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Telementoring And Computer Mediated Discussions: A Description Of Online Instructors' Support

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TELEMENTORING AND COMPUTER MEDIATED DISCUSSIONS: A DESCRIPTION OF ONLINE INSTRUCTORS' SUPPORT

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Abstract

The purpose of this study was to evaluate online instructors' characteristics and preferences concerning telementors' characteristics and role during a computer mediated discussion. In addition, this work looked for relationships between online instructors' characteristics in correlation to their support for the utilization of telementoring. Two thousand online instructors from a convenience sample received a request to participate email that contained a link to an anonymous contingency survey. Of those contacted, 323 instructors responded to the survey. Online instructors responded to questions about their characteristics, level of support for telementoring, and perceptions on a telementor's characteristics and roles. Spearman rho tests for each variable were significant when certain variables were correlated with instructors previously assisted by a telementor. Results indicated that online instructors did not support the use of telementoring by the highest percentage. However, instructors who had been assisted by a telementor depicted support for telementoring. Of the telementors' characteristics and roles, online instructors who had been assisted by a telementor identified telementor training, interacting with students, providing technical support, and scholarly support as important characteristics and roles that a telementor should have.

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Of all the things that people have in common there is one that has continued to stand out for me. That one thing is that everyone can make a difference. I know this is true, because I have experienced the receiving end. Without my professors, I would not be where I am today. It was Dr. Larry Tomei who helped me experience the responsibility and thrill that comes with being a leader. Dr. Linda Wojnar who pushed me as a student to work hard and taught me the importance of setting myself up for success, and Dr. Bonita Wilcox who showed me that publishing and finding the writer deep within myself was possible. These are not the only instructors who impacted my learning. To all of you, thank you for making this experience so enriching.

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CHAPTER I

INTRODUCTION

Presentation of the Problem

Adult learners have found distance education to be an acceptable choice when it comes to taking a course or earning a degree (Chu & Hinton, 2001). Researchers state that distance education has been distributed in different ways (Kanuka & Conrad, 2003; Shale, 2003). Distance education can be defined by geographical location and time which helps separate traditional face-to-face courses with courses that are completely online. Traditional or face-to-face forms of learning require students and the instructor to be at the same place at the same time. Online learning courses are offered at a different time and a different place or they are offered at the same time, but the students and the instructor participate from different locations (Simonson, Smaldino, Albright, & Zvacek, 2000). Course management systems have made online learning more accessible, because they provide students with tools that offer options for flexibility and opportunity to learn from a distance (Course-Management Systems, 2005).

One feature available to students using a course-management system is an asynchronous discussion board. Students discuss topics and readings, they explore, collaborate, and share their own perspectives with other students. Feelings of isolation, according to researchers, are reduced when the asynchronous board feature is made use of (Makrakis, 1998; Prestera & Moller, 2001). There are disadvantages that students and instructors experience when they use asynchronous boards during a computer mediated discussion. For example, reading and contributing posts can be a time-consuming endeavor and misunderstandings can occur since social context cues are reduced in this

learning environment (Collins & Berge, 1996). However, courses can be designed to effectively reduce the disadvantages (Makrakis, 1998; Collins & Berge, 1996; Prestera & Moller, 2001; Williams, 2001).

Need for Research

Computer mediated discussion can be used as a medium to promote discussion and interaction that is more meaningful, social, constructive, and cohesive for building knowledge, according to researchers. Online learners have needs and responsibilities when participating in a computer mediated discussion (Gunawardena & Duphorne, 2000; Hacker & Neiderhauser, 2000; Shin and Chan, 2004). Researchers indicate a need for more research that focuses on meeting students' learning needs and strategies that may impact the success of computer mediated discussions (Hacker & Neiderhauser, 2000).

Instructors' play a significant role in the success of computer mediated discussions (Williams, 2001). Students' socio-cognitive process abilities should be evaluated by instructors, and strategies should be implemented to help increase interaction. In addition, students do not always know how to interact or understand what is expected of them. As a result, instructors need to be clear and concise, provide due dates, make use of advanced organizers, and they have to provide students with the right amount of guidance (Makrakis, 1998). Another responsibility that instructors have includes altering their lessons so that they are appropriate for an online venue. This can mean making use of facilitation strategies, individualizing instruction, defining goals and designing cognitive learning opportunities. It can also mean helping students develop online communities where they learn to make connections and transfer knowledge (Prestera & Moller, 2001).

Researchers are concerned about the possibility of a major pedagogical shift moving toward the use of computer mediated discussion boards because of the impact they can have on social relationships within the learning environment (Khine, Yeap, & Lok, 2003). The need to prepare faculty for a shift toward an increased need to utilize computer mediated discussions is especially important when there are instructors with teaching practices that reflect teaching trends from the 20th century as opposed to the technological teaching skills they will need for the 21st century students who are increasingly looking at online learning with a favorable view (Waits & Lewis, 2003; Setzer & Lewis, 2005; Stumph, McCrimon, & Davis, 2005).

A study that focuses on eight Florida State University online instructors who teach eight different courses with approximately five hundred seventy online students illustrates the potential impact that the increasing number of online courses and computer mediated discussions can have on the role of the instructor (Chang, 2004). When designing courses, instructors will use theories on which they base their design choices to help them meet students' needs and create courses that are effective (Buendia, Diaz, & Benlloch, 2002; McAlpine & Ashcroft, 2002; Huang & Liaw, 2004). Instructors also make use of best practice strategies and updated principles that reflect technological innovations (Chickering & Gamson, 1987; Chickering & Ehrmann, 1996; Ritter & Lemke, 2000; Taylor, 2002; Huang & Liaw, 2004; Martyn, 2004).

Telementoring is an alternative strategy being used in the online learning environment and during computer mediated discussions in particular to better meet students' needs and to help reduce instructors' responsibilities. Researchers show that online telementors should be supportive, act as technological and scholarly guides, and

they should help students develop an online community (Stein & Glazer, 2003; Chang, 2004; Buchanan, Myers, & Hardin, 2005).

Buchanan et al., (2005) present a study on the impact of a telementor in an online learning environment. Results from graduate students' perspectives show positive attitudes about the use of a telementor, because students feel a telementor would help them increase learning and work through difficulties that come with learning online. Other researchers examine and find favorable impacts from the use of student moderators. However, a student moderator is different from a telementor, and the impact that one has should not be considered to be an impact of the other (Tagg, 1994; Poole, 2000; Durrington & Yu, 2004). Research that studies telementors from the workplace who guide students while they explore a topic and offer suggestions based on experience has also shown benefits (Tsikalas, McMillan-Culp, Friedman, & Honey, 2000).

Despite the benefits of a telementoring program, researchers become cautious when telementoring programs do not provide training, coaching, and procedures to evaluate or check the progress of the telementoring relationships (Tsikalas et al., 2000; Chan, 2004). Tsikalas et al. (2000) present a model of structured mentoring to help others develop sound training programs. The model guides telementoring program developers to design programs that include planning steps, structure, and assessment. Planning involves recruiting telementors, managing expectations or communicating goals, and carefully matching the telementors to those being mentored. Providing structure, the second phase of the model, requires training, coaching, and community building. Assessment is the final phase of the model. During this phase, involvement data needs to be collected to

determine if the participants are following the program's guidelines. This phase also involves making formative and summative assessments.

Chan (2004) presents a different telementoring model that also includes subsequent phases that guide the development of a telementoring program. During the first phase of this model, new telementors discuss roles and responsibilities. Then, they meet with other training telementors during a workshop for the purpose of building a supportive telementoring community. Learning how to utilize the course management system is another part of the first phase. During the second phase, the training telementors interact online so they can practice using the course management system and participate in training activities. While the telementoring model that Chang (2004) presents does not include an assessment feature and the model (Tsikalas et al., 2000) present does not require telementors to build their own supportive community, they both focus on the students, the instructors, and the telementors as model participants. Empirical contributions to the field show that when exploring research on telementoring, information on students' perspectives on telementoring is available, yet instructor's and telementor's perspectives of telementoring are not mentioned (Single & Muller, 1999; Tsikalas et al., 2000; Chang, 2004; Buchanan et al., 2005).

Evaluation

Researchers note the importance of evaluating programs, and the need to include the stakeholders during the evaluation process (Fetterman, 1994; Greene, 1997; Rossi, 1999). Rossi (1999), states that the evaluators seek information from the stakeholders for the purpose of guiding their future plans. Fetterman (1994) discusses the potential of empowerment and the need for individuals to be a part of making change and solving

problems to enhance their self-determination. Greene (1997) stresses the need to keep from taking sides during an evaluation and the significance of wanting to equitably advance stakeholders. Scriven (1998) looks at different theories on evaluation and points out that sometimes the components need to be examined as opposed to developing a deep explanation about why something does not work.

Ricardo Millett, a philanthropist and evaluator, discusses evaluation with a focus on utilizing evaluation in the right way to help people who are less advantaged. What this evaluator says about evaluation itself can be applied to any area. According to Millett, there is a need to develop knowledge that accurately presents the perspectives and knowledge of the individuals impacted by a program. He warns against the use of conventional evaluation programs, and he recommends a multicultural approach that is more sensitive to the abilities and knowledge of those directly involved with the program at hand. Of producing authentic knowledge, Millett shares an evaluation experience in which families from housing projects have been asked to share their perspectives about better housing. Not only does he feel that when an evaluator has a connection to the study, he supports asking the stakeholders questions for the purpose of obtaining authentic knowledge and providing for a more effective evaluation (Coffman, 2004).

Research that has been conducted by the National Center for Education Statistics shows that the number of online courses that higher educational institutions offer has increased. These findings are significant enough that legislators have opted to reduce restrictions that once restrained institutions that offer online courses from applying for certain federal grants. Schools that previously offered fifty percent or more of their courses online are the key institutions once impacted by the restrictions. Results from

these studies do not include the perspectives of online instructors or instructors who intend to teach online in the near future. (Simonson, 2003; Waits & Lewis, 2003; Garnevale, 2005; Setzer & Lewis, 2005).

Goal Statement

The purpose of this quantitative study was to examine online instructors so that authentic knowledge and perspectives about teaching online courses and telementoring could be generated. It was especially important to question online instructors, because the development of telementoring programs within colleges and universities across the United States continues to have the potential to impact how and when instructors teach. Instructors were first asked descriptive questions at the nominal level to see if any recognizable characteristic patterns in instructor preference on providing telementoring support during a computer mediated discussion existed. If instructors did support the utilization of a telementor, they were asked preference questions to learn if there were any recognizable patterns in instructor preference on issues that concern telementor characteristics and the role of a telementor.

Significance of the Study

Results from this study will help anyone interested in determining when implementing telementor support is necessary and under what circumstances it could be advantageous. Information about instructors' characteristics and perspectives on telementoring during a computer mediated discussion as part of a course offering will be beneficial to instructors, students, and telementors, because they are directly impacted by the incorporation of a telementor. University or college administrators who make decisions about the development of online courses will profit from the study, because it

will help them make decisions that are better informed. Government officials will also gain from this study, because it may effect the future decisions they make regarding grants and online learning. Finally, individuals who design telementor training programs will be able to use information from this study to improve their programs.

Research Questions

More than one research question is presented to target the specific areas of information related to instructors' characteristics and preferences concerning telementor support. This study examines the following research questions:

1. Are there recognizable characteristic patterns in instructor preference on telementoring support during a computer mediated conference as a part of the course offering?
    a. Does an online instructor's choice to want or not want telementoring support during a computer mediated conference as a part of the course offering relate to discipline?
    b. Does an online instructor's choice to want or not want telementoring support during a computer mediated conference as a part of the course offering relate to the number of online courses taught?
    c. Does an online instructor's choice to want or not want telementoring support during a computer mediated conference as a part of the course offering relate to gender?
    d. Does an online instructor's choice to want or not want telementoring support during a computer mediated conference as a part of the course offering relate to their theoretical style of teaching?

e. Does an online instructor's choice to want or not want telementoring support during a computer mediated conference as a part of the course offering relate to the undergraduate, graduate, and post-graduate levels from which the course is taught?

f. Does an online instructor's choice to want or not want telementoring support during a computer mediated conference as a part of the course offering relate to the number of years the instructor has taught online courses?

g. Does an online instructor's choice to want or not want telementoring support during a computer mediated conference as a part of the course offering relate to the number of years the instructor has taught at the college or university level?

h. Does an online instructors choice to want or not want telementoring support during a computer mediated discussion as part of the course offering relate to the enrollment limit of your online course?

2. Are there recognizable patterns in instructor preference on the characteristics that a telementor should have before one acts as a telementor during a computer mediated conference as a part of the course offering?

   a. Does an instructor prefer a telementor to be trained in the course management system through which the online course is offered before taking a telementoring role?

   b. Does an instructor prefer a telementor to interact with other telementors to gain support and seek advice about meeting students' needs?

   c. Does an instructor prefer a telementor to pass a telementor training program before taking a telementoring role?

3. Are there recognizable patterns in instructor preference on how a telementor should be utilized during a computer mediated conference as a part of the course offering?

   a. Does an instructor prefer a telementor to interact and discuss with students during a computer mediated discussion?

   b. Does an instructor prefer a telementor to first respond to learners' questions and refer questions that can't be answered to the instructor?

   c. Does an instructor prefer a telementor to collect students' questions then present them to the instructor for a response?

   d. Does an instructor prefer a telementor to provide learners with encouragement and friendship during a computer mediated discussion to aid in social improvement and help learners' build an online community?

   e. Does an instructor prefer a telementor to provide learners with qualified technical suggestions and direct them to the correct place for support during a computer mediated discussion?

   f. Does an instructor prefer a telementor to act as a scholarly guide when students do not understand the course content and requirements during a computer mediated discussion?

Definition of Terms

The following are terms that have been used in this study:

Asynchronous- Interaction and communication that does not take place at the same time or at the same place (Moore & Kearsley, 1996).

Asynchronous Bulletin Board- Also called electronic bulletin board. A feature or tool often available through a classroom management system in which students interact and communicate during different times and from different places by using their computers (Moore & Kearsley, 1996).

Cognitive Theory- Pertaining to the internal processes of the brain and information processing. There is a focus on the prior knowledge and learning styles of the learners. Cognitive theory developed after behaviorism, and it has had an influence on distance education and course design (Moore & Kearsley, 1996).

Cognitive Flexibility Theory- Pertaining to the ability to internally process information and make adjustments so that learning can be transferred to situations that involve solving unstructured problems (Jonassen, 2003).

Computer Assisted Instruction- A process that involves teaching and the use of a computer so that teaching and learning can take place (Moore & Kearsley, 1996).

Collaboration- A form of learning in which a group of learners make individual contributions to the learning experience and building of knowledge. There is emphasis on building relationships with peers and creating a community of learning (Moore & Kearsley, 1996).

Computer Mediated Discussion- Also called threaded discussion or computer mediated conference. Manner in which students communicate and interact asynchronously by

posting messages onto discussion threads or responding to the messages contributed by others (Moore & Kearsley, 1996).

Correspondence Education- A first form of distance teaching and learning that originated as a result of learners and their instructors communicating and exchanging assignments through postal mail (Moore & Kearsley, 1996.)

Course Design- Process of declaring objectives, picking technology tools and media applications, developing activities supported with instructional strategies, and planning evaluation steps for the purpose of guiding students' learning (Moore & Kearsley, 1996).

Course Management System- Also called a learning management system. A system through which students participate in a course, receive assignments, communicate, and turn in assignments as part of a learning experience (Moore & Kearsley, 1996).

Distance Education- Different forms of planned learning through unique course design techniques, forms of communication, and organization (Moore & Kearsley, 1996).

Dual-Coding Theory- Belief that learners process information aurally and visually (Huang & Liaw, 2004).

Elaboration Theory- A theory that holds that new learning should be presented first in the simplest form and carefully move to more complex forms of content and learning (Huang & Liaw, 2004).

Electronic Mail- Also referred to as e-mail. A fast, easy, and inexpensive way to communicate with others through the use of a computer and correspondence software (Moore & Kearsley, 1996).

Facilitation- A guidance approach to helping students learn. It correlates with the teacher being a guide on the side as opposed to being the sage on the stage (Moore & Kearsley, 1996).

Feedback- When an individual responds to a sender's question or message, the person is responding with feedback (Moore & Kearsley, 1996).

Formative Evaluation- A form of evaluation or assessment that takes place while a course, program, or situation is taking place for the purpose of identifying ways of improvement (Moore & Kearsley, 1996).

Gagne's Conditions of Learning- A form of instructional theory and process of learning that is methodological and logical. There are nine steps to the learning process (Huang & Liaw, 2004).

Interaction- A form of communication that takes place when information, ideas, perspectives, and opinions have been exchanged. Different forms of interaction include learner-to-learner, learner-to-instructor, learner-to-content, and learner-to-interface (Moore & Kearsley, 1996).

Instructors- Qualified individuals who have had the schooling or training to teach or guide learners so they can gain new knowledge and abilities (Moore & Kearsley, 1996).

Instructional Transaction Theory- Holds that learners can be motivated by processes of transactions that help them make connections (Huang & Liaw, 2004).

Objective- An observable behavior that an instructor wants a student to demonstrate through action (Moore & Kearsley, 1996).

Online learning- A form of learning in which learners interact with each other and the instructor through either asynchronous or synchronous modes of learning (Dennis, 2003).

Pedagogy- Another word for teaching and the teaching of children in particular (Moore & Kearsley, 1996).

Research- A process based on theory in which an individual or more than one individual explore to find answers to developed questions (Moore & Kearsley, 1996).

Stakeholder- Individual directly involved with a course, project, program, or area of work. The stakeholder is often asked questions during the evaluation process to share perspectives for the purpose of making improvements (Rossi, 1999).

Summative Evaluation- A form of assessment in which a course, program, or situation is evaluated after it has taken place for the purpose of making improvements (Moore & Kearsley, 1996).

Synchronous- A way in which learners or individuals interact and communicate using computers. They communicate at the same time, but they may be at different places (Moore & Kearsley, 1996).

Telementor- Qualified individual who assists the instructor and guides the learners with technological, academic, and social advice for the purpose of enhancing the learners' success while learning online (Tsikalas, 2000).

Theory of Immediacy and Social Presence- Holds that learning takes place through the interaction of three core components: cognitive presence, teaching presence, and social presence (Rourke, Anderson, Garrison, & Archer, 2001).

Theory of Multiple Representations- Supports providing learners with more than one way of learning or knowing to meet various learning styles and needs (Huang & Liaw, 2004).

Theory of Transactional Distance- Holds that three forms of transaction; interaction, course structure, and learner autonomy should be applied when designing an online course (Huang & Liaw, 2004).

Three-Form Theory- Holds that there are three ways from which individuals see the world; through action, icons, and symbols (Huang & Liaw, 2004).

Transfer Knowledge- A learner's ability to take what has been learned and use the new knowledge in an effective way in another area (Moore & Kearsley, 1996).

Web Site- An area on the World Wide Web in which documents are collected and made available for others to look at once they have reached the documents URL or home page (Moore & Kearsley, 1996).

Summary

This study employs a descriptive research design method, because basic characteristics and perspectives of the participants are studied. A cross-sectional survey that looks at a range of data from a specific time frame is available in Appendix B. Instructors from different departments who teach for colleges and universities across the United States were asked to respond to the survey. Survey questions were presented in contingency format so that the participants only responded to questions that pertained to them. A univariate, descriptive level analysis was run for each variable during the analysis stage. All data is at the nominal level and survey responses were recorded on a Likert Scale, thus Spearman rho correlation coefficient and Chi-square statistical tests were calculated during data analysis. Discussion and conclusion points have been made based on the analysis of the data.

CHAPTER II

REVIEW OF LITERATURE

Distance Education

Learning comes from thinking, and instructors should focus on using technology to facilitate learning according to Khine et al., (2003). Adult learners indicate that learning from a distance is a compatible alternative that meets their needs (Chu & Hinton, 2001). Miller and King (2003) define distance education as learning conducted at a distance that is formalized and instructional. Moore and Kearsley (1996) refer to distance education as a form of "planned learning" through unique course design techniques, distinctive forms of communication, and exceptional forms of organization that occur at different places and possibly during different times. Shale (2003) states that distance education is rooted in traditional correspondence education, a practice handed down from the past in which the learner and the instructor are separated by space. Researchers discuss the incomparability of earlier correspondence courses with distant learning through the use of technology as we know it today. They recognize the need for those connected to the field to be aware when labeling educational modes as distance education, because the meaning of the term continues to broaden and some fear the traditional meaning will be lost (Kanuka & Conrad, 2003; Shale, 2003; Stumpf et al., 2005).

Upon looking at various definitions of the term, Kanuka and Conrad (2003) illustrate that other terms such as distance learning and distributed learning carry similar definitions with subtle differences. Despite the differences, the terms distance education and distance learning, according to Miller and King (2003), are often used

interchangeably. Shale (2003) notes his support of the argument that the meaning of the term distance education now means more than it once did and that there are different terms that have parallel meanings. He also agrees with Kanuka & Conrad's (2003) point that distance education has to do with how content is distributed. However, Shale (2003) disagrees with claims about pedagogy making distance education more complex. He warns against confusing content delivery with pedagogical practices, especially now that the Internet provides us with new opportunities for delivery.

Researchers indicate that current distance education necessitates vigorous participation and prepared communication to be a contributor and a recipient in the distance education environment. Technologies are questioned as to whether they do or do not act as change-agents to build learning communities where the learners have possession of their own learning. Furthermore, they acknowledge that while the learner and the instructor are separated by space, they are also aware that, unlike traditional distance education, there is a relationship between the two that reflects a facilitative/mentoring role for the purpose of supporting the growth of critical thinking and student ability to create understanding of new knowledge (Shale, 2003; Visser, Visser, & Schlosser, 2003; Stumpf et al., 2005). Distance education courses, according to Chu and Hinton (2001), are also more flexible, and with the growth of the number of nontraditional learners in higher education systems, flexibility has become an influential factor.

Not all distance education successfully promotes critical thinking. Visser et al. (2003) identifies instructors' expectations for the correct answer, students' lack of ability to think critically, and a learning environment that promotes instructor-controlled two-

way learning as factors that stand in the way of critical thinking. Researchers also note that course design can be improved through the use of strategies such as collaborative problem solving and the development of a learning culture where there is opportunity for effective critical thinking (Makrakis, 1998; Visser et al., 2003).

Online Learning

Distance education is broad in terms of the types of distance delivery that are available today (Kanuka & Conrad, 2003; Shale, 2003; Stumpf et al., 2005). Authors describe traditional face-to-face and hybrid environments, as well as completely online surroundings such as synchronous and asynchronous environments for learning (Simonson et al., 2000; White & Weight, 2000; Ko & Rossen, 2001; Dennis, 2003). Geographical location and time are identified as two criteria generally used to differentiate courses from traditional education and technological distance education. These two types are further divided into what researchers label as "same-time, same-place (ST-SP); different-time, same-place (DT-SP); same-time, different-place (ST-DP); and different-time, different-place (DT-DP)" subcategories (Simonson et al., 2000).

Courses that are considered to be ST-SP and DT-SP classes are examples of traditional education, because they require the instructor to be at the same place. The only difference between these two types is that the second category offers more than one section (Simonson et al., 2000). These types of learning are commonly referred to as face-to-face or traditional classroom forms of learning that involve real-time (Dennis, 2003). Some instructors have utilized technological tools for content delivery and communication by designing hybrid courses that blend online and face-to-face interaction. Although these types of courses integrate technology; they are still

considered to be traditional distance education courses (Simonson et al., 2000; White & Weight, 2000; Ko & Rossen, 2001).

The other two categories are examples of distance education that require technology or access to a course through an online venue. Video-conferencing and synchronous real-time online chats are excellent examples of ST-DP forms of distance education. Asynchronous learning, a DT-DP subcategory has been identified as having the most volatile growth compared to other forms of distance education (Simonson et al., 2000). Learning asynchronously is a time when the students and the instructor do not have to be at the same place at the same time to participate. It is time independent conversation, a facet of online learning (White & Weight, 2000; Ko & Rossen, 2001). E-mail is identified as one way of communicating asynchronously online (Simonson et al., 2000). Course management systems are also used for online instruction (Hollerbach, 2004; Course Management Systems, 2005).

Course Management Systems

Online learning, according to Hollerbach (2004), has four components that are necessary for it to exist. It needs a curriculum, the technology through which the course is conducted, a professor to teach the course, and the students. Course management systems are a common medium through which courses are offered online. These systems not only serve as a way for instructors to make assignments, readings, and tests available; they also provide tools for asynchronous and synchronous discussions. What it takes to design online courses is different compared to designing face-to-face courses. Instructors have to learn how to use the software to run the classroom management system, and they have to be clear and concise when writing curriculum. Communication, according to this online

instructor, is the key to the success of online courses. Due to the facilitative nature of designing and conducting an online course, Hollerbach (2004) has begun to think of herself as the "guide on the side" as opposed to the "sage on the stage."

The online classroom is a product of the Internet and new developments in technology. Many institutions use course management systems to meet the needs of students who are looking for flexibility and opportunity to learn from a distance. These systems have such tools as a discussion board, online chat room, and e-mail for the purpose of communication. Tools of organization that help an instructor manage a course include a calendar, announcement board, course document board, and a digital drop box. Assessment tools in the form of online exams and quizzes, grading tools, and a feature that allows an instructor to keep track of how long a student interacts with the course material and discussion board are also available. Blackboard, WebCT, Angel, Desire2Learn, Moodle and Sakai are examples of open course management systems (Course-Management Systems, 2005).

The attitudes of instructors and students who use the course management systems for online learning vary (Meyer, 2002; Course-Management Systems, 2005). Meyer (2002) reports that when looking at a compilation of studies on distance education that a not significant difference is found when researchers have compared student achievement between traditional and distance education courses. An interesting perspective of the no significance difference result is that interactive video may be an acceptable alternative to face-to-face learning experiences. Students, according to the researcher, are successful and satisfied with web-based courses. Performance and attitudes of the students may be due to interaction with material, other students, and instructors. Constructivist learning

experiences that include project and problem based activities is noted as another possible reason for positive student perspectives. Other factors that may influence student satisfaction with web-based learning include students' attitudes, computer skills, visual learning abilities, and an understanding that a student's role should be active. If this is so, the researcher notes that if such individual characteristics are needed for success in web-based courses then participation in such courses may not be right for everyone.

Inductive analysis of a qualitative study conducted by Powers and Mitchell (1997) reveals four major themes concerning student perceptions and performance namely; support, student-to-student interaction, faculty-to-students interaction, and time demands of the course. Graduate students first participate in the course without any disruptions from the research. Open-ended questions are asked after the course has ended and grades are turned in. Despite the distance and absence of face-to-face interaction, the research shows that the students work in a community that includes rapport, support, and examples of interaction that would not have been available to them had the course been face-to-face. Technology and feelings of being comfortable with student-to-student interaction because of anonymity are possible reasons for the positive attitudes. Relationships between the students and the instructor are also different in that the instructor is not the sole distributor of information. In addition, results indicate that students do find that it takes longer to participate in a web-based course.

Instructors, students, content, environment, and learning community are identified by Usrey (1999) as factors that influence the interaction in a distance learning course according to the preferences of the adult graduate students in the study. Students have the opportunity to offer their opinions through an online survey, a mailed survey, and a

course evaluation that is administered at the completion of the course. Results show that students prefer a web site, discussion forum, and visualization as key factors in their attitudes. Feedback is also identified as an important influence. In another study conducted by Beyth-Marom, Saporta, & Caspi (2005), ninety-two students participating in a satellite-based synchronous Research Methods course during one semester and seventy-three students participating in the same course the following semester with a synchronous and asynchronous delivery mode answered preference questions about their experience. Time management, ease of access to learning materials, positive interaction aspects, and negative interaction aspects are identified as factors that influence students' attitudes. Results show that students prefer asynchronous over synchronous interaction because of the flexibility. However, if they had to choose between a face-to-face course and a virtual course, they prefer courses that are face-to-face. It is the four factors that influence their preference for face-to-face over virtual courses and their preference for asynchronous over synchronous interaction.

Wright, Marsh, & Miller (1999) present an historical analysis of instructional technology. Upon review of the literature they stress the importance of using technology as an enhancement to instruction so that students are offered more opportunities and alternatives. Researchers believe that learning is a process and that traditional practices for learning do not provide students with the skills they need to function in the real world (Figueroa & Huie, 2001; Thomas & Knezek, 2002) Figueroa & Huie (2001) state that students can read content about a subject for exposure. They claim that students won't understand a topic until they have done something with the information, and they won't understand that topic until they have reflected on the meaning of what they have done.

Figueroa and Huie (2001) present an example of an online course that utilizes Blackboard. Their example is of students actively working together in a collaborative effort. The instructor doesn't use a lecture strategy, or answer students' questions, and then hand out assignments. Instead, students explore, solve, and build knowledge so they can answer their own questions. Results from the study show that students like the course management features that let them keep track of their grades, provide access to course information materials, and hand in their work to the instructor by using the drop box or email attachment features. However, they do not like collaborative projects when other students do not do their fair share of the work. Another main concern of these students is that they are not always comfortable with the discussion board feature. Lack of security in individual writing skills and students' misuse of other student's comments to help develop their own contributions are listed as possible reasons for their dislike. According to the researchers, if instructors view teaching and learning as a process and they design the curriculum so that the students learn by doing with an opportunity for reflection, the use of computer management systems can be effective.

Synchronous Chat Rooms

Asynchronous discussion boards and synchronous chat rooms are two of the course management system features through which the instructor and course participants communicate. Synchronous discussions which take place in a chat room are compared to conference calls or telephone calls in that each medium used for communication among individuals takes place at the same time. Discussions that are held synchronously however differ from conference or telephone calls, because the individuals chat through text as opposed to communicating verbally. In the case of a synchronous chat, the

participants in the conversation use a computer and Internet access to connect with each other. During a synchronous chat one participant types a message into a text input box and sends the message to other participants by hitting the enter key or selecting the send button. Participants respond to each others messages or questions until the conversation has ended (Schlabach, 2004).

Researchers report positive and negative factors connected to online learning. When discussions are synchronous feedback is immediate. It resembles verbal conversation more so than asynchronous discussions because participants are in a real-time conversation, and they are considered to be engaging, animated, and enjoyable. On the down-side, adding synchronous posts to the dialogue box takes time to type, especially if an individual has poor typing skills. In addition, when many individuals are participating in the conversation and more than one topic is being discussed, it can be difficult for the participants to follow the separate conversations since they are presented in the same space. Results from research on the use of a structured interactive design model show that the discussion process is more understandable and deeper compared to when a synchronous discussion is run without a structured format. (McAlister, Ravenscroft, & Scanlon, 2004).

Other researchers find that when online communication strategies are used to guide discussions that there is more flexibility. However, they also find that the instructor's responsibility increases. The synchronous experience can be exhilarating and it can produce feelings of high anxiety. Yet, there are glitches and failures that can impede the discussion. First, participants can lose their Internet connection during the middle of a discussion which is frustrating and keeps them from participating in the

discussion. When this happens, students have to spend time reviewing the recorded discussion to catch up on what they missed. Connections through the Internet can also be slow, especially if the student is using a dial-up Internet service, and the amount of bandwidth available through the Internet connection is not always strong enough to send for example, a streamline video that can be viewed by all participants during the discussion. Further conclusions from the study illustrate that the inclusion of face-to-face meetings are important to the success of communication (Dykes & Schwier, 2002). Results from a study conducted by Davidson-Shivers, Tanner, and Muilenburg (2000) show that students like synchronous and asynchronous discussion for different reasons. Synchronous chats are liked because of direct interaction during the discussion of a topic, the casual conversation, and the support that is provided during synchronous discussions. Asynchronous discussions, on the other hand, are liked because of the additional time for reflection and the thoughtful responses that can come from asynchronous discussion.

Asynchronous Discussion Boards

ISTE (Instructive Standards for Technology Education) educational technology standards have been developed as a result of a belief that performance expectations needed to be defined to provide administrators and teachers with a sound understanding of what they themselves and their students should know about and be able to do with technology. Using technology to help teachers and students learn, communicate, investigate, solve problems, and develop products are some of the behaviors that can be accomplished if the standards are used to guide course design (Thomas & Knezek, 2002). Instructors use the asynchronous discussion board feature found in course management systems to provide their students with a place to carry out these behaviors. At one time,

learning from a distance meant correspondence courses and isolation to the students who took them. Today, computer-mediated communication tools such as asynchronous discussion boards reduce the isolation. When students use the discussion tools to asynchronously communicate, they are interacting in learning environments that have the potential to be rich in interaction, because relationships can flourish. Students can explore, collaborate, discuss readings, share what they have learned about a topic during a search, map concepts, and even reflect when they utilize asynchronous tools for discussion (Makrakis, 1998; Prestera & Moller, 2001). Computer mediated discussions, according to Murphy, Drabier, & Epps (1998), are an effective tool for education. Discussions effect processes of learning, they change the way learners interact, and they support students' active educational development.

Researchers present various advantages of using the asynchronous discussion feature (Collins & Berge, 1996; King 2001b; Prestera & Moller, 2001; Williams, 2001; Northrup, Lee, & Burgess, 2002). King (2001) describes a study about web-based bulletin boards and the influence it has on face-to-face learning. This researcher states that the use of web-based bulletin boards for asynchronous discussion, according to 109 learners' perspectives, creates unity and enhances learning. Participants in the study claim that having time to reflect enables them to post more thoughtful responses that contain examples of critical thinking. They identify the thread feature for organizing discussions as a benefit, and they remark on the convenience of communicating through web-based bulletin boards as opposed to other technology based forms for communication.

Northrup et al. (2002), present results from a study that consists of 52 graduate students participating asynchronously in an online instructional technology masters program. An inventory with a five-point Likert scale asks students questions about their experience and satisfaction with specific online courses. Results show that students like to feel as though they are part of a community, they like to collaborate, they want to discuss course readings after they have read them, and they want feedback from their instructor. Online students indicate that being able to count on their instructor and classmates to help develop and maintain interaction during discussions is important to them. Discussing and sharing ideas and concepts with peers during discussion is essential to them as well.

Researchers illustrate advantages of using strategies in an online environment so that learners can put problems into context, make meaning personal, and make use of their own choices. Instructors can use features of the course management system such as the asynchronous tool to individualize instruction, promote goal-based exploration, map concepts, develop a community for learning, and foster reflection for the purpose of constructing knowledge (Prestera and Moller 2001). Students' ability to interact at a distance, instructors' ability to offer support and encourage students to share and interact for the purpose of learning and reducing isolation and other opportunities such as students acting as guest speakers are identified by Collins & Berge (1996) as advantages of online computer mediated discussions.

There are negative comments about web-based bulletin boards as well (Figueroa & Huie, 2001; King, 2001; Prestera & Moller, 2001; Northrup et al., 2002). Learners identify waiting for responses to a post, lack of impulsive twists in discussion, and

absence of non-verbal communication as downfalls of this type of discussion medium. It is sometimes easier to make a comment on a discussion board and regret that comment later on. Some learners fear this communication alternative because of their lack of technological literacy and their fear of technology. There are also technological problems that can arise and interfere with participation in web-based bulletin boards. Despite the negatives, the researcher notes that when used appropriately, web-based bulletin boards have great potential as long as studies continue to show significant outcomes. This researcher claims that web-based bulletin boards should still be used as a medium for communication (King, 2001).

Figueroa & Huie (2001) present a study that focuses on the reasoning for integrating Blackboard and students' reactions to the system. Results show that students feel it is difficult to use because they do not always know what to say to another student when trying to respond to their posts. Northrup et al. (2002), state that students can easily become frustrated with the requirements of remaining involved during an asynchronous discussion, especially when there are a large number of posts to read. Some students indicate that working in teams in an online environment is difficult for them. Taking a leadership role or acting as a "guest presenter" isn't always favorable to students in an asynchronous discussion. Lack of feedback and receiving feedback that is not immediate from an instructor is also considered to be an unfavorable part of interacting online. However, participants from their study do not expect instructors to provide daily feedback.

There are general disadvantages that also apply to asynchronous discussions according to Collins and Berge (1996). They state that students may have difficulty

accessing the discussion board if their computer access to the Internet is unreliable. In addition, participating in asynchronous discussions can be time-consuming which may lead to a low investment return. While students may have some computer knowledge, they may not have the knowledge they need to utilize telecommunication software, upload and download files, or store email messages that they need access to so they can participate in the discussion. Also, students have to be able to develop relationships without social context cues, work through misunderstandings that tend to occur during asynchronous discussions, have access to technical support, and they have to be able to manage their work so they complete assignments and fulfill participation requirements. Not all students are capable of overcoming these disadvantages and as a result they often withdraw from the course.

Considering that there are advantages and disadvantages to integrating asynchronous discussions into a course design, instructors have a vital role that effects the experience of the students in that they have the power to design courses that foster student ownership of the learning experience. Designing effective courses can prohibit the disadvantages from taking place (Makrakis, 1998; Collins & Berge, 1996, Prestera & Moller, 2001; Williams, 2001). Williams (2001) notes the importance of course design so that asynchronous features are used effectively. This statement comes out of concluding remarks about African-American students who already have factors mounted against them who need contact through discussion to succeed in an online course. More effective opportunities can be provided for these learners through the use of asynchronous discussion boards when the courses are appropriately designed by the instructors.

Instructors should evaluate students' socio-cognitive process and introduce strategies that heighten interaction among students (Makrakis, 1998). In addition, Collins & Berge (1996) claim that instructors should elaborate on the procedures and expectations for online collaboration during a computer mediated discussion, because the students do not always know how to interact or understand what is expected of them. Instructors should provide structure for the program by delegating due dates. They should provide the students with advanced organizers, graphical demonstrations of the processes needed to work online effectively, and they should provide them with a guide for taking notes. Prestera & Moller (2001) note that redefining learning and instruction, using facilitation strategies, individualizing instruction, declaring goals then creating ways for students to explore for answers, helping students develop learning communities, and guiding students to recognize what they have learned and make connections through reflection are ways in which instructors can plan courses so students experience the advantages related to the use of asynchronous discussion boards.

Theories that Guide Online Course Design

Online instructors apply theory and practice as a powerful tool when designing a course. Instructional design is referred to as a discipline that links expressive conjecture by means of instructional practice (Buendia et al., 2002). The Internet is a link for communication that is networked, and students can easily access it from almost anywhere. There are web browsers and hyperlink features available through the Internet that make getting a hold of important information more convenient. Beliefs in how instructors and students should go about learning from a distance vary in theory. Huang and Liaw (2004) present a compilation of theoretical principles that support the

foundations of distance education, course design, and pedagogical practices. Each are described in this section of this chapter. McAlpine & Ashcroft (2002) present additional theoretical information in relation to distance education are also illustrated.

Theory of Multiple Representations

Researchers provide support and they raise cautions when it comes to using multiple representations during instruction. (Gfeller, Niess, & Lederman, 1999; Moreno, 2002; Ying-Shao & Fu-Kwun, 2002; Huang & Liaw, 2004). Applying multiple representations that connect to content of subject matter is thought to be a valuable practice because students can build mental representations with the information. Web environments and computer mediated discussions are said to be conducive to the application of multiple representations during course design (Huang & Liaw, 2004).

Gfeller et al. (1999) study preservice teachers' perceptions of mathematical concepts and their ability to build a range of flexible representations of the concepts that they will eventually teach in the classroom. Nineteen students attempt to provide more than one solution for the question that is asked. Results from the study show a significant difference between preservice teachers with a mathematical background in comparison to preservice teachers with a scientific background concerning their ability to balance deviations to solve a problem. Those with a mathematical background have the ability to view concepts from multiple representations which makes being able to understand a students' different view of the problem an advantage. They are also better equipped when it comes to being able to explain a problem to a student in many different ways so that hopefully the learner eventually understands one of those perspectives.

Multi-representations are used in a study conducted by Ying-Shao and Fu-Kwun (2002) when a web-based lesson is used to promote situated learning. During the study, 110 high school participants from Taipei are presented with a realistic situation and they attempt to connect it to their real life. Social learning theory plays a role along with the use of multi-representations to help the participants make learning connections. Results show that online asynchronous discussion with an emphasis on situated learning and multiple representations can cultivate the integration of knowledge.

Moreno (2002) reports on a study that includes sixty-one fifth and sixth grade students who are lacking addition and subtraction skills. These students are provided with multi-representations during their learning experience. This researcher claims that students with high prior knowledge or high computer skills when compared to students with low prior knowledge or low computer skills will be effected more positively by multiple representations due to a lower amount of cognitive overload. Cognitive theory is supported as a result of this study because when symbols, visual, and verbal representations are used in the study to solidify learning possibilities, some students experience cognitive overload and others do not.

Cognitive Flexibility Theory and Constructivism

Researchers study the processes of thinking and learning as children develop. Theory that evolves from the research contributes to the practice of pioneering instructional methods and strategies to evaluate student learning. An influential trend that connects to the construction of learning when children try to adapt for understanding is cognitivism (Parkay, 1995). Cognitive theory is used by online educators to guide how students interact with each other, their instructor, and the content. When this theory is

implemented students work to develop a conceptual understanding that moves from basic to more complex forms of comprehension such as reasoning and making inferences. Principles from this theory call for students to apply conceptual knowledge to situations that are new (Huang & Liaw, 2004).

Jonassen (2003) explains that much research looks at the presentation of problems to learners and identifies two conflicts with how problems that need to be solved are presented. First, the problems are presented as structured problems. Real life problems are ill-structured. Second, students do not transfer problem solving skills very well. Research considers the role of tools that can be used to help externalize students' internal representations. Semantic networks, expert systems, and systems modeling tools are three types of cognitive tools that this researcher uses to study the efficacy of using them to externalize internal representations. Learning how to represent the problems being solved is vital when it comes to transferring skills so structured and ill-structured problems can be solved. According to Jonassen, problem representation is the main factor. Students must be helped by the instructor to learn to build problem representations that integrate their internal representations with knowledge domains. The better a student is at externalizing representations the better they are at solving problems. Jonassen writes that there are three ways learners can go about building representations, through the development of mental representations, making internal maps of problems, and using tools to externalize problem representations. Jonassen states that learners need to qualitatively and quantitatively represent problems when trying to reach a solution. Using different cognitive tools that bring students to construct and justify their own models of learning is the best way for learners to do this. An example of a cognitive tool is a

concept or semantic map. These maps or graphs help students build spatial representations of concepts that help them see connections between abstract concepts and reality so they can solve a problem more realistically.

Of developing deep and durable learning in an online classroom, Hacker and Niederhauser (2000) hold that while deep and durable learning isn't a guarantee, there are five principles of instruction that can be used by instructors to guide cognitive learning. One way is for students to act as active participants by expounding on their own explanations and deep questioning during group discussions. Using examples effectively, such as case-based examples, is a second principle that can promote deep and durable learning. However, implementing case-based examples can be difficult, and the instructor has to be mindful of the order of complexity in which they are presented. In addition, it is important to remember that the structure of a case-based example is still different from how situations play out in real life situations. Collaborative problem solving is the third principle that can help students think on levels that are deeper and more durable. When students work together to solve problems different perspectives can be considered and the dialogue can serve as a form of support during the thinking process. Effective use of feedback, the fourth principle, should be provided in the right amounts. Students need to make their own discoveries as well as make adjustments to their own errors. Feedback should be used to make students feel a part of the course, but it should not answer all of the questions either. Motivational components, the fifth principle, can be integrated into a course to raise students' cognitive thinking abilities. When student's interests are a part of learning then the experience can be less sterile and students may be less likely to internally resist instruction.

Researchers present a study of twelve graduate students who discuss an assigned topic for eleven days through an online asynchronous discussion. One article of four articles is read by all participants and each group is given one of the three remaining articles to read. Students are asked not to share the other articles with members from the other groups nor are they allowed to search for additional articles on the topic. During the study, the degree of cognitive facilitation from the facilitator is varied so that two groups receive high facilitation and two groups receive low facilitation. Research members act as the facilitators in two groups of three. As facilitators, the research members take turns leading discussions and the other members provide feedback to the participants before message posting begins. High facilitation means that the participants actively receive verbal expressions to replace non-verbal cues that cannot be seen. Overall, the goal of the high compensation facilitators is to encourage critical discussion and evidence based responses without providing the students with specific content. Research members who provide low facilitation do not provide this encouragement, and they avoid using strategies that promote cognitive behaviors from the participants. Results from student surveys show that there are links between high facilitation and critical thinking although the researchers do remind their audience to remember that the sample size is small and that there are limitations to the study (del Valle, Oncu, Koksal, Kim, Alford, & Duffy, 2004).

McAlpine and Ashcroft (2002) state that active learning through discussion and exchange of ideas are key behaviors of the constructivist approach. Notar, Wilson, & Montgomery (2005) stress the importance of constructivism and cognitive flexibility theory, the two key aspects to effective distance learning. For an instructor or mentor to

take on the role of facilitator, learners should be active participants and instructors should not be distributors of information. Students may not process material in the same way as the instructor. Cognitive flexibility theory, according to these researchers, holds that students should solve problems in ways that best suit themselves so that they are applying Bloom's analysis, synthesis, and evaluation which are all higher levels of the cognitive thinking. These researchers go so far as to present facets of a model that instructors can use to facilitate higher levels of thinking from their students. They find that rich learning activities should be embedded so that the big picture is still visible, make use of illustrations as opposed to text, embed data for problem solving needs, require students to present possible solutions prior to receiving expert input, utilize multiple links and multiple perspectives, and they should stimulate learning with collaboration, self assessment, critical performance, expert examples, and guidance for transferring skills to other places.

Bruner's Three-Form Theory

Bruner (1990) states that there are three ways from which individuals see the world, through action, icons, and symbols. They use action to perform or demonstrate what it is they see about the world from their perspective. Icons or mental images are used to present a path, summary, or pattern. Symbolism which is an abstract way of visualizing reality through the use of words and numbers is the third form that individuals use. According to Bruner, these three forms of representation are founded on the theory that development must be effectively related to theories of knowledge and instruction.

Vacca and Vacca (1998) discuss Bruner's work on scaffolding and the development of categories. They refer to scaffolds as a form of support and compare it to

the scaffolds used by construction workers to lift themselves up so they can make achievements that they could not make without the support. Instructors are to provide all learners with support. Helping students recognize what they know, what is new, and building new categories makes the environment less complex and more constant. According to Bruner (1990), how learners make meaning relies greatly on cultural connections with their own convictions, objectives, aspirations, and dedication to the learning. Eisner (1991) extends this thought by saying that students' whose interests are ignored lack motivation to learn. Vacca and Vacca (1998) find that building schemes of knowledge with categories is linked with the need to be motivated. Learners need to be emotionally involved, and instructors need to identify what the students know, what they need to know, and how well the learners already know so learners have an opportunity to be emotionally motivated to become active learners.

Dual-Coding Theory

Another strategy used by online instructors when designing and implementing courses is to apply dual-coding theory. Through this theory, the systems of verbal and imagery processing can be used independently or simultaneously through the support of verbal and imagery subsystems. The verbal subsystems help with the presentation and processing of information. Imagery subsystems aid in the development of images, sounds, actions, and responses of emotion that aren't always available when non-verbal cues cannot be shared (Huang & Liaw, 2004).

Research initially introduced on dual coding, a theoretical construct with two meaning-making channels, illustrates how we process information internally. Conditions of this construct hold that we use both aural and visual paths to process information and

make meaning. The aural and visual modalities that we each have differ by their representational system depending on our own experiences. For some of us the visual modality is stronger and for others the aural modality is used more to process information, but they both have an influence on how information is perceived by an individual. It is suggested that the visual and aural stimuli are combined to make remembering the messages easier. Using multiple stereotypes as stimuli is one strategy that instructors can use to make a concept more understandable and obvious to the learners. Aural stimuli should be connected to the visual stimuli whenever possible so that the visual stimuli suggests a vivid image and the aural stimuli presents logical representations of the message you are trying to send. The goal is to help the learner achieve long-term results. When using visual and aural modalities together there is less confusion, discrepancy, and misunderstanding (Paivio, 1979; Paivio, 1986, Simpson, 1997).

Studies that are conducted by researchers to determine the significance of Dual-coding theory show that there is an influence when visual and aural modalities are combined (Rieber, Tzeng, Tribble, & Chu, 1996; Alty, 2002; Beacham, Elliott, Alty, & Al-Sharrah, 2002). Rieber et al. (1996) present a study that explores the impact of computer simulation on an individual's learning. Dual-coding theory serves as a framework of the study because it is the researchers' understanding that when information is dually coded the chances for understanding are increased. In this study, fifty-two college students use computer simulation to learn about Newton's laws of motion. Visual modalities appear to the participants in the form of animated graphics in that they view a ball moving at different speeds and directions. Numeric displays are in

place as the aural modalities. Results show that when the participants interact with the visual and the aural stimuli in the computer simulation that they have a more explicit understanding when compared to students who are provided with only the visual or only the aural modalities.

Alty (2002) claims that dual-coding theory will influence the development of computer-based programs because of the significant effects that the application of dual-coding theory has on individuals' ability to store, manipulate, and recall information that is presented with visual and aural stimuli. Participants in the study use computer-based programs to learn statistical skills. Material is presented to the students in three different forms. One presentation is a text only format. Another presentation includes only text and diagrams, and the third presentation format contains voice and diagrams as part of the presentation. The thirty-seven participants are divided into three groups so that there is an even number of learning styles represented in each group. After participants interact with the three program formats, the researchers show significant results in their findings. They find that learning styles do influence accuracy and recall. Dual-coding, according to this study, significantly influences how well the learners can recall what has been learned.

Beacham et al. (2002) find similar significance of Dual-coding theory in a different study. Forty-four student participants from ages twenty to twenty-four are selected according to their learning style and placed into three groups so that each group has participants with the same types of learning styles. Students are pre and post tested to attain previous and new learning information about the participants. Each group participates in a different presentation at a different location. Students who interact with the text only and diagram presentation and students who interact with the aural only

presentations do not score as high as the students who interact with the visual and aural combined presentations. Differences between learning styles in this study show that students' learning styles influence their reaction to the media being used. Both findings support the premises of Dual-coding theory.

Simpson's (1997) work agrees with the work of Paivio in that visual and aural modalities influence the way we perceive information through individual representations only he offers the possibility of a third modality. He finds that the emotions of individuals influence the way we understand the visual and aural modalities. Kinesthetic modalities, according to Simpson, also help make messages more meaningful. In a two-part study, the researcher asks twenty-five individuals from sixteen to fifty-three years of age and another group of 5-16 year-old students to first listen to an audio recording of a radio drama that is four minutes in length. Then, the participants are asked to participate in a dialogue with two other individuals not participating in the study. The dialogue is scripted and the participants read directly from the script when participating. Script are designed to emotionally involve the students in the radio activity. Results from the study show that adults have an ability to learn from each of the three modalities as a result of acquiring the ability. However, they do show that the adults tend to combine the modalities. They see this as an acquired ability because the results of the younger individuals show that the participants tend to use the modality that is easiest for them depending on their own learning style.

Gagne's Conditions of Learning

Gagne's conditions of learning is a form of instructional theory, and he is credited for the beginning of the infusion of instructional psychology into the instructional technology and design field. Instructional theory involves the integration of principle sets that are based on learning theories and empirical research that allow for predictions of instructional conditions on cognitive processes and new learning (Richey, R. C., 1996; Smith & Ragan, 1996). Huang and Liaw (2004) identify Gagne's condition as an instructional and learning process that is methodical and logical. Gagne's conditions of learning are a descriptive theory of knowledge that contain five separate categories of outcomes labeled as intellectual skills, verbal information, cognitive strategies, motor skills, and attitudes. Having the ability and knowledge to categorize and use materials are characteristics of intellectual skills. Abilities that allow individuals to show "what" something is or means are verbal information abilities. Cognitive strategies have to do with the learning skills that individuals own. Simple and complex movements make up an individual's motor skills, and attitudes are the feelings that we develop as a result of interactions that are either constructive or unconstructive. Researchers note that Gagne's work has grown into a system of nine practices: gaining attention, informing learners of the objective at hand, stimulating recall of prior learning, presenting the content, providing learning guidance, eliciting performance, providing feedback, assessing performance, and finally, enhancing retention and transfer (Gagne, 1985; Smith & Ragan, 1996; Molenda, 2002; Gagne, Wager, Golas, & Keller, 2005).

Smith and Ragan (1996) write about the influence that Gagne's theory has had on instructional design models that are conditions-based. Conditions based models theory

holds that learning can be placed into categories according to cognitive learning processes. In order for these categories of learning to take place in an instructional design instructional supports are needed. The categories are so clear that when the theory is applied researchers argue that you can look at a lesson and point out which parts of the lesson can be linked with the different categories. According to Richey (1996), Gagne's work serves as the root of other known instructional theories including Merrill's instructional transaction theory and Reigeluth's elaboration theory. In addition, the researcher states that Gagne's work can be related to positions on trends in learner-centered instruction and design as well as context-centered instruction and design. It looks as though Gagne's work, states Richey, will continue to be expanded upon as long as the positions of the theorists, researchers, and practitioners still support principles of cognitive learning.

Merrill's Instructional Transaction Theory

This theory holds that learners can be motivated by processes of transactions that help them make connections. It has a set of conventions to which objects of knowledge are selected and sequenced (Huang & Liaw, 2004). Identifying relationships between educational and technical factors are possible with instructional transaction theory. Instructional transaction theory consists of two facets: schemes of knowledge and procedures for applying the knowledge. Merrill's position states that for learning to take place, the learner needs to have more than one knowledge structure illustrated for anything to make sense. According to the researchers, instructional transaction theory learning consists of the object that is to be learned or the content that is to be taught. It is possible to combine the different facets of content that need to be taught and group it into

one structure of knowledge. Individuals have internal representations of knowledge and structures of knowledge are external. The theory utilizes transactions as a way to categorize the content that is to be taught (Buendia, et al., 2002).

Instructional transaction theory can reduce problems that learners have when using computer simulations. It is believed that there are three data types used when a transaction of knowledge takes place. There is a knowledge base, a resource base, and there are instructional boundaries. These three facets of instructional transaction are then subdivided into more descriptive categories. A knowledge base is for example, divided by entities, activities, and processes. Resource databases among other possibilities are subdivided by mediated representations of the knowledge field, presentation techniques, and communication techniques. Instructional boundaries, of which vary by situation, can be divided according to population, learning task, and the environmental situations. So when an online instructor applies instructional transaction theory to course design empirical research is used to help set the categories in a knowledge base, build resource database classes, and define the parameters that are used to set the boundaries. This practice is meant to reduce difficulties that can occur when simulations, for example, are being used as the form of delivery (Zwart, 1992).

Elaboration Theory

Elaboration theory is a belief developed by Reigeluth that is concerned with the organization of materials for a course. This theory holds that new learning should be presented first in the simplest form and carefully move to more complex forms of content and learning. For this reason, online instructors when applying this theory will introduce basic content to their students before moving on to more difficult material. When this

strategy is utilized instructors tend to begin with knowledge that students are already familiar with. Then, they transition to the exploration of new knowledge which helps students make the appropriate connections to help them understand the content. This theory is based on cognitive psychology, and it holds that in order for a learner to acquire and retain the new knowledge that a sequence of concepts, procedures, and theoretical content has to be in place. Epitome, is generally the first level introduced and it usually involves a single form of content. Level 1 is the second step of elaboration theory and it entails a more detailed look at the first concept presented. As the instructor guides the learners to level 2 of elaboration theory, what is focused on in the first level is further elaborated on in level 2. As learners move from more basic content to content that is more complex, there is a point at which the entire content has been introduced to the learners (Ludwig, 2000: Huang & Liaw, 2004).

The entire elaboration theory process relies greatly on the summarization and synthesis of everything that has been introduced so that students gain an understanding of the big picture as opposed to only the parts. Theory of elaboration greatly depends on the learner's cognitive structure. So some learners will transition from the simple to the complex more easily than others mainly because of their own abilities. Elaboration theory when applied to instructional design processes targets the organization and sequencing of the content through four trouble areas. These areas are referred to as selection, sequencing, synthesizing, and summarizing. It is the effective use of these four areas among the responsible application of other important theories that can make the difference between a successful and an unsuccessful online course (Ludwig, 2000; Huang & Liaw, 2004).

Moore's Theory of Transactional Distance

Moore's theory of transactional distance unlike the web-based theories already presented is a distance theory. Many online instructors have applied this theory because its three dimensions have an affective influence on teaching procedures. Those three dimensions are referred to as interaction, course structure, and learner autonomy (Huang & Liaw, 2004). Two key factors of independent learning, structure and dialogue, are identified by Moore in the early part of the 1970's. The distance aspect of this theory has less to do with physical separation and much more to do with pedagogical distance. When a course is highly structured, there is less distance between the instructor and the learner because the interaction is higher between the two as well. Thus, there is a perception that the distance between the two is not as great as it would be if the course were low structured with less interaction (Moore, 1973; Moore & Kearsley, 1996; Laly & Barrett, 1999; Chen, 2001; Jung, 2001; Kanuka, Collett, & Caswell, 2002).

Several types of interaction have an impact on the effectiveness of online courses, and there are specific variables that influence interaction. Students, the instructor, mediums used for communication, course organization, and delivery method are all influential variables (Stow, 2005). Distance educators are concerned with and want to identify students' perceptions of these variables. Huang states that learners should not only be surveyed on interaction to learn what they think about online course. Questions should also be asked about learner autonomy, course structure, and the system used for delivering the course (Huang, 2002).

Interaction, the first of Moore's three dimensions, includes interaction between the learner and the content, the learner and the instructor, and the learner with another

learner. Course structure, the second of Moore's three dimensions, includes learning objectives, educational strategies, and methods for evaluation. Learner autonomy, the third of Moore's dimensions, requires students to take responsibility for their own experience due to the distance between instructors and students in online courses. Eventually, Moore introduces a fourth dimension that he calls interface. Learners must have technology skills or expect to attain those skills in conjunction with fulfilling course requirements in order to be able to act as a participant in an online course (Moore, 1989; Moore, 1991; Chen, 2001; Huang, 2002; Kanuka et al., 2002; Stow, 2005). Blending the right amount of the dimensions into the course design, according to Kanuka et al. (2002) is vital to transactions in an online environment.

Jung's (2001) study indicates that the research is showing key factors for improved understanding to take place during transaction in online learning environments. First, content needs to be expandable and adaptable. Visual layout also has to be structured. Next, different forms of interaction in regards to dialogue are standing out as necessary factors. Academic interaction, collaborative interaction, and interpersonal interaction are other types of interaction that are emerging in online leaning environments that are web based. In addition, collaboration and learner autonomy are two very visible dimensions that continue to appear in the literature.

Of his study, Huang (2002) writes that Likert scaled survey responses that communicate students' perceptions of online learning indicate that a significant connection from impact of interface on learner to content interaction exists. Conversely, impact of interface between learner-to-learner and learner-to-instructor correlations is not significant. Overall, these results show that learners do not need to interact with other

individuals to develop a relationship with an instructor. Of course structure, results from the study show that the online environment is a place where delivery of course content can be structured and easy to adjust. Results from this study also show that the more technologically skilled an individual is the better an individual is at working independently.

Kanuka et al. (2002) show that instructors perceive apprehension about the structure, dialogue, and autonomy in their courses especially when they first begin teaching through asynchronous computer mediated discussions. When studying pre and post interviews during a two year study of twelve university instructors who teach online courses, the researchers find that as their technical knowledge increases with experience that they find it easier to transfer face-to-face strategies to the online learning environment. According to results from this study, instructors need to assess learners' autonomy and ability to succeed when there are gaps between the learner and the instructor. When students do not have the self-discipline to work independently, then instructors must meet the students' needs with such support as feedback and structure. Flexibility is another factor that influences the success of an online learning experience according to the results from this study.

From an exploratory factor analysis study that uses a principal axis factor method when analyzing the performance of seventy-one online learners' responses to a Likert-scale questionnaire, Chen (2001) finds that there are four dimensions of transactional distance that are represented. Existence of the four factors and their influence over the gaps experienced by the learners shows leaders of online learning that instructor-to-learner, learner-to-learner, learner-to-content, and learner-to-interface facets need

consideration when designing and conducting online courses. The researcher concludes even though correlations are not high that correlations do exist and that it is possible for one of the transactions to occur without the others occurring. Impact on the transactions in further research is suggested.

Lally and Barrett (1999) present results from a study that is focused on the impact of support that encourages increased dialogue during computer mediated discussions on transactional distance among post graduate students. The researchers in the study are concerned with the lack of non-verbal cues. They are also concerned with the existence of social-presence in an online learning environment. As a result of these concerns, the researchers purposely focus on reducing social isolation. Their efforts include a co-operative goal structure that requires all of the learners' goals to be met as opposed to individual goals. For this to take place high levels of interactivity need to take place. Results of the study show that new technologies such as asynchronous computer mediated discussion has a role in reducing transactional distance. It provides substantial social and academic support needed by students. Democratization and equalization are identified as influential factors that effect transaction between learners and the four dimensions.

Theory of Immediacy and Social Presence

A model of online learning which presents the significance of social presence during asynchronous computer mediated discussion is presented by Rourke et al. They hold that learning takes place through the interaction of three core components: cognitive presence, teaching presence, and social presence. A more in-depth look is made by the researchers of the social presence response and is presented as affective responses,

interactive responses, and cohesive responses (Martyn, 2004). These responses are used as indicators by Rourke, Anderson, Garrison, & Archer (2001) when analyzing content during their exploration of computer mediated discussions and affective behaviors among participants. Learners' perceptions are an important factor that instructors should keep in mind when designing online courses because learners' perceptions influence their behavior. Two behaviors that have an impact on interaction are immediacy or quick response to an act or question and social presence which refers to a learner's skill of visually and affectively interacting in the learning environment whether it be done synchronously or asynchronously (Rourke et al., 2001).

After administering a questionnaire on teacher interaction to students and the classroom teacher for the purpose of comparing learners' perceptions of learner-to-instructor interaction with instructors perspective of learner-to-instructor interaction, researchers find that perceptions of interaction have an influential effect. In the case of this study, the teacher's perceptions of the interaction influences how the students perceive the actual interaction which in turn influences the teacher's perceptions of interaction. Based on the results of the study, self-assessment and self-reflection on the part of the teacher for the purpose of modifying the actual interaction is necessary if the teacher wants to change the perceptions of interaction in the classroom. If perceptions are adjusted for the better then circular communication processes develop so that behaviors are influenced to be more interactive (Fisher, Richards, & Newby, 2001).

Predictors of learner satisfaction are explored by Gunawardena and Duphorne (2000) in a study that focuses on the academic computer conference environment. Of the influential factors that they investigate in the study, comfort with participating in

discussions, easiness with communicating with text, and assurance with presenting ones self into a computer mediated discussion are some of the variables that significantly impact learners' perceptions. Results point to the understanding that learners' social presence is effected by students' perceptions of preparedness and that course design and immediacy on the part of the instructors must attend to familiarizing the learners with online features, computer mediated discussion learning approaches, as well as the tools and abilities that they need to feel ready to participate in a discussion.

Murphy (2004) presents sharing personal information, recognizing group presence, communication appreciation towards other participants, expressing feelings and emotions, and expressing motivation about a project or participation as indicators of social presence in a computer mediated discussion that promote collaboration. Social presence exists as a lower level thinking ability on the online asynchronous discussion model that is designed and presented by the researcher. Social presence is a significant engagement that the researcher finds to exist during a computer mediated discussion. It is a skill or behavior that learners need to accomplish before they can move to the higher levels of Murphy's design model.

To identify course design factors that have an affective impact on the success of learning through an asynchronous medium, Swan (2002) explores the correlations between twenty-two factors and satisfaction of students, learning, and interaction with instructors and classmates. Seventy-three New York State University Learning Network courses are used by the researcher as a data source during the spring semester of 1999. Three factors that are labeled as clarity and consistency in course design, contact with and feedback from course instructors, and active and valued discussion are made known

during the stage of data analysis to be significantly correlated to the perceptions of students who participated in the asynchronous computer mediated discussions. A culmination of the findings lead the researcher to conclude that interaction is important for online teaching and learning if student satisfaction with asynchronous mediated discussions are expected. Researchers state that it is social presence as opposed to the potential of the asynchronous medium that make computer mediated discussions successful (Walther, 1994; Gunawardena & Zittle, 1997; Richardson & Swan, 2001).

Computer Mediated Discussions

McAlpine and Ascroft (2002) state that online learners need to actively participate in learning as well as learn how to use the courseware if they want to learn. According to them, discussing online is critical to constructing knowledge because they can share ideas and develop an understanding of the topic. It is when learning constructively moves from simpler to more complex tasks and content that students begin to learn effectively. Fauske and Wade (2003-2004) report results from a study that includes twenty-nine male and female preservice teachers who participate in newsgroup discussions without instructor participation. Findings show that the discussions fall more heavily into the categories of support, taking perspectives, inquiry, self-questioning, and challenging statements. Other discussions that occur as well, but to a lesser degree, are from the categories of nonsupport and posturing or assuming the role of a leader. According to these researchers, responses with higher levels of thinking tend to come out of asynchronous discussions more than synchronous discussions, because students have more time for reflection when posting asynchronously.

Greenlaw and DeLoach (2003) present a 6 level taxonomy for critical thinking and state that instructors should describe what critical thinking is depending on their course and the medium through which the course is being delivered. Unilateral descriptions, the first level of critical thinking, involves the defining of terms, paraphrasing of information, and restatements of the original question that contain little other information related to the topic. Simplistic alternatives, the second level, refers to when a student takes a position during a discussion without considering other alternatives. Basic analysis/reasoning, the third level, pertains to discussions attempts made by students who make a valid effort to develop an argument or analyze a number of other arguments while using basic information for support of their claims. Theoretical inference, the fourth level, concerns student's contributions to the discussion that include theoretical foundations to support their argument. Empirical Inference, the fifth level, includes responses to questions and posts that are more sophisticated in that they make use of empirical evidence to support their claims based on theory. Finally, the sixth level of critical thinking is merging values with analysis. Students who post comments at this level move from objective to subjective levels of thinking. These students can see the realities but they also consider the impact that the realities have on values. They use this type of thinking to help them make difficult decisions.

Overall, the researchers find that discussions are comprised of a combination of writing and discussion. For computer mediated discussions to be effective, they feel they must be designed carefully and that careful preparation is needed for participation. Topics should allow for different opinions and arguments. Students should be guided so they can learn to make comments that involve critical thinking at higher levels, and students

should have the appropriate background information related to the content so that they can participate. Meaningful activities should take place following the discussions that bring students to reflect and reinforce any new learning (Greenlaw & DeLoach, 2003). Course design is a major factor in effectiveness. Instructors' awareness of their own philosophy as well as their knowledge of the theories and empirical evidence can be used to develop effective courses that bring students to discuss at higher levels of thinking (Fauske & Wade, 2003-2004; Greenlaw & DeLoach, 2003). Online computer mediated discussions, according to McAlpine and Ashcroft supports active learning because students become engaged, reflect, and they post a response. Their written reply is tangible evidence of their moving away from the content to engagement with the material on a higher level (2002).

Researchers illustrate that the computer mediated discussion is a learning environment where the interface among students varies in that sometimes students collaborate while exchanging perspectives through dialogue (Moshman, 1982; Levin & Ben-Jacob, 1998; Dalgarno, 2001; Lou & d'Apollonia, 2001; Hathorn & Ingram, 2002; Ferdig & Roehler, 2003-2004; Steinbrown & Merideth, 2003; Im & Lee, 2003-2004; Poole, 2003-2004; Deemer, 2004; Morrone, Harkness, D'Ambrosio, & Caulfield, 2004; Wade & Fauske; 2004; Smith, 2005). Research also shows that when the interface between students includes collaboration and dialogue possible outcomes appear in the form of interaction and learning outcomes (Boshier, Mohapi, Moulton, Qayyum, Sadownik, & Wilson, 1997; Gunawardena & Duphorne, 2000; Kochtanek & Hein, 2000; Lee & Gibson, 2003; Durrington & Yu, 2004; Murphy, 2004; Sorensen & Baylen, 2004; Benson, Johnson, Taylor, Treat, Shinkareva, & Duncan, 2005).

Collaboration

Researchers show that web based bulletin boards or computer mediated conference rooms are viable mediums for collaboration. They present research on adult students with the opportunity to reflect, elaborate and expand on focused associated content (Levin & Ben-Jacob, 1998; Hathorn & Ingram, 2002; Im & Lee, 2003-2004). Im and Lee (2003-2004) discuss the findings of preservice teachers interacting in synchronous and asynchronous environments. Qualitative and quantitative measures in the study examine the electronic discussion content as well as social and cognitive development. Results show that the synchronous environment is more effective for social development, and the asynchronous environment is more conducive for content discussion. More females post asynchronously when compared to males, but the differences between the postings are fewer when compared to the synchronous postings posted by women and men. Researchers identify this as a signal for affectual attention from the instructor to guide those male participants toward more reflective, elaborate, and expanded posts during asynchronous discussions.

Hathorn and Ingram (2002) share their measurements of collaboration and analysis of groups of students working together and their products. A model that assesses student use of interdependence, synthesis, and independence is used to evaluate collaboration. Participants are graduate students taking the same course with the same instructor. Students are divided into groups and they are given a problem to solve. Some groups are advised to solve their problem collaboratively. Other group members are given roles and help solve the problem from the perspective of their assigned role. Students that collaborate to solve the problem are more collaborative, but their problem

solution is not as good when compared to the group with assigned roles. Results from the study show that instructors need to implement effective learning strategies for collaboration to be successful.

Levin and Ben-Jacob (1998) state that collaborative learning is vital for achievement in distance education. Interactive video courses can only be a place for instructors to lecture and use email for communicating when students are not actively involved. When this occurs, the course interaction is only a glorified correspondence. Style of teaching, presentation of content, and learning experiences must change for distance learning to be meaningful. Two instructors, one from Mercy College in New York and the other from DePaul University in Illinois, integrate collaborative learning in the curriculum of their distance learning courses. These instructors find collaboration to be a valuable strategy for learning, because it uses verbal discussion between the learners during the learning experience.

Online learners gain advantages from collaborating with their peers. When learners work together motivation is increased, there is opportunity to develop critical thinking and skills to solve problems, there is a social component, and a chance to build new knowledge. In a qualitative study, Eight groups of 3 to 4 participants were analyzed as they collaborated to solve a case study problem. Journal notes, posts to the asynchronous discussion board, recorded chats, and interviews were used as sources of data. The researcher found that the participants were able to use the course content and apply it to the problem so they could solve it. They also learned that the participants feared losing their identity yet they matured as their group took on its own identity (Smith, 2005).

In a study that quantitatively synthesizes research that compares small group collaboration and independent learning, researchers show that of the 11,317 studied 486 autonomous findings can be taken from the 122 studies investigated by the researchers. Result show that on average, there are significantly positive effects of small group collaboration on learning when compared with independent learning. Social context is identified as a contributing factor in learning through computer technology. After a weighted least squares univariate and multiple regression analysis is taken; technology, task, members in the groups, and characteristics of the individual learners are identified as variables that have significant impact on learning. Results show that when students work independently they move faster when compared to working with small groups. When strategies are applied there is a small yet significant effect on both small group and independent learning outcomes. Finally, when tasks are difficult, the groups consist of five or fewer members, and there is no additional feedback available to the students, the performance of groups is superior when compared to individuals working alone. The following limitations of the study are presented by the researchers: meta-analysis results are correlational not causational, there is no control for the experimental data, the variables used in a multiple regression analysis study are sensitive to the order in which they are placed, and design quality of the courses studied can limit a meta-analysis. For further research, studying more effective ways of designing courses that promote small group learning through technology is suggested by the researchers (Lou, Abrami, & d' Apollonia, 2001).

Dialogue

Three forms of discussion used in social learning environments follow constructivist views that vary according to individual perspectives. Deep-seated constructivists propose putting learners within an environment where teacher support is limited and students build their own intellectual representation. Temperate constructivists support the use of "formal instruction," but want the learner to participate in activities that help them build knowledge. Social constructivists believe that knowledge should be built in collaborative environments with dialogue used to help construct understanding. These three differentiating views are labeled as exogenous, endogenous, and dialectical constructivism with the dialectical falling between the other two forms. Exogenous constructivists emphasize the use of formal instruction along with activities that require learners to develop "knowledge representations" that are applicable to real life situations. Endogenous constructivism looks at how the learner constructs knowledge. Instructors who design endogenous constructive experiences act as facilitators and challenge learners' existing models through active learning. Dialectical constructivists represent learning through "realistic experiences." Teachers who design dialectic lessons and activities provide scaffolding along with peer collaboration (Moshman, 1982; Dalgarno, 2001; Deemer, 2004; Morrone et al., 2004).

Morrone et al. (2004) describe their examination of preservice teachers working in a social constructivist guided course. Research in the study focuses on determining ways in which instructional discourse influences student perception of mastery goals. Sessions are videotaped, transcribed and analyzed. Results in the study show that discourse supports student mastery.

Dalgarno (2001), illustrates that the exogenous, endogenous, and dialectical constructivist approaches mesh with CAI (Computer Assisted Instruction). Since exogenous constructivism emphasizes the use of direct instruction with some learner choice in order and selection of the content, the author identifies hypermedia and concept mapping as tools that offer exogenous learner control. Some exogenous proponents criticize student ability to browse without teacher guidance because of the risks of losing direction during the search. CAI tools such as hypertext, hypermedia, simulation, and microworld tools are said to support endogenous constructive learning that supports active and student-directed discovery. Importance of social interaction and construction of meaning by the learner is recognized as dialectical constructivist behavior. He indicates that Computer Supported Collaborative Learning (CSCL) tools support dialectical practices. This type of tool is presented in three different forms. Computer Mediated Communication or Conferencing (CMC) tools, Computer Supported Cooperative Work (CSCW) tools, and tools with features appropriate for group learning are identified as appropriate CAI tools for dialectical constructive approaches. CMC tools are said to include synchronous and asynchronous interaction capabilities. There are also groupware tools identified by Dalgarno that allow for communication and shared workspace. These dialectical tools offer opportunities for real life experience, scaffolding, and chance for challenging learning that moves outside of the learners Zone of Proximal Development.

Effective dialectical discussion is identified as a key facet of collaboration, factors of effective discussions are to be recognized by researchers (Ferdig & Roehler, 2003-2004; Steinbrown & Merideth, 2003; Wade & Fauske, 2004). Ferdig and Roehler (2003-

2004) qualitatively and quantitatively evaluate asynchronous discussions among preservice teachers. Their findings include conditions that need to be present for productive asynchronous discussions to take place. First, discussion forums need to challenge participants to move beyond their Zone of Proximal Development. Some students find themselves feeling unprepared or inadequate. As a result, they hold back from interacting in the conversations. The researchers identify the need for students to be provided with "adult guidance or collaboration" so that struggling students can participate. Discussions also need to influentially be related to classroom goals. Content and objectives present in the classroom need to be extended into the discussion arena to allow for reflection, elaboration, and expansion of the topics. Researchers from the study recognize the condition that calls for the teacher to demonstrate discursive discussion. They find that responses are recaps of the topic as opposed to posting of thoughts on the topic followed by a question to extend the thinking of the other participants. Finally, the researchers call for teachers to assess the social composition of the groups of students working together. They find teachers need to recognize whether or not any participants in the group have the necessary skills needed to guide other group members. Adult guidance from the teacher needs to be provided to help guide students when the group makeup does not include a member with the qualities that lead to productive asynchronous discussions. Another factor that researchers identify is other time outside of the face-to-face and the asynchronous classroom that the students use to delineate the topic. Outside discussion takes away from the asynchronous discussion because students do not see the need to reiterate previously discussed material.

Steinbrown and Merideth (2003) present a design for online support because meeting student's needs is an important factor that influences their motivation. They note that the instructor's needs must also be a part of the support system. Wade and Fauske (2004) identify a CMC as an ideal place for dialogue, but they identify dominating individuals who control discussions as a problem. The researchers analyze discourse strategies used by participants, and they find that men and women use a variety of discourse strategies. Researchers also find that when participants do not follow the practices of the group standard they are mocked or excluded from the discussion.

Poole (2000) illustrates a study on student participation in asynchronous discussions. The researcher found that posts are focused and show student commitment, an atmosphere of community is recognized, and the effects of the experience on the participants are positive. A need for further investigation of the impact on outcomes is suggested. Fauske and Wade (2003-2004) identify computer-mediated discussions as a model environment for dialogue. However, knowing that studies on discussions show tendencies of certain participants to dominate the discussion, they find opposite results in their study. Most of the participants in their study were supportive, receptive, personal, respectful, and considerate. Their participants did not refrain from criticizing or challenging statements made by others. Despite these results, the researchers state that actual learning needs to be evaluated.

Interaction

Discussions held online have been used to increase interaction and develop life-long skills among students. Results have shown that students are not interacting online as researchers had originally expected, and for the role of interaction to have influence in a

computer mediated discussion, the instructor has to take a certain role. Researchers also note the importance of students learning "how" to interact during a conference (Lee & Gibson, 2003; Durrington & Yu, 2004; Sorensen & Baylen, 2004; Benson et al., 2005). In a study that compares online and campus courses, the results show that a significant number of participants from each medium noted similar feelings of satisfaction with course support from the instructor and structure of the course. There was no significant difference between the online and campus course in the areas of interaction and distance (Benson, et al., 2005). Durrington and Yu (2004) show from results found through their study that students participated more during a discussion when it was student-moderated as opposed to instructor-moderated. Sixty-one students with the same instructor from three different entirely online classes participated in the study. Participants were either undergraduate, masters, or doctoral students. Differences by academic level did not influence the number of posts made by individual students.

Sorensen and Baylen (2004) studied the communication patterns of students participating in an online discussion. They categorized lower-level forms of communication as initiating and supporting patterns, and they categorized higher-level forms of communication as challenging, summarizing, and monitoring patterns of discussion. After analyzing the online discourse from two different courses that used the asynchronous discussion tool. Results show that students used high level initiating and supporting communication patterns. The challenging and monitoring patterns of communicative behavior occurred less often, and a pattern of summarizing occurred only once. The researchers give the following implications for practice: a) Inform students of best practice discussion examples and provide them with feedback, b) inform students of

expected behavior that is appropriate for online discussion and make sure they understand how to utilize the technology tools, c) Provide the discussion formats with structure that include effective discussion questions and give them opportunities to interact individually as well as with groups and, d) Instructors should use instructional design principles that guide active learning, construction of knowledge, and feedback.

Lee and Gibson (2003) present evidence that twenty-one participants from an online course demonstrated self-direction in three ways. They showed how interaction made it possible to use self-control, critical reflection, and responsibility. An important finding from the study concerned the influence of the instructor on students' self-direction as a result of interaction. The structure designed by the instructor which allows for student influence also gave the students more choices, thus making it more student-centered. Students had influence over the structure of the course in that they could initiate structural change through the instructor. The researchers note the importance of the instructor's role as a facilitator and adjusting design so that it is student-centered.

Learning Outcomes

Increased student involvement by both regularly contributing and noncontributing students, building of community, improved understanding of peers' and their perspectives, deeper thinking, and moral awareness are outcomes that Killian and Willhite (2003) present in an article about their study of preservice teachers who participate in a computer mediated discussion. There is a statement made by researchers about Web-based learning. They hold that courses that are Web-based serve more as disseminators of content and information as opposed to learning guides (Boshier et al., 1997; Gunawardena & Duphorne, 2000).

Out of a need from a call for further research on the repercussion computer mediated discussions have on student learning, Thomas (2002) explores and presents results from a study that investigates students' learning outcomes and interaction patterns when discussing online. Findings from the study suggest that the online discussion forum may be too nonlinear for true conversation to take place. Sixty-nine undergraduate students participate in a Lotus Notes discussion forum integrated into an existing course, and participation points are a part of the final course grade. Results of the study show that computer mediated discussions promote cognitive engagement and higher level thinking needed to solve problems. However, the researchers do not find the interaction between the participants to be representative of normal discussion. Isolation, message format, and differences between written and oral discussion are identified by the researchers as conflicting factors. Students do not always have the skills needed to enter into a deep interactive conversation. They stress the importance of a moderator or tutor to the success of a discussion, and they present a need for further research on the methods used to support interactive computer mediated discussions.

Kochtanek & Hein (2000) qualitatively illustrate the effects of asynchronous computer mediated discussions on learning and collaboration during two online courses. The courses are designed and presented via the Web. Browsable links are included in the course web display where students could find a list of goals, objectives, assignments, and directions. A FirstClass link for threaded computer mediated discussions is also available for the students. Participants in the course consist of residence and off-campus learners. Successes and challenges experienced by the instructor and learners are presented. Questions about how to go about measuring student success, outcomes, and achievements

are raised by the researchers. Other questions about impact of learning style and comparison of courses that are offered individually compared to courses offered through an established program are also asked by the researchers. Based on their experience, Kochtanek & Hein expect to see significant changes in how instruction is delivered especially as learners and instructors become more skilled at online learning.

Murphy (2004) reports on a study that attempts to measure collaboration during a computer mediated conference using a model developed from a conceptual framework. The model transitions from the facet termed social presence to the development of an artifact. An instrument that is designed from the foundations of this model is used to measure collaboration. 103 participants collaborate in the study and the instrument is used to assess the outcomes. Results show that evidence of participation exists mainly during the social presence and articulating individual perspectives phases of the model. The accommodating and reflecting the perspectives of others phases of the model only receive a few messages with evidence of the necessary behaviors as taking place during the discussion. One message represents the behavior of a learner attempting to build shared goals and purposes. There is not one message that portrays the participants as performing during the phase that requires the production of shared artifacts. It is this researchers conjecture that if participants were to perform at the higher levels of the model that effective guidance needs to be promoted unless the learners want to stay at a level that is considered to be an independent level instead of moving to higher levels that are thought to take a more collaborative effort to achieve. See Figure 1 for an illustrated view of this model.

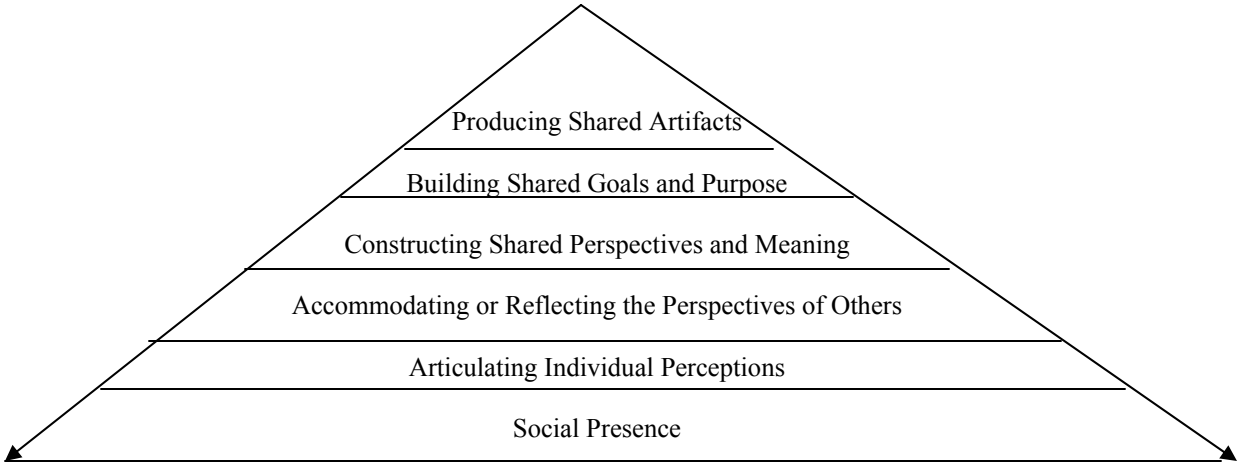

Figure 1. Design Collaboration Model (Murphy, 2004)

Evidence about the low levels of actual interaction and lack of research that demonstrates how computer mediated conferences successfully effect learning outcomes leaves one with questions about what can be done so that computer mediated discussions can have a greater impact on students' self reports on interaction and learning outcomes.

Interest in the Field and Legislative Impact

Questions related to improving computer mediated discussions for the improvement of students' self reports on interaction and learning outcomes become even more important when needs based studies produce evidence that supports online learning. For example, the Sloan Consortium is responsible for conducting and reporting on studies that have influenced the acceptance of online courses. In the year 2003, the Distance Education at Degree-Granting Postsecondary Institutions study from the years 2000 and 2001 became available to the public. Data is presented on various topics about the target audience and the online learning topic. It includes information about the number of institutions that offer distance education, enrollments, types of courses that are offered,

which programs offer degrees and certificate programs, and factors related to why institutions either choose to or choose not to offer online courses. Information from this study has made an impact on authority figures who make decisions that effect distance education (Waits & Lewis, 2003).

The 2004 *Entering the Mainstream: The Quality and Extent of Online Education in the U. S.* has been available since the 10th Annual Sloan Consortium International Conference. A distance education course for public elementary and secondary school students study from 2002-2003 became available in March of 2005. In the national report, estimates that show an increase in interest and numbers of current enrollments are presented. In addition to these numbers there are reasons that identify the need for online learning courses based on the need of the population. The findings are presented at the national and school district levels. Overall, the report overwhelmingly supports and demonstrates the growth of online learning in the future (Setzer & Lewis, 2005; Barack, 2005).

Simonson (2003) summarizes the goals of the Sloan Consortium, an organization dedicated to education through the online venue. This organization seeks to find answers to questions that individuals have about the online learning environment by conducting studies that primarily gets its data from surveys. Students are interested in finding out whether or not online courses are quality courses. Individuals such as instructors, administrators, and political leaders want to know if students' interest in online courses is a growing trend or a fad that will eventually pass. Of the 2002 and 2003 report: *Sizing the Opportunity: The Quality and Extent of Online Education in the United States*, Simonson identifies results that he considers to be influential factors of supporting online education,

as well as demonstrates the growth of online learning in the future. According to chief academic instructors learning outcomes will equal or exceed what is attained by face-to-face courses by the year 2006. There will be a twenty percent increase in online enrollment. Institutions that are for-profit are expected to increase in size compared to the growth rate of other institutions. Institutions that are private and non-profit are expected to grow at a slower rate than other institutions, and if students have the choice they will choose to take courses online as opposed to face-to-face. Finally, Simonson chooses the faculty adherence to remain conservative when it comes to online learning as his last piece of evidence from the report that he feels is an influential outcome of the study.

The studies and reports that are conducted by the Sloan Consortium and other supporting research has had an impact on the decisions made by legislators at state and national levels. In the state of South Dakota, legislator's constituents have passed legislation in which distance education will be governed by the state. In this situation, Northern State University provides a distance education program for high schools via a videoconference medium so that they may take upper-level and advanced-placement courses during their regular school day. This alternative has been implemented to serve the needs of their largely rural society (Carnevale, 2005).

The United States legislators has made changes to get rid of the "50 percent rule," a law which they find to be outdated as a result of the growth of interest in distant education. According to the original law, institutions that offer fifty percent or more of their courses through an online avenue are not allowed to offer federal financial aid through distance education. Today that law is no longer in effect. As a result of the change, the possibility of an increased student interest in taking distance education

courses is viable. In addition, the number of schools that increase the number of distance education courses that they offer could increase as well (Vaishali, 2005).

Learner's Role

Gunawardena & Duphorne (2000) identify computer mediated discussions as a tool for promoting discussion and interaction that is more meaningful, social, constructive, and knowledge building. They also find the discussion environment as a place where collaboration, cultivation, and a means for reducing the distance gap can take place. The researchers seek to identify variables that impact students' satisfaction with asynchronous computer mediated discussions. GlobalEd is utilized as the computer mediated discussion environment in which ninety graduate students from six different universities participate in the study. Results from the study show a correlation between learner readiness and satisfaction at a moderately positive level making the variable a significant factor. The learner satisfaction with online features results with a high positive correlation making the variable a highly significant factor of student satisfaction. Finally, there is a significantly positive correlation between student satisfaction with computer mediated conference related approaches to learning. Overall, if a student wants to improve their chances with being satisfied with a computer mediated discussion it is their responsibility to do what is needed so that they are ready, capable of using the online features to their potential, and familiar with interacting with the strategies implemented by the instructor. According to the researchers, using the model that they used in this study is a viable choice for looking at learning achievement.

Online learners have needs that should be fulfilled if they are to succeed in online courses, and online learners need certain characteristics and behaviors to succeed to

succeed as well (Hacker & Niederhauser, 2000; Shin and Chan, 2004). Learners need their demographics to be considered especially since the typical online learner is a non-traditional learner who also works and has personal responsibilities. Researchers present a study that gathered information using an electronic survey and compared 285 students' learning outcomes with their perceptions of their interaction and feelings of belonging. The researchers found a sense of belonging to be an important factor in the amount of interaction and impact on learning outcomes (Shin & Chan, 2004).

Hacker and Niederhauser (2000) discuss deep and durable learning in environments that are online. Researchers note that participants need to be active learners (Hacker & Niederhauser, 2000; Palloff & Pratt, 2001; Miller & King, 2003). Hacker and Niederhauser (2000) believe learners should be taught through the use of examples, they find that collaboration should be used, because it supports the ability to solve problems. They claim that feedback should be provided and used effectively, and they cannot begin to stress the importance that motivation has on learning. Their concluding remarks indicate that upholding such principles do not guarantee learning that is deep and durable. Ultimately, these researchers state that further research on the impact of online learning needs to be investigated so that the move made by universities to provide the online learning venue is justified.

Instructor's Role

There are different roles that online instructors have been expected to take when it comes to teaching online (Parker, 1996; Murphy, Drabier, & Epps, 1998; Shelton, 2000; Kirk, 2001; Newberry, 2001; Blignaut & Trollip, 2003; Khine et al., 2003; Herring, 2004). Prestera & Moller (2001) state that the instructor's role should be as a guide, a

mentor, a catalyst, a coach, an assessment-giver, and a resource-provider. Research shows that instructors should act as facilitators of learning through technology (Parker, 1996; Murphy et al., 1998; Prestera & Moller, 2001; Khine et al., 2003; Herring, 2004). Making sure that the learners have the appropriate skills, attitudes, and technical ability to participate in an online course is an instructor's duty (Shelton, 2000). Instructors are expected to explain the objectives so that the learners find a reason for the learning and motivate them to learn (Khine et al., 2003; Herring, 2004). They should communicate for clarification and provide students with learning environments that are structured (Murphy et al., 1998; Kirk, 2001; Khine et al., 2003). Helping students learn to become independent learners so that they can choose from different paths to solve real world problems is another role of an instructor (Parker, 1996; Kirk, 2001; Khine et al., 2003; Herring, 2004). If need be, instructors should communicate with the learners privately (Murphy et al., 1998). When students participate in online courses feelings of isolation and lack of social presence can occur. Instructors not only need to make themselves present, they should apply best practice strategy to help emphasize interaction. Strategies that instructors can follow to improve social presence include holding a face-to-face first session when possible, include small group learning activities, model effective interpersonal communication, respond quickly to questions, and make sure that the responses are directly related to the original question. See Figure 2 for an illustrated view of an instructor's role in an online learning environment. (Murphy et al., 1998; Kirk, 2001; Newberry, 2001; Blignaut & Trollip, 2003; Herring, 2004).

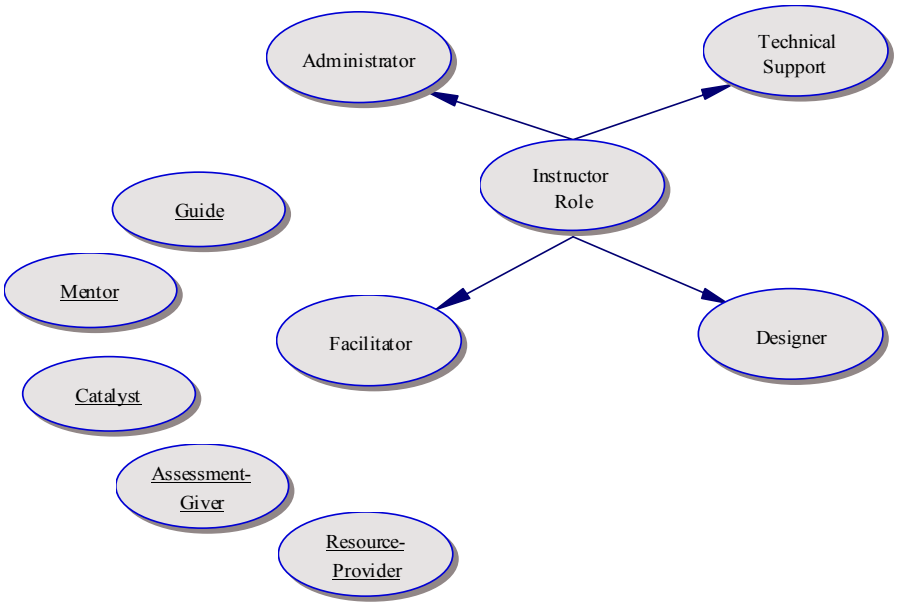

Figure 2. Roles of an Instructor in an Online Learning Environment (Prestera & Moller, 2001)

Researchers report a major shift in education headed toward the use of computer mediated discussions. Loss of social relationships is thought to be an important part of online learning. (Khine, et al., 2003). Stumph et al. (2005) recognize the importance of the need to equip and train faculty so they are prepared to act as facilitators and guides for students of the 21st century. They present information about the technological separation between instructors whose teaching practices are rooted in trends from the 20th century and the increasing number of 21st century students participating in distance education. Instructors who are leery of teaching online are often overwhelmed by the requirements of teaching online. Success, according to the author has much to do with instructors' perceptions and their training.

Chang (2004) presents a scenario of eight online instructors from a large southeastern university who teach eight different online courses that when added together have twenty-six sections with approximately five hundred seventy online students. Average the students to instructors and the result is that each instructor is responsible for guiding approximately seventy students a piece. Attending to the needs of this many students means a lot of work for the instructors especially when comparing the amount to instructors responsible for meeting the needs of a fewer number of students in a face-to-face classroom. The researcher's work looks at using mentors in an online classroom to reduce the instructor's responsibilities when it comes to meeting students needs and increase the students' chances for success in the online classroom. With the student drop-out rate being higher for online courses when compared to face-to-face courses, the additional help could be beneficial.

Best Practices Among Instructors

Distance theory such as Moore's theory of transactional distance and theories that are web-based such as Bruner's three-form theory, dual-coding theory, theory of multiple representations, cognitive flexible theory, Gagne's conditions of learning, Merrill's instructional transaction theory, and theory on elaboration guide are used by instructors when designing courses. These theories also guide instructors in practice (Huang & Liaw, 2004). Researchers report on the principles that instructors should adhere to when teaching and designing. Content should be consistent and coherent, technological competencies should be assessed, and chosen technologies should complement the students learning abilities as well as the teachers instructing abilities. Regulations should be followed and faculty should be qualified in areas of design, assessment, and self-

evaluation. They should keep students' personal information secure and help to ensure their social success in the course. (Collins & Berge, 1996; Miller & King, 2003; Huang & Liaw, 2004). Huang & Liaw (2004) specifically cite the following principles that exemplify best practices among instructors:

1. Assess the necessary prerequisite skills
2. Increase technical supports available to distance learners
3. Interactions through advanced technologies are necessary
4. Provide quality discussion questions
5. Arrange appropriate size of discussion groups
6. Enhance learners' higher order thinking skills
7. Offer hypermedia and well-programmed instructions
8. Provide well-structured learning environments with links
9. Let learners control their learning process
10. Encourage distance learners to actively participate in group discussions
11. Facilitate student learning

The researchers conclude that unique approaches should be used to promote success through best practices.

Zemelman, Harvey, & Hyde (1998) present best practice interlocking principles for teaching and learning in America's schools. They identify the following principles as broad, deep, and enduring standards for practice: (a) student-centered, (b) experiential, (c) holistic, (d) authentic, (e) expressive, (f) reflective, (g) social, (h) collaborative, (i) democratic, (j) cognitive, (k) developmental, (l) constructivist, and (m) challenging.

Seven Principles for Good Practice

A set of principles widely followed by instructors are the seven principles for good practice in undergraduate education. The principles initially were presented in the October issue of the AAHE [American Association for Higher Education] Bulletin (Chickering & Gamson, 1987). They have been used to guide instructors when designing courses and evaluate teaching practices. These principles have been updated so that they now reflect technological innovations that have become a major influence on the way courses are presented, instructors' teach, and students' learn (Chickering & Ehrmann, 1996; Ritter & Lemke, 2000; Taylor, 2002; Martyn, 2004).

In all, the seven principles (a) encourage contact between student and faculty, (b) encourage the development of reciprocity and student cooperation, (c) encourage learning that is active, (d) encourage prompt feedback, (e) support an emphasis of time on task, (f) promote the communication of high expectations, and (g) support the respect of diverse talents and ways of learning (Chickering & Ehrmann, 1996; Braxton, Olsen, & Simmons, 1998; Ritter & Lemke, 2000; Taylor, 2002; Martyn, 2004). Researchers have used these principles through investigation so that they can illustrate the results when they have been applied with technology.

The seven principles encourage contact between student and faculty (Chickering & Ehrmann, 1996; Braxton et al., 1998; Ritter & Lemke, 2000; Taylor, 2002; Martyn, 2004). Taylor (2002) presents a study that looks at the use of the seven principles for good practice in undergraduate education in conjunction with distance education. Due to a lack of evidence in the field, the researcher has focused the study on identifying whether or not instructors who teach online courses apply the seven principles to practice.

In addition, the researcher explores differences between those who use the seven principles and those who do not by discipline, teaching experience and gender variables. Chickering and Gamson's seven principles are used as the instructional model for identifying best practice behaviors in the study. Participants in the study respond to a fifty-two item survey called the Online Teaching Practice (OTP) Inventory that was developed by the researcher. The tool was tested through a pilot study before it was used in this study. Mean scores were calculated, standard deviations were applied, and the responses were placed in a descending rank order. Results show that in general instructors are applying the seven principles to practice. In the area of "Contact" (3.78) and "Feedback" (3.75) the scores show that instructors work toward being reachable and obtainable to the students. As for the principles of "Ways of Learning" (3.58), "Expectations" (3.42), and "Learning Techniques" (3.42) results show that instructors recognize the importance of differences in learning style, they set high expectations, and they utilize more than one technique for learning. Of the principles that are practiced but to a lesser extent, research shows that of "Relations Among Students" (3.10) instructors do not initiate interaction among students through assigning collaborative assignments and discussions as much as they could. Findings from the "Time on Task" is an area in which instructors need to improve their practice. Results from an ANOVA test show that there is no significant difference at the .05 significance level between genders (2002). In the area of "Expectations" there is a significant difference by participants with higher years of experience as well as when comparing disciplines. The researcher offers possible explanations for the findings.

Martyn (2004) presents a doctoral study on the effects of threaded discussion on students' perceptions and learning outcomes in environments that are face-to-face. Chickering and Gamson's seven principles for good practice in undergraduate education are used as a theoretical framework for evaluating online asynchronous computer mediated discussion effectiveness. Since participants in the study discuss in groups, the researcher compares different variables namely; (a) student major, (b)gender, (c) age, and (d) number of semester hours completed. Pre and post tests are a strategy applied by the researcher to identify previous learning. When speaking of best practice principles, the researcher finds that how a course is implemented is just as important as what is implemented. In other words, how an instructor implements a discussion impacts the success or failure that a student experiences in the areas of engagement and learning. This finding is true of the face-to-face and online learning environments explored in this study. It is important to note that instructors in this study did not implement the best practices as they could have. Major findings from the study show that there is not a significant influence from threaded discussions on students' perceptions of their learning. However, the researcher reports that the calculated effect sizes from online threaded discussion that is supported with the application of the seven principles has the potential to influence student learning outcomes. Further research in the area of learning outcomes and computer mediated discussions is suggested by the researcher because of the influence it may have on issues of cost.

Challenges of Online Learning

Olsen, Carlson, Carnevale, and Foster (2004) present ten challenges that distance education providers can expect for the next ten years. In the past, there has been a focus on making the technology available to students. Now the new focus will be to make the technology more effective, useful, manageable, and multifaceted in that instead of offering technology tools they will offer high-tech systems. Along with these opportunities there are challenges (Miller & King, 2003; Olsen et al., 2004). Researchers identify time, lack of technology skills, and difficulties with the computer or gaining access as challenges. Attitudes, flaming, and need to continuously monitor the classroom site are some of the other disadvantages that researchers identify (Creed, 1997; Hammond, 1998; Edens, 2000; Killian & Willhite, 2003).

Institutions can expect a need for collaboration tools, reliable wireless networks, and a need for enough bandwidth to keep activity moving, to keep up with the distance education demand. Along with those needs, there will be cost issues, as well as an acceptance of having to learn to live with software systems as is or expect to pay every time a modification is made. In addition, individuals have to learn to manage open source systems such as WebCT or Blackboard course management systems. Administrators and staff must fight against security threats, protect digital archives with back-up plans, and debate over intellectual property rights because of digital copyright law. Since the demand for distance education is expected to grow, the sharing or purchasing of courses will take place to meet the demand as will the number of instructors capable of customizing and conducting the courses (Olsen et al., 2004). Considering that these future changes will have an additional impact on the institutions, the instructors will need

additional training to meet the new challenges (Miller & King, 2003; Olsen et al., 2004; Stumph et al., 2005).

Miller and King (2003) identify issues that confront the success of distance education. New technologies can bring obstacles as quickly as they bring opportunities. One such example is the benefit that video teleconferencing has brought to distance education. It allows for the instructor and students to see each other and it provides the feeling of being in a face to face classroom. Unfortunately, the costs are high, the technologies are sometimes used by instructors as a driving force as opposed to using them as tools, and technological difficulties can cause interference with the production of the course. Learners, according to the researchers need to be self-regulated and self-directed to succeed in distance education courses, and they can become frustrated if they do not receive immediate feedback from the instructor. These conflicting factors make the instructor's role a vital component to overcoming some of the obstacles of distance education. Proper training to use the technology and design courses is considered to be a major necessity for distance education courses to succeed.

King (2001) presents a study in which 109 graduate students share their perspectives of web-based bulletin boards. Data is taken from the students' entries during a computer mediated discussion, reflective essays, and class discussions. Themes that emerge from the data are used to categorize the information through in-depth analysis procedures. Of the positive perspectives, participants express excitement with the bulletin board medium and identify deeper communication and feelings of increased connections to other classmates. They like being able to reflect and offer a more critical response that isn't constrained by time as it is when they are in the face-to-face portion of the class

with their peers. Shy classmates feel they have more of an opportunity to participate. Other benefits of the discussion board include sense of community, increased peer-to-peer interaction, convenience, and organization. Motivation is another key theme that participants find to be a benefit from participating though a discussion board. Along with their positive comments are negative comments made by the students that the researcher presents. They note that if an individual is not a self-directed learner who is capable of making sure that he or she participates consistently then the student will be challenged. Receiving delayed responses is identified as frustrating as is the lack of spontaneity and non-verbal communication. Once words are posted and read by others, those words can not be taken back. This is a disadvantage when students say something that they regret. It is also easy for students to say something during a discussion that leaves other students with a false impression. Some students do not have the technology skills needed to participate which tends to lead to feelings of intimidation. Other students are frustrated with the problems that come with access through Internet connections and further technical problems.

Role of a Telementor

Online mentoring is generally provided through asynchronous communication mediums, email, and asynchronous discussion forums. Individuals have turned to online mentoring, because they are not bound by time or place and other limiting factors such as cost are reduced. Another word for an online mentor is a telementor. Research has shown that telementors should demonstrate certain behaviors when acting as an online telementor for other students. They should be supportive by offering encouragement and friendship. Recipients of telementoring support should be able to turn to the telementor

for guidance that is sincere, sensible, constructive, and hopeful. Telementors are individuals that recommend qualified improvement suggestions, and they offer information and services to students as scholarly guides (Buchanan, Myers, & Hardin, 2005). Stein and Glazer (2003) describe the role of a telementor as having the responsibility of helping the telementee build skills of critical and reflective thinking. In addition, they are there to provide academic support in the pursuit of goals that are scholarly.

Buchanan et al. (2005) present a study that looks at the impact and function of a telementor in an online learning environment. Online graduate students' perspectives are collected by the researchers through an open and closed-ended response survey. Results show that sixty-seven percent of the participants felt that they would benefit from a telementor, because it would help them to increase their learning. Participants state that a telementor would help them work through the "institutional maze" by helping with issues connected to registration, and resources offered by the university including student services. In addition, they feel that a telementor would help reduce feelings of confusion and isolation.

The amount of research that examines the use of student moderators is limited, and studies that compare student-moderated discussions with instructor-moderated discussions is even less (Durrington & Yu, 2004). Instructors have given students in the class the role of acting as a moderator with responsibilities that include opening the discussion and keeping the flow to the discussion moving forward. Results show that the students acting as moderators and working with the instructor has been positively effective for online discussions (Rohfeld & Hiemstra, 1991). However, researchers

demonstrate that the roles of student moderators differ from class-to-class, because they are utilized differently by the instructors. Researchers find that the moderators do impact the sense of community for the better, they empower students, and they make for a student-centered learning environment (Tagg, 1994; Poole, 2000).

Durrington & Yu (2004) present a study in which undergraduate and graduate students participate in three different technology education courses that are completely online. Some of the discussions are moderated by the students and some are moderated by the instructor. Based on a .01 level of significance, results from an initial t-test show that students significantly participate more when a student moderates a discussion compared to when the instructor moderates the discussion. There is no significant difference in the area of interaction when comparing undergraduate and graduate students. High levels of motivation are contributed as a possibility for this result. Generally, all of the students in the class have an opportunity to act as a student moderator. Researchers note that it is important not to confuse the role of a student moderator with the role of a telementor. Unlike student moderators, telementors usually are not students from the class, instead they tend to be graduate students or individuals with a background in the field of the course being offered with the addition of a telementor (Tagg, 1994; Poole, 2000; Chang, 2004).

Chang (2004) notes that an online mentor or telementor is there to aid instructors in teaching and to help facilitate learning through the online venue. The researcher recognizes the concern over the effectiveness of online courses when compared to face-to-face courses and notes that results of the comparison when made in studies are still inconclusive. When a distance learning department had been assigned the task of helping

develop online programs at a southeastern state university they developed and implemented a model of online learning communities with online mentors (OLCOM) to help make sure that the programs were effective. Mentors from the program are usually graduate students who hold a master's degree. They are trained by the mentor support team before being assigned to act as a mentor for a course.

Typically, universities that offer online degree programs and online courses rely on the faculty members for designing and implementing the entire online course (Bauman, 1997; Stumph et al., 2005). Although students do find a sense of community when instructors mediate a discussion there are other problems such as time constraints and lack of immediate feedback that exist (Tagg, 1994; Poole, 2000; King, 2001; Miller & King, 2003; Chang, 2004; Olsen et al., 2004; Stumph et al., 2005).

When asked about satisfaction through a 5 point Likert scale survey students have reported that the mentors who mediated their discussions were consistent and, they responded with feedback within a time frame that they felt was appropriate. Reports show that the mentor's guidance with content was important. In addition, students' reports express that they felt comfortable working with the mentors and they would recommend their mentor to other students. Students' GPA records and their completion rate records from the 1999-2000 academic years suggest that when compared to all of the face-to-face students completion rate records and GPA records that the students might have performed better because they had a mentor there to guide them. However, since the completion rate records and higher average GPA records have not been taken from a controlled comparison study, the significance of the suggested implications still need to be found through an actual study. Chang presents other areas for further research. An objective

examination of the effectiveness of a mentor in a computer mediated discussion, motivation to learn, and feelings of community still need to be explored. Interaction between telementors and students is also another area that the researcher has identified as an area that still needs to be studied (Chang, 2004).

Telementor Training

Researchers are concerned about the results if telementoring programs do not have effective planning, guidance from administrators, and resources in order to be successful. Models have been developed and recommendations have been made by researchers to guide telelmentoring program developers to take the correct steps. Highlighting pitfalls that can occur and illustrating ways in which effective programs can be productive are ways in which researchers try to communicate change (Single & Muller, 1999; Tsikalas et al., 2000; Chang, 2004). Mentors who train and act as an online mentor at the southeastern university that Chang (2004) presents are responsible for content facilitation in that they guide students when they are confused or need redirection because they do not understand the course content and requirements. They aid in social improvements so that the students can build an online community. Finally, they provide technical support or they direct them to the right place so that their technical needs can be met. These responsibilities alone allow the instructor to spend more time focusing on course effectiveness and less time on maintenance. There are two phases of the training process which prospective mentors must go through before they can begin mentoring students. In all, the training experience takes approximately forty hours to complete. The first thirty-two hours are spent in the first phase and the remaining sixteen hours are spent in the second phase of the training program. Phase one consists of a three-day face-to-

face training workshop at the university. During the first phase new mentors discuss roles and responsibilities, they meet other mentoring members so that they can build a community of their own, and they learn about the functions of a course management system. There is even a website available to the mentors so that they can remain connected with each other for the purpose of maintaining their own support community. Phase two of the mentor training program is online. Mentors learn to become comfortable with using the Blackboard features and they participate in training activities. Once they have completed the training program they are awarded a Mentor Certificate from the university and they can begin acting as a mentor in an established course. See Figure 3 for a conceptual view of the Online Learning Community with Online Mentors (OLCOM) Model.

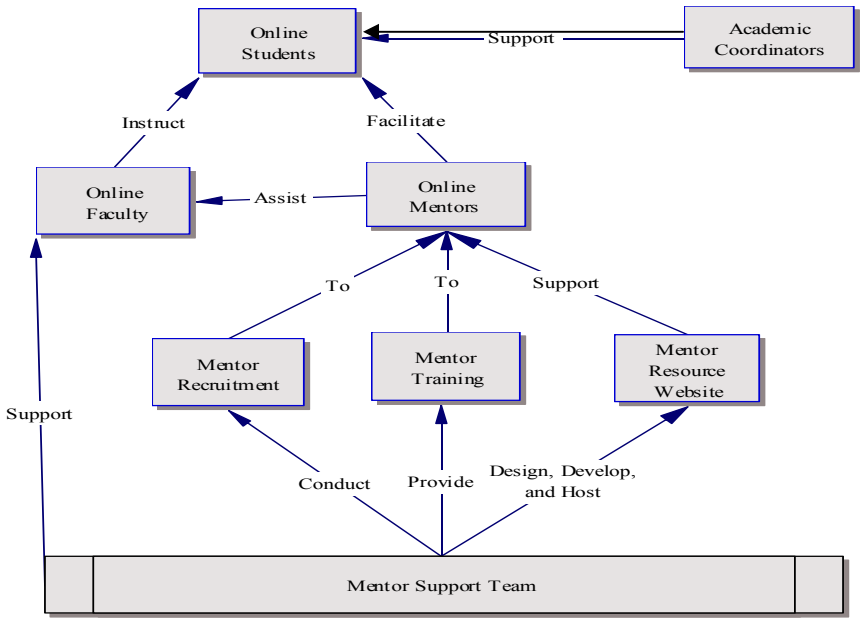

Figure 3. Online Learning Community with Online Mentors (OLCOM) Model (Chang, 2004)

Evaluating Stakeholder Perspectives

Greene (2001) notes that evaluators have shifted their attention from improving methodical ways of gathering, reviewing, and presenting data to methods that include the ideas, perceptions, and dialogue of the stakeholders. Making the stakeholder a part of the process is an example of what Fetterman (1994) refers to as using empowerment evaluation that is both appropriate and meaningful. By including the stakeholder, one makes use of what they already know about to help make improvements. Greene (1997) acknowledges the importance of interests being equitably advanced. Including stakeholders' perspectives, she notes, provides for democratic pluralism and commitment to value. Fetterman (1994) considers including the stakeholders as a form of empowerment which in turn gives the stakeholders self-determination.

Summary

In summary, online courses that are offered in higher education are increasing and the number of students interested in taking online courses are increasing as well. These findings are significant enough that legislators have opted to reduce restrictions connected to federal grants and universities that offer online courses (Simonson, 2003; Waits& Lewis, 2003; Carnevale, 2005; Setzer & Lewis, 2005). Studies that compare face-to-face learning environments result with no significant differences. One could infer from such results that an online classroom is comparable although different than a face-to-face learning experience (Bauman, 1997; Chang, 2004). Martyn (2004) concludes that the quality of online courses can be improved if interaction is increased in conjunction with using Chickering and Gamson's seven principles for good practice in undergraduate education. In addition, Martyn presents a synthesis of the literature on students' learning

outcomes and a synthesis of students' perceptions of learning outcomes. When students' learning outcomes are concerned, Martyn's synthesis of research from the year 1996 through 2002 shows that a combined use of mediums through which computer mediated discussions can take place are used to find student learning outcomes. Findings of the effect that each of the mediums including synchronous chats, online threaded discussions, email, and electronic quizzes alone are not focused on in the available research. In addition, the researchers synthesis of available research shows that research about learning outcomes come from students' perceptions and that actual student learning outcomes were not available to them at the time. This points to a need for research on students' learning outcomes from separate mediums such as a computer mediated discussion.

Instructors are using theory to establish a framework when designing their courses. They use the theories to accomplish specific goals such as improve feedback, to advance how they meet the needs of learners who learn in different ways, and so they can help develop students' problem solving skills so they can transfer learning and make better decisions on ill-structured real world problems (McAlpine & Ashcroft, 2002; Huang & Liaw, 2004) . Another strategy instructors use to improve variables that impact learning is to follow best practice strategies (Chickering & Gamson, 1987; Zemelman et al., 1998; Chickering & Gamson, 1999; Huang & Liaw, 2004). One of the variables that is worthy of research is interaction (Lee & Gibson, 2003; Durrington & Yu, 2004; Sorensen & Baylen, 2004; Benson et al., 2005) and that online threaded discussion spaces which have been made more accessible through open course systems are compatible for collaborative learning and discussion which are two components of interaction (Levin &

Ben-Jacob, 1998; Hathorn & Ingram, 2002; McAlpine & Ashcroft, 2002; Fauske & Wade, 2003-2004; Greenlaw & DeLoach, 2003; Im & Lee, 2003-2004). Researchers recommend that different forms of interaction should be focused upon when students collaborate, discuss, and interact. Focus should be on learner-to-content interaction, learner-to-learner interaction, learner-to-instructor interaction, and learner-to-interface interaction. See Figure 4 for an illustrated view of the Transactional Distance and Typology of Interaction in Distance Learning Environments Model (Moore, 1989; Moore, 1999; Chen, 2001; Huang, 2002).

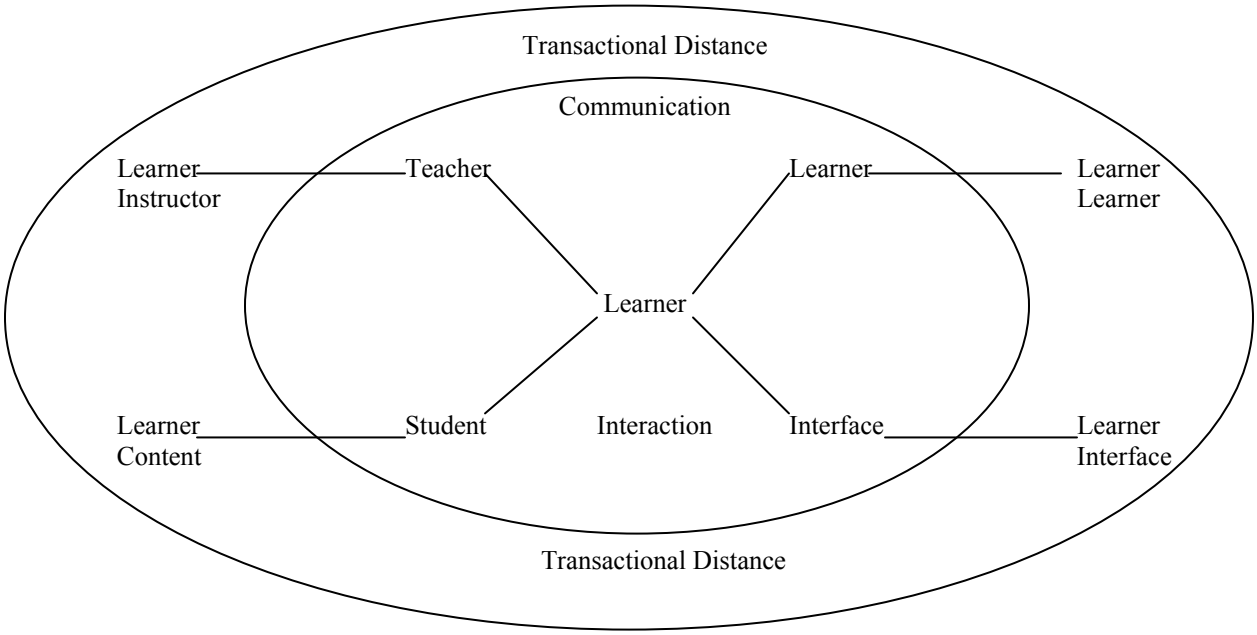

Figure 4. Transactional Distance and Typology of Interaction in Distance learning Environments Model (Chen, 2001)

This study proposes focusing on instructors' perspectives, ways of teaching, and characteristics in relation to the use of a telementor during a computer mediated discussion, because instructors are a significant stakeholder in the process. In addition, asking online instructors about their support for and perspectives on a fifth type of interaction called learner-to-telementor interaction could potentially add to the literature base, especially since researchers such as Moore (1999), Chen (2001), and Huang (2002) have not specifically mentioned the learner-to-telementor form of interaction. This type of interaction will also be looked at because of the impact that it could have on the instructors' roles, students' learning outcomes, and types of interaction during a computer mediated discussion. Gibson (2003) recognizes the need to explore theory and theoretical models to find theoretical gaps and overlap. However, before identifying those gaps, there are characteristics that make online instructors similar and different from each other that need to be defined.

CHAPTER III

METHODOLOGY

Purpose

The purpose of this quantitative exploratory study was to examine online instructors' teaching characteristics and perspectives of telementor support. Identifying if and when providing telementor support in a computer mediated conference was beneficial was another goal. In order to accomplish this task, distinguishing features such as instructors' theoretical ways of teaching, number of years teaching, gender, and the discipline from which the instructor taught were examined.

If the instructors supported the use of a telementor during a computer mediated discussion, they were asked their perspective on what characteristics a telementor should have, and they were asked how telementors should be utilized during a computer mediated discussion. Finally, the data were analyzed to determine if the information created significant patterns of similarities and differences that would help anyone interested in determining when implementing telementor support was necessary and under what circumstances such a service was advantageous. In addition, this study was chosen because a better understanding of instructors' perceptions concerning telementor programs was needed.

Quantitative Methodology

This quantitative exploratory study employed a descriptive research design method, because descriptive research has been used when a researcher wants to identify the basic characteristics of the individuals being studied. Other descriptive questions in the study asked about instructors' preference on telementor characteristics and how they

should be utilized during a computer mediated discussion. Information about age, education, gender, and number of years of online teaching experience were some types of descriptive questions asked in this study's survey. (Anastas & MacDonald, 1995; Babbie, 1994; McMillan & Schumacher, 1997; York, 1997).

In this study, a descriptive survey was used when data was collected. Questions in the survey appeared in a contingency format since a survey of this type required having a series of subsequent questions related to the initial question. Respondents only answered the subsequent contingency questions if the answer they provided met the stated contingency. Survey questions focused on instructors' self-reports of their characteristics and their preferences in regard to having a telementor as a part of their course offerings. The researcher did not initiate contact with the subjects involved in the study beyond sending email correspondence that asked them to respond to the survey. They were also informed that if they responded to and submitted the survey that such an action was considered to be their proposal of consent (Anastas & MacDonald, 1994; Babbie, 1995; McMillan & Schumacher, 1997; York, 1997).

The survey was conducted according to Duquesne University's Institutional Review Board (IRB) guidelines. This study took place during the end of the spring semester and the beginning of the summer semester of the 2005-2006 academic school year.

Procedures

Presented in this section are the procedures that were followed during the development and implementation of this study. Steps taken to identify online instructors and sample selection are presented first. Then, the methods taken for instrument

development are described. Next, the course of action used to provide validity and reliability is illustrated. Finally, the data collection and data analysis procedures are presented, and the methodology section of this study is summarized.

Sample Selection

Convenience samples include subjects who are selected because they are accessible or expedient. Instructors from colleges and universities across the United States were selected through a convenience sample in this study. The only condition to participate in the study was that the instructors have taught a course online or have students who participated in the course completely online. Years of teaching, discipline from which the instructor taught, and the college level to which the instructor taught the online course or courses did not stand as prohibitive factors (McMillan & Schumacher, 1997).

Finding study participants was the first step in the sample selection process. A book titled Distance Degrees was utilized to identify schools that offered online courses (Wilson, 2001). Once the higher education schools and courses were identified, access to the online instructors' email and postal addresses were found either by looking them up online and finding online course lists that included the instructor name and email address or by physically calling the college or university. Email addresses were recorded on a data base and in an electronic address book that was accessible to the researcher. Postal addresses were kept in case unforeseen additional steps had to be taken later on in the study. Upon the completion of online instructor identification process, two thousand possible study participants were found. Since participants were found through a convenience sample, the researcher knew that it was not possible to generalize the study

results to the population, thus it was the researchers intention to obtain a 95% confidence level by keeping the test open until at least 322 participants had responded to and submitted the survey. For an illustrative description of the sample selection see Figure 5.

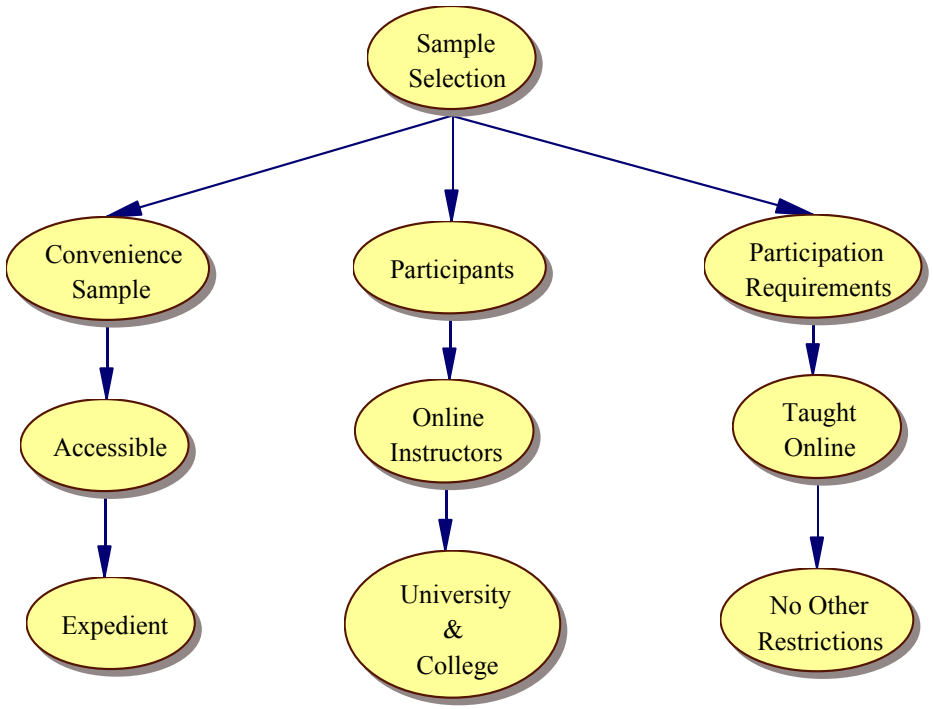

Figure 5. Sample Selection

Instrumentation

A survey, the Online Instructor Characteristics and Preference for Telementor Support (OIC and PTS) Survey-1, was developed as the instrument to be used during the data collection process. See the survey in Appendix A. Questions were presented in a contingency arrangement which meant that succeeding questions to be answered by the respondent depended on how the respondent answered the initial contingent question. This procedure meant to keep respondents from having to answer questions that did not

pertain to them. Such a way of presenting the questions helped to identify the instructors' characteristics and differentiate the variables in the study (Babbie, 1995).

Overall, there were 29 questions on the survey. Many of these questions pertained to identifying instructors' characteristics. If the participants supported the use of a telementor at any of the nominal levels other than the do not support level, the participants were asked to move on to the contingent questions about instructors' preferences and telementors. For an illustrative description of the instrument see Figure 6.

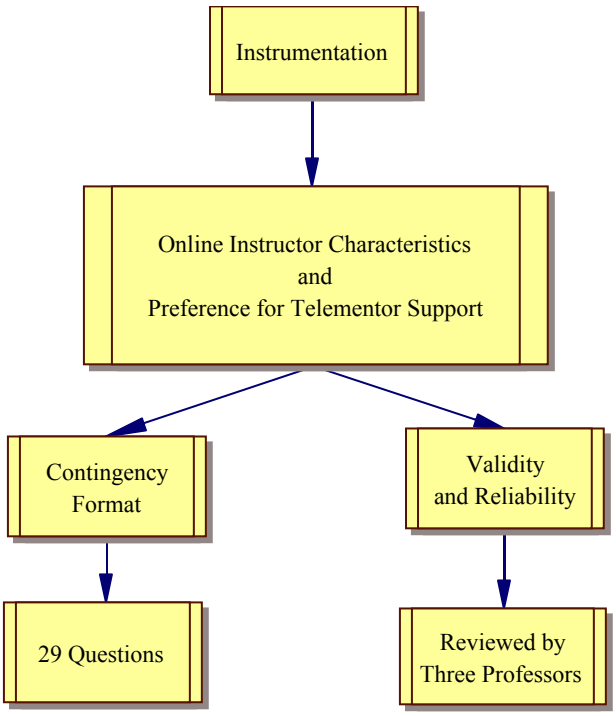

Figure 6. Instrumentation

Validity and Reliability

For the purpose of providing validity and reliability; survey questions were professionally reviewed. Validity has been described as the accuracy of an instrument

used to measure a phenomenon, and reliability has been referred to as the consistency of the tool. It is possible for an instrument to be consistent and inaccurate, but it cannot be accurate if the tool is not consistent (Babbie, 1995; York, 1997).

First, a rough draft of the cross-sectional survey was developed. Then, one individual from the Teaching, Learning, and Technology Group (TLT Group) with wide experience in survey development was asked to review the questions independently and provide suggestions. In addition, three university professors with experience in survey research design and online teaching were asked to review the items on the instrument and check the wording of the questions. All of the comments made by the individuals who reviewed the survey pertained to the wording of the questions. After revisions were made the survey was re-submitted until it was found to be a quality survey that was worthy of being used in a research project.

Procedure for Data Collection

College and university online instructors who were identified from across the United States were sent a request to participate email after the survey had been activated and tested for availability. Included in the message to the potential participants was an explanation of the study's purpose, a description of the researcher and the sponsoring institution, and a polite request for participation that included an explanation of the risks and benefits of the study. In addition to this information, the message described in detail what was expected of the participants, and they were provided with assurance concerning their voluntary involvement as well as assurance for confidentiality. A reminder email with a statement that contained the link to the survey was sent after the original request had been sent.

Since the return of a completed survey was considered to be a sign of consent according to Institutional Review Board stipulations, the participants were not asked to sign consent forms. Not one of the participants was offered payment for participating in the study. An example of the email correspondence that was sent to the two thousand college and university online instructors is available in Appendix B. Once 323 responses to the survey were submitted, the participant access to the survey was turned off, because according to Krejcie and Morgan (1970), 322 responses in relation to a 2000 participant sample size was needed if the researcher wanted to be sure that similar results would have occurred if a greater number of individuals had responded to the survey.

Procedure for Data Analysis

A statistical software program, Statistical Package for Social Sciences (SPSS), was used to perform data analysis. First, data cleaning steps were taken to identify any outliers. To accomplish data cleaning procedures, the researcher looked for blank cells by reviewing the corresponding data sheet to find missing data. Running individual frequency distribution tests on each variable to find odd data in the output was the second cleaning step, and the original data sheet was corrected if any anomalies appeared.

A univariate, descriptive level analysis of frequency distributions was run for each variable during the analysis stage. Every question in the survey was designed according to a Likert Scale format, thus responses were at the ordinal level. Questions 1 through 19 were related to the instructors' characteristics. The purpose of these questions was to operationalize the independent variables in the study. The researcher examined data results to see if any patterns developed according to the independent

variables. Additionally, the results from questions 1-19 were analyzed for bivariate relationships between the independent variables (characteristics of instructors) and dependent variables (degree of use of telementoring).

The second and third research question sets were numbered 20 through 29, and they targeted the contingency question section of the survey. Questions in this section asked the participants their preferences concerning the characteristics they wanted a telementor to have. Contingency questions related to the third research question asked instructors how they preferred telementors to be utilized during a computer mediated discussion. All data collected from research question sets two and three of the survey were also Likert format at the ordinal level. Data from research question sets two and three were analyzed by running a nonparametric measure called Spearman rho to describe the ordinal variables. Then, data was analyzed by running univariate, descriptive statistics of frequency or percentage distributions. Additionally, some bivariate analysis' using Spearman rho tests were conducted. Data (independent variables) from research question set one was correlated with data (dependent variables) from research question sets two and three. Cross-tabulations were utilized to determine if there were any patterns regarding instructor characteristics in association with characteristics valued in a telementor and perceptions on how a telementor should be utilized.

Summary

The methodology section of this dissertation presented information on the background, procedure, sample selection, instrumentation, as well as the validity and reliability steps that were taken. In addition, procedures for data collection and analysis

was described. Submitted data was stored on Washington University's server where their Flashlight Online survey development capabilities are stored. Survey responses were not looked at by the researcher until after all data had been collected and public access to the survey had been turned off.

It was the researchers intention to identify whether or not online instructors supported the use of a telementor as part of their online courses, to see if online instructors' characteristics showed significant patterns according to their support or lack of support for the use of a telementor, and if they did support the use of a telementor how they wanted a telementor to be utilized as part of a course offering. Findings from the study were to become an addition to the knowledge base in the areas of online learning, computer mediated conferences or discussions, and telementoring. Areas for further possible research were contributed based on the findings of this study.

CHAPTER IV

RESULTS

Introduction

Presented in this chapter are the results of a study that focused on describing online instructors support or lack of support for the use of telementoring during computer mediated discussions. In all, 323 instructors responded to the survey. Some instructors did not respond to every survey question. Online instructors' characteristics were used to operationalize the variables. Responses to preference questions were used to identify how they felt telementors should be utilized. First, online instructors' characteristics are presented. Second, the characteristics that online instructors believe that telementors should have are shown. Third, preferences on how telementors should be utilized, according to online instructors, are offered.

Report of Results

One initial concern was to make sure that the individuals who participated in the study had online teaching experience. The first survey question asked instructors to indicate how often they taught online. Instructors who indicated never were asked to stop and submit the survey. All other instructors were asked to continue responding to survey questions. Of the 321 instructors who responded to the first survey question, only six had never taught an online course. Table 1 illustrates online instructors' frequencies of the responses.

Table 1

Are You An Online Course Instructor?

	Scale	Frequency	Percent
Valid	Always	123	38.3
	MOTO	134	41.7
	Occasionally	50	15.6
	LOTO	8	2.5
	Never	6	1.9
	Total	321	100.0

Note. Valid=Number of respondents who successfully responded to the question.
MOTO=More Often Than Occasionally
LOTO=Less Often Than Occasionally

Next, the responses on how often each instructor taught an online course was correlated to their response concerning how much they supported the utilization of a telementor for the purpose of measuring the strength between the variables. The nonparametric Spearman rank order coefficient of correlation (Spearman rho) was computed to measure the strength of the relationship between the two variables. Results showed that the correlation was not significant, ($r = -.004$, $p = .946$). This shows that the correlation most likely occurred by chance and there is no relationship. Finally, a cross-tabulation table was created to get a more detailed view of the relationship between the two variables. See Table 2 for results.

Table 2

Support for Telementoring by Amount of Online Teaching Experience Cross-Tabulation

Amount of online teaching experience	Support for telementoring					
	Always	MOTO	Occasionally	LOTO	Never	Total
(count) Always	(6) 5.0%	(11) 9.2%	(22) 18.3%	(8) 6.7%	(73) 60.8%	(120) 100.0%
(count) MOTO	(8) 6.1%	(13) 9.9%	(23) 17.6%	(14) 10.7%	(73) 55.7%	(131) 100.0%
(count) Occasionally	(1) 2.0%	(4) 8.2%	(10) 20.4%	(3) 6.1%	(31) 63.3%	(49) 100.0%
(count) LOTO	(0) .0%	(0) .0%	(4) 50.0%	(0) .0%	(4) 50.0%	(8) 100.0%
Percent within total table	4.9%	9.1%	19.2%	8.1%	58.8%	(308) 100.0%*
Total percentage of first four rows			41.3%			

Note. MOTO=More Often Than Occasionally
LOTO=Less Often Than Occasionally
*= Row totals may not add up to 100% due to rounding

No matter how frequently the instructors professed to teach online, a greater percentage of instructors noted that they did not support telementoring as a part of their course offering. Of the 308 instructors who taught online at varying frequencies, 58.8% said that they would never support the utilization of telementoring during computer mediated discussions. The remaining 41.3% of the respondents indicated to some frequency level that they supported the use of telementoring.

Next, respondents indicated whether or not a telementor had ever assisted them as part of their course offering during computer mediated discussions. Of the 317 individuals who responded to the survey question about telementor assistance only 65 respondents said they had ever utilized a telementor. Table 3 shows the frequency results.

Table 3

Does a Telementor Assist You and Your Online Students?

	Scale	Frequency	Percent
Valid	Always	12	3.8
	MOTO	8	2.5
	Occasionally	21	6.6
	LOTO	24	7.6
	Never	252	79.5
	Total	317	100.0

Note. Valid=Number of respondents who successfully responded to the question.
MOTO=More Often Than Occasionally
LOTO=Less Often Than Occasionally

When data from the online instructors who had been assisted by a telementor was correlated with data from instructors' reports on their support for telementoring using Spearman's rho, a significant correlation for a two-tailed test was found ($r = .498$, $p = .00$). This shows that there was a relationship. A cross-tabulation table was also created to develop additional outcomes. See Table 4 for results.

Table 4

Support for Telementoring by Use 0f Telementor Assistance Cross-Tabulation

Use of telementor assistance	Support for telementoring					
	Always	MOTO	Occasionally	LOTO	Never	Total
(count) Always	(10) 83.3%	(0) .0%	(1) 8.3%	(0) .0%	(1) 8.3%	(12) 100.0%
(count) MOTO	(8) 12.5%	(5) 62.5%	(2) 25.0%	(0) .0%	(0) .0%	(8) 100.0%
(count) Occasionally	(2) 9.5%	(7) 33.3%	(8) 38.1%	(0) .0%	(4) 19.0%	(21) 100.0%
(count) LOTO	(0) .0%	(3) 12.5%	(8) 33.3%	(5) 20.8%	(8) 33.3%	(24) 100.0%
(count) Never	(2) .8%	(13) 5.3%	(40) 16.4%	(20) 8.2%	(169) 69.3%	(244) 100.0%
Percent within total table	4.9%	9.1%	19.1%	8.1%	58.9%	(309) 100.0%*
Total percentage of first four rows			41.2%			

Note. MOTO=More Often Than Occasionally
LOTO=Less Often Than Occasionally
*=Row totals may not add up to 100% due to rounding

A clear majority (83.3%) of online instructors previously assisted by a telementor indicated that they would always support the utilization of a telementor and 8.3% said that they would never support telementoring. Those assisted by a telementor more often than occasionally (62.5%) indicated that they supported telementoring. About a third,

(33.3%) of those who received occasional assistance indicated more often than occasional support and about 38.1% showed occasional support for telementoring. Online instructors who received less often than occasional assistance or who were never assisted by a telementor said they would never support telementoring by 33.3% and 69.3% respectively.

In the following section, results are presented according to the order of the three main research questions as they are presented in Chapter 3 of this study. Question one and its sub-parts are related to online instructors' characteristics. Research questions two and three and their sub-parts concern instructor preferences on a telementor's characteristics and how telementors should be utilized during a computer conference as part of the course offerings in that order.

Research Question One Results

1. Are there recognizable characteristic patterns in instructor preference on telementoring support during a computer mediated conference as part of the course offering?

This first research question included eight sub-questions to which specific survey questions were developed. The first sub-question related to the instructors discipline.

   a. Does an online instructor's choice to want or not want telementoring support during a computer mediated discussion as part of the course offering relate to discipline?

Of the instructors who responded, 10.4% taught Business and Public Administration courses, 3.2% taught Journalism and Mass Communication courses, 19.1% taught Pharmacy and Health Science courses, 26.5% taught Liberal Arts and

Science courses, and 18.4% taught Education and Human Service courses. Participants who said they taught Engineering courses indicated at 4.5%, and 1.9% of the instructors claimed to teach online courses from the Agriculture and Forestry fields. In addition, there were 10.4% of the online instructors who taught Computer Science and Technology, and 5.5% of the instructors were placed in the category called other.

When the Spearman rho test was used to measure the relationship between the discipline and support for telementoring, the results of the two-tailed test were not significant ($r = -.029$, $p = .613$). This shows that there was no relationship. Cross-tabulations were calculated next to provide a deeper look at the data. In this situation, instructor support for telementoring was analyzed within groups according to discipline. See Table 5 for the results.

Table 5

Support for Telementoring by Discipline Cross-Tabulation

	Support for telementoring					
Support by discipline	Always	MOTO	Occasionally	LOTO	Never	Total
(count) Business and public admin.	(1) 3.1%	(4) 12.5%	(6) 18.8%	(2) 6.3%	(19) 59.4%	(32) 100.0%
(count) Journalism and mass comm.	(1) 10.0%	(0) .0%	(1) 10.0%	(1) 10.0%	(7) 70.0%	(10) 100.0%
(count) Pharmacy and health science	(1) 1.7%	(9) 15.3%	(12) 20.3%	(8) 13.6%	(29) 49.2%	(59) 100.0%
(count) Liberal arts and science	(3) 3.8%	(7) 8.9%	(9) 11.4%	(6) 7.6%	(54) 68.4%	(79) 100.0%
(count) Engineering	(0) .0%	(0) .0%	(1) 7.1%	(0) .0%	(13) 92.9%	(14) 100.0%
(count) Education and human service	(5) 8.9%	(3) 5.4%	(15) 26.8%	(3) 5.4%	(30) 53.6%	(56) 100.0%
(count) Agriculture and forestry	(0) .0%	(1) 16.7%	(2) 33.3%	(0) .0%	(3) 50.0%	(6) 100.0%
(count) Computer science and technology	(1) 3.2%	(2) 6.5%	(6) 19.4%	(3) 9.7%	(19) 61.3%	(31) 100.0%
(count) Other	(3) 17.6%	(1) 5.9%	(7) 41.2%	(2) 11.8%	(4) 23.5%	(17) 100.0%
Percent within total table	4.9%	8.9%	19.4%	8.2%	58.6%	(304) 100.0%*
Total percentage of first four rows			41.4%			

Note. MOTO=More Often Than Occasionally
LOTO=Less Often Than Occasionally
*=Row totals may not add up to 100% due to rounding

Results depicted that 59.4% of the online instructors who taught courses from the Business and Public Administration discipline would never support telementoring. Seventy percent of the online instructors who taught Journalism and Mass Communication courses were against telementoring. There were 49.2% of Pharmacy and Health Science instructors who indicated opposition, and 68.4% who said they did not support telementor utilization. Liberal Arts and Science instructors who taught online courses chose not to support telementoring by 68.4%, and instructors from Education and Human Services said no to the support by 53.6%. These and the following percentages on support for telementoring by discipline illustrate instructors' preferred preference.

Opposition to the use of telementoring continued from online instructors from other departments. Engineering online instructors had the greatest rejection result of telementoring with a 92.9% who did not accept telementoring. Agriculture and Forestry online instructors were split in that 50% indicated that they would never support telementoring and the other 50% said that they supported it either more often than always, occasionally, or less often than occasionally. There were 61.3% of the respondents who taught Computer Science and Technology that said they were against telementoring, and of the disciplines categorized under the other category there were 23.5% who showed no interest in the utilization of a telementor. Although a total of 58.6% of those instructors according to discipline said that they did not support the use of telementoring, there were a total of 41.4% who did support telementoring use to some frequency level.

The second sub-question from research question number one dealt with the number of online courses taught by the instructors.

b. Does an online instructor's choice to want or not want telementoring support during a computer mediated conference as a part of the course offering relate to the number of online courses taught?

When responding to the survey question related to research sub-question number two, respondents chose from a scale of numbers to express how many online courses they had taught. Individuals who responded to the survey question indicated at a greater percentage that they either taught fewer than five or more than fifteen online courses. This question did not allow the respondents to communicate whether or not they taught a specific online course more than once. See Table 6 for frequency results.

Table 6

How Many Online Courses Have You Taught?

	Scale	Frequency	Percent
Valid	1 to 2 Courses	95	30.2
	3 to 4 Courses	72	22.9
	5 to 6 Courses	30	9.5
	7 to 8 Courses	27	8.6
	9 to 10 Courses	19	6.0
	11 to 12 Courses	11	3.5
	13 to 14 Courses	4	1.3
	15 or more Courses	57	18.1
	Total	315	100.0

Note. Valid=Number of respondents who successfully responded to the question.

A two-tailed Spearman's rho test with 309 respondents showed that there was no significant relationship between support for telementoring and the number of courses taught ($r = -.017$, $p = .765$). This shows that there was no relationship. Responses were then cross-tabulated, and the results are shown in Table 7.

Table 7

Support for Telementoring by Number of Online Courses Taught Cross-Tabulation

Number of online courses taught	Support for telementoring					
	Always	MOTO	Occasionally	LOTO	Never	Total
(count)	(4)	(8)	(18)	(10)	(53)	(93)
1 to 2 courses	4.3%	8.6%	19.4%	10.8%	57.0%	100.0%
(Count)	(5)	(7)	(9)	(2)	(49)	(72)
3 to 4 courses	6.9%	9.7%	12.5%	2.8%	68.1%	100.0%
(count)	(2)	(3)	(7)	(3)	(14)	(29)
5 to 6 courses	6.9%	10.3%	24.1%	10.3%	48.3%	100.0%
(count)	(2)	(3)	(5)	(2)	(14)	(26)
7 to 8 courses	7.7%	11.5%	19.2%	7.7%	53.8%	100.0%
(count)	(1)	(0)	(2)	(3)	(12)	(18)
9 to 10 courses	5.6%	.0%	11.1%	16.7%	66.7%	100.0%
(count)	(0)	(1)	(1)	(0)	(9)	(11)
11 to 12 courses	.0%	9.1%	9.1%	.0%	81.8%	100.0%
(count)	(0)	(1)	(2)	(0)	(3)	(6)
13 to 14 courses	.0%	16.7%	33.3%	.0%	50.0%	100.0%
(count)	(0)	(1)	(1)	(1)	(1)	(4)
15 or more courses	.0%	25.0%	25.0%	25.0%	25.0%	100.0%
Percent within total table	4.9%	9.1%	19.1%	8.1%	58.9%	(309) 100.0%*
Total percentage of first four rows			41.2%			

Note. MOTO=More Often Than Occasionally
LOTO=Less Often Than Occasionally
*=Row totals may not add up to 100% due to rounding

Amount of telementor support by number of online courses taught cross-tabulations showed that 182 or 58.9% of the respondents indicated that they did not support the use of telementoring. There were 127 or 41.2% who did support telementoring at some level.

The fourth sub-question of the first research question to which a survey question was developed was related to gender.

c. Does an online instructor's choice to want or not want telementoring support during a computer mediated conference as a part of the course offering relate to gender?

Differentiation by gender was almost split equally. There were 161 female participants (51.1%) of the total number of respondents, and there were 154 male participants (48.9%) of the total number of respondents who participated in the survey.

The relationship between gender and instructor support for telementoring as measured by Spearman rho was not statistically significant ($r = .054$, $p = .345$). This shows that there was no relationship. A detailed look at the relationship between these two variables was obtained through running cross-tabulations (See Table 8 for cross-tabulation results).

Table 8

Support for Telementoring by Gender Cross-Tabulation

Support by for telementors by gender	Support for telementoring					
	Always	MOTO	Occasionally	LOTO	Never	Total
(count) Female	(10) 6.3%	(15) 9.5%	(31) 19.6%	(12) 7.6%	(90) 57.0%	(158) 100.0%
(count) Male	(5) 3.3%	(13) 8.6%	(28) 18.5%	(13) 8.6%	(92) 60.9%	(151) 100.0%
Percent within total table	4.9%	9.1%	19.1%	8.1%	58.9%	(309) 100.0%*
Total percentage of first four rows			41.2%			

Note. MOTO=More Often Than Occasionally
LOTO=Less Often Than Occasionally
*=Row totals may not add up to 100% due to rounding

Cross-tabulations by gender were almost split evenly. A little more than half of the participants did not support the use of telementoring. There were however 41.2% who indicated some level of support for telementoring. Their preference concerning the use of telementoring was eventually explored.

In the following paragraphs, there are nine sub-questions related to how much or how little the online instructors utilize the different theoretical styles of teaching. Tables connected to theoretical style of teaching illustrate instructors' responses.

d. Does an online instructor's choice to want or not want telementoring support during a computer mediated conference as a part of the course offering relate to their theoretical style of teaching?

Theory to Multiple Representation was described to participants as a practice of attending to learners' multiple ways of learning during course design. Responses were given in Likert scale form. See Table 9 for frequency results.

Table 9

Do You Apply the Theory of Multiple Representation When You Design an Online Course?

	Scale	Frequency	Percent
Valid	Always	103	32.8
	MOTO	103	32.8
	Occasionally	65	20.7
	LOTO	23	7.3
	Never	20	6.4
	Total	314	100.0

Note. Valid=Number of respondents who successfully responded to the question.
MOTO=More Often Than Occasionally
LOTO=Less Often Than Occasionally

Data was used to run a Spearman rho test to look for significant correlations between instructor support for telementoring and instructor application of the Theory of Multiple Representation. The relationship between instructor support for telementoring and instructor application of the theory of multiple representation was not statistically significant ($r = .061$, $p = .282$). This shows that there was no relationship. Cross-tab results for these two variables are shown in Table 10 below.

Table 10

Support for Telementoring by Theory of Multiple Representation Use Cross-Tabulation

Theory of multiple representation use	Support for telementoring					
	Always	MOTO	Occasionally	LOTO	Never	Total
(count) Always	(8) 7.8%	(8) 7.8%	(20) 19.4%	(2) 1.9%	(65) 63.1%	(103) 100.0%
(count) MOTO	(4) 4.0%	(12) 11.9%	(23) 22.8%	(13) 12.9%	(49) 48.5%	(101) 100.0%
(count) Occasionally	(2) 3.2%	(6) 9.5%	(12) 19.0%	(5) 7.9%	(38) 60.3%	(63) 100.0%
(count) LOTO	(0) .0%	(2) 9.1%	(3) 13.6%	(3) 13.6%	(14) 63.6%	(22) 100.0%
(count) Never	(1) 5.0%	(0) .0%	(1) 5.0%	(2) 10.0%	(16) 80.0%	(20) 100.0%
Percent within total table	4.9%	9.1%	19.1%	8.1%	58.9%	(309) 100.0%*
Total percentage of first four rows			41.2%			

Note. MOTO=More Often Than Occasionally
LOTO=Less Often Than Occasionally
*=Row totals may not add up to 100% due to rounