4 FREQUENTLY
26. Use expert guests to actively involve students in Internet chat sessions or discussions.				
27. Use personal touches—posting my photograph and/or including a biography of myself.				
28. Establish learning objectives for my web-based course that are equally as rigorous as those for corresponding face-to-face courses.				
29. Provide constructive feedback to students in a timely manner.				
30. Require students to post an introduction of themselves to the class as part of the first online assignment.				

If you would like to receive results for this survey, please check here _____.

Place the completed survey in the self-addressed envelope provided.

Thank you for participating in this survey. Enjoy some coffee or munchies on me with the $5 gift card to Starbucks®.

M E M O R A N D U M

TO: Web-based Instructor

FROM: Julie Ray, Doctoral candidate

DATE: April 8, 2003

RE: Survey on Web-based Teaching Strategies

The UNT spring '03 schedule identifies you as an instructor for a web-based course. I am conducting a study examining teaching strategies used by web-based instructors at UNT based on Arthur Chickering and Zelda Gamson's "Seven Principles for Good Practice." Your participation is vital.

I've included with the survey a $5 gift card to Starbucks® to say "thanks in advance" for taking a few minutes to complete the survey.

Your participation is voluntary and the data collected is strictly confidential. You will not be identified in any report from this study. Results will be aggregated into groups and categories. Completion of the survey should take about 10 minutes.

The survey is included along with a pre-stamped, self-addressed envelope to be returned to me within the next few days.

Your contribution is appreciated and this study will benefit web-based courses at UNT. There is a place on the survey to specify if you would like a copy of the results.

Please contact Julie Ray if you have any questions.

APPENDIX C

VALIDATION OF WEB-BASED TEACHING STRATEGIES SURVEY

Validation of Web-based Teaching Strategies Survey

This document explains the validation process of the 30 teaching strategies (survey items) being matched with one or more of the seven principles.

Definition of Terms

Section B – Teaching Strategies Survey Item: The teaching strategy survey items as they appeared on the survey.

Matching Principle(s): The principle(s) identified as matching a teaching strategy and used in the data treatment for research questions 3, 4, and 5.

Five Field Testers: The percentage of the field testers that identified a principle as matching a teaching strategy. If 60% or more of the field testers identified a principle as matching a strategy, the match was used. If 40% or more of the field testers identified a principle as matching a strategy, I must have identified the same principle in order for it to be matched with the strategy (based on the literature review).

Winegar's Study: Seventeen of the 30 Web-based Teaching Strategies survey items were used with slight modifications from Winegar's (2000) survey. A validation process of identifying one or more principles that matched the teaching strategies was performed in Winegar's study; therefore, those same principle and strategy matches were used in this study. Even if the field tester did not identify the principle, it remained, based on Winegar's validation.

Researcher Based on Literature: Based on the literature review, the researcher identified one or more principles for each teaching strategy.

Seven Principles of Good Practice

1. Encourages student-faculty contact
2. Encourages cooperation among students
3. Encourages active learning
4. Gives prompt feedback
5. Emphasizes time on task
6. Communicates high expectations
7. Respects diverse talents and ways of learning

Section B – Teaching Strategies Survey Item	Matching Principle(s)	Five Field Testers	Winegar's Study	Researcher Based on Literature Review
1. Use collaborative learning methods that require participation in pairs or a group learning activity i.e. problem-based, project-based, and/or case studies.	2 3 6	40% 40%	2 3 6	2 3
2. Select real-world, relevant, and practical assignments that allow students to apply and practice the concepts learned.	3	100%	N/A	3
3. Ensure student accountability with quizzes, tests, peer evaluations, discussions, or other mechanisms.	4 6	40% 60%	6	4 6
4. Respond to student e-mail within 24-48 hours (during work week).	1 4	60% 80%	1 4	1 4
5. Provide positive and supportive feedback to students in a timely manner.	1 4	60% 60%	1 4	1 4
6. Specify the amount, substance, and times required for participation in online class.	5 6	80% 80%	N/A	6
7. Require a portion of the grade be allocated to the online discussion portion of the course.	2 5 6	80% 40% 40%	N/A	5 6

Section B – Teaching Strategies Survey Item	Matching Principle(s)	Five Field Testers	Winegar's Study	Researcher Based on Literature Review
8. Use a variety of instructional media such as text, images, videos, animations, and sound.	7	80%	N/A	7
9. Get to know the students as individuals and let them get to know me as an individual.	1	100%	N/A	1
10. Require students to provide and critique URLs or Web sites.	2 3	40% 100%	N/A	2 3
11. Accommodate self-paced learning (i.e. provide students access to more than one lesson at a time).	7	100%	7	7 5
12. Acknowledge messages or receipt of assignments even if I plan on responding in more detail at a later time.	1 4	40% 80%	N/A	1 4
13. Hold virtual office hours—times I am available for online chats, phone calls or email.	1 4	100% 40%	N/A	1 4
14. Provide the majority of the course instructional material and interaction so that students can participate at their own convenience.	3 7	0% 100%	3 7	3 7

Section B – Teaching Strategies Survey Item	Matching Principle(s)	Five Field Testers	Winegar's Study	Researcher Based on Literature Review
15. Provide directions and guidelines for work that includes examples of excellent, average, and poor work.	6	100%	N/A	6
16. Guide students by asking questions and encourage them to find solutions rather than giving them an immediate answer.	3 7	100% 40%	3 7 5	3 7
17. Publish the course assessment criteria, prerequisites, and grading scale in the syllabus.	5 6	40% 100%	5 6	5 6
18. Use an assessment instrument to learn about students' learning styles.	7	100%	N/A	7
19. When using electronic chat sessions or discussion groups, allow students to exercise some control over the sessions (i.e. students take turns being the discussion leader).	2 3 7	80% 60% 20%	 3 7	 3 7
20. Publish the course learning objectives and schedule in the syllabus.	5 6	20% 100%	5 6	5 6
21. Allow students to have a choice in assignments or design own assignments.	3 5 7	20% 0% 100%	 5 7	3 7

Section B – Teaching Strategies Survey Item	Matching Principle(s)	Five Field Testers	Winegar's Study	Researcher Based on Literature Review
22. Make contact with students who are not regular contributors to the discussion.	1 4	100% 40%	N/A	1 4 5
23. Require students to publish work for other students to read on the web.	2 3 6	100% 40% 40%	3	2 6
24. Use discussions and organize them into folders (i.e. assignments, study questions, major course topics, etc.).	2 3 5	40% 60% 40%	N/A	2 5
25. Present course content on web pages (WebCT®).	6 7	40% 40%	7	6 7
26. Use expert guests to actively involve students in Internet chat sessions or discussions.	3 7	60% 40%	3	3 7
27. Use personal touches—posting my photograph and/or including a biography of myself.	1	100%	N/A	1
28. Establish learning objectives for my web-based course that are equally as rigorous as those for corresponding face-to-face courses.	5 6	20% 100%	5 6	 6
29. Provide constructive feedback to students in a timely manner.	1 4 6	40% 100% 0%	1 4 6	1 4 6

Section B – Teaching Strategies Survey Item	Matching Principle(s)	Five Field Testers	Winegar's Study	Researcher Based on Literature Review
30. Require students to post an introduction of themselves to the class as part of the first online assignment.	1 2	40% 100%	N/A	1 2

APPENDIX D

WEB-BASED TEACHING STRATEGIES (SURVEY ITEMS) AND SUPPORTING LITERATURE

Web-based Teaching Strategies (Survey Items) and Supporting Literature

Section B – Teaching Strategies Item	Literature Citations
1. Use collaborative learning methods that require participation in pairs or a group learning activity i.e. problem-based, project-based, and/or case studies.	Chickering & Ehrmann, 1996; Chickering & Gamson, 1987; Connick, 1999; Cross, 1998; Crumpacker, 2001; Garrison, 1989; Graham et al., 2000; Hiltz, 1998; League for Innovation, 1999; Luchini, 1998; Matthew et al., 1997; Parker, 1996; Spears & Sax, n.d.; Winegar, 2000
2. Select real-world, relevant, and practical assignments that allow students to apply and practice the concepts learned.	Chickering & Gamson, 1987; Crumpacker, 2001; Graham et. al, 2000; Matthews et al., 1997; Parker, 1996; Spears & Sax, n.d.
3. Ensure student accountability with quizzes, tests, peer evaluations, discussions, or other mechanisms.	Graham et al., 2000; League for Innovation, 1999; Spears & Sax, n.d.; Winegar, 2000
4. Respond to student e-mail within 24-48 hours (during work week).	Carr, 2000; Clay, 1999; Graham et al., 2000; Gresh & Mrozowski, 2000; Matthews et al., 1997; Winegar, 2000; Young, 2000
5. Provide positive and supportive feedback to students in a timely manner.	League for Innovation, 1999, Sorcinelli, 1991; Teles et al., 2001; Verduin & Clark, 1991; Winegar, 2000

Section B – Teaching Strategies Item	Literature Citations
6. Specify the amount, substance, and times required for participation in online class.	Carr, 2000; Clay, 1999; Graham et al., 2000; Harrison & Bergen, 2000; League for Innovation, 1999; Levin, 1998; Spears & Sax, n.d.
7. Require a portion of the grade be allocated to the online discussion portion of the course.	Graham, et al., 2000; Harrison & Bergen, 2000; Levin, 1998
8. Use a variety of instructional media such as text, images, videos, animations, and sound.	Buchanan, 1999; Chickering & Ehrmann, 1996
9. Get to know the students as individuals and let them get to know me as an individual.	Buchanan, 1999; Spears & Sax, n.d.
10. Require students to provide and critique URLs or Web sites.	Harrison & Bergen, 2000; Spears & Sax, n.d.
11. Accommodate self-paced learning (i.e. provide students access to more than one lesson at a time).	Carr, 2000; Graham et al., 2000; League for Innovation, 1999; Winegar, 2000
12. Acknowledge messages or receipt of assignments even if I plan on responding in more detail at a later time.	League for Innovation, 1999; Graham et al., 2000
13. Hold virtual office hours—times I am available for online chats, phone calls or email.	Byun et al., 2000; Carr, 2000; League for Innovation, 1999; Spears & Sax, n.d.
14. Provide the majority of the course instructional material and interaction so that students can participate at their own convenience.	Winegar, 2000
15. Provide directions and guidelines for work that includes examples of excellent, average, and poor work.	Graham et al., 2000; Spears & Sax, n.d.

Section B – Teaching Strategies Item	Literature Citations
16. Guide students by asking questions and encourage them to find solutions rather than giving them an immediate answer.	Graham et al., 2000; League for Innovation, 1999; Parker, 1996; Winegar, 2000; Young, 2000
17. Publish the course assessment criteria, prerequisites, and grading scale in the syllabus.	Harrison & Bergen, 2000; League for Innovation, 1999; Spears & Sax, n.d.; Winegar, 2000
18. Use an assessment instrument to learn about students' learning styles.	Granger & Benke, 1998; Sherry, 1996; Smith, 2001; Spears & Sax, n.d.
19. When using electronic chat sessions or discussion groups, allow students to exercise some control over the sessions (i.e. students take turns being the discussion leader).	Graham et al., 2000; Gresh & Mrozowski, 2000; Spears & Sax, n.d.; Winegar, 2000
20. Publish the course learning objectives and schedule in the syllabus.	Foshay, 2000; Harrison & Bergen, 2000; Spears & Sax, n.d.; Winegar, 2000
21. Allow students to have a choice in assignments or design own assignments.	League for Innovations, 1999; Winegar, 2000
22. Make contact with students who are not regular contributors to the discussion.	Graham et al., 2000; Spears & Sax, n.d.
23. Require students to publish work for other students to read on the web.	Graham et al., 2000; Matthews et al., 1997; Winegar, 2000
24. Use discussions and organize them into folders (i.e. assignments, study questions, major course topics, etc.).	Aoki & Pogroszewski, 1998; Harrison & Bergen, 2000; League for Innovation, 1999
25. Present course content on web pages (WebCT®).	Winegar, 2000
26. Use expert guests to actively involve students in Internet chat sessions or discussions.	Spears & Sax, n.d.; Winegar, 2000

Section B – Teaching Strategies Item	Literature Citations
27. Use personal touches—posting my photograph and/or including a biography of myself.	Carr, 2000
28. Establish learning objectives for my web-based course that are equally as rigorous as those for corresponding face-to-face courses.	Matthews et al., 1997; Winegar, 2000
29. Provide constructive feedback to students in a timely manner.	Chickering & Gamson, 1997; Graham et al., 2000; Harrison & Bergen, 2000; Matthews et al., 1997; Sorcinelli, 1991; Verduin, 1991; Winegar, 2000; Yeung, 2001
30. Require students to post an introduction of themselves to the class as part of the first online assignment.	Graham et al., 2000; Harrison & Bergen, 2000; Spears & Sax, n.d.

APPENDIX E

WEB-BASED TEACHING STRATEGIES (SURVEY ITEMS)

AND MATCHING PRINCIPLES

Web-based Teaching Strategies (Survey Items) and Matching Principles

Seven Principles for Good Practice

1. Encourages student-faculty contact
2. Encourages cooperation among students
3. Encourages active learning
4. Gives prompt feedback
5. Emphasizes time on task
6. Communicates high expectations
7. Respects diverse talents and ways of learning

Teaching Strategy Survey Item	Principles						
	1	2	3	4	5	6	7
1. Use collaborative learning methods that require participation in pairs or a group learning activity i.e. problem-based, project-based, and/or case studies.		X	X			X	
2. Select real-world, relevant, and practical assignments that allow students to apply and practice the concepts learned.			X				
3. Ensure student accountability with quizzes, tests, peer evaluations, discussions, or other mechanisms.				X		X	
4. Respond to student e-mail within 24-48 hours (during work week).	X			X			
5. Provide positive and supportive feedback to students in a timely manner.	X			X			
6. Specify the amount, substance, and times required for participation in online class.					X	X	
7. Require a portion of the grade be allocated to the online discussion portion of the course.		X			X	X	

Teaching Strategy Survey Item	Principles						
	1	2	3	4	5	6	7
8. Use a variety of instructional media such as text, images, videos, animations, and sound.							X
9. Get to know the students as individuals and let them get to know me as an individual.	X						
10. Require students to provide and critique URLs or Web sites.		X	X				
11. Accommodate self-paced learning (i.e. provide students access to more than one lesson at a time).							X
12. Acknowledge messages or receipt of assignments even if I plan on responding in more detail at a later time.	X			X			
13. Hold virtual office hours—times I am available for online chats, phone calls or email.	X			X			
14. Provide the majority of the course instructional material and interaction so that students can participate at their own convenience.			X				X
15. Provide directions and guidelines for work that includes examples of excellent, average, and poor work.						X	
16. Guide students by asking questions and encourage them to find solutions rather than giving them an immediate answer.			X				X
17. Publish the course assessment criteria, prerequisites, and grading scale in the syllabus.					X	X	
18. Use an assessment instrument to learn about students' learning styles.							X

Teaching Strategy Survey Item	Principles						
	1	2	3	4	5	6	7
19. When using electronic chat sessions or discussion groups, allow students to exercise some control over the sessions (i.e. students take turns being the discussion leader).		X	X				X
20. Publish the course learning objectives and schedule in the syllabus.					X	X	
21. Allow students to have a choice in assignments or design own assignments.			X		X		X
22. Make contact with students who are not regular contributors to the discussion.	X			X			
23. Require students to publish work for other students to read on the web.		X	X			X	
24. Use discussions and organize them into folders (i.e. assignments, study questions, major course topics, etc.).		X	X		X		
25. Present course content on web pages (WebCT®).						X	X
26. Use expert guests to actively involve students in Internet chat sessions or discussions.			X				X
27. Use personal touches—posting my photograph and/or including a biography of myself.	X						
28. Establish learning objectives for my web-based course that are equally as rigorous as those for corresponding face-to-face courses.					X	X	
29. Provide constructive feedback to students in a timely manner.	X			X		X	
30. Require students to post an introduction of themselves to the class as part of the first online assignment.	X	X					

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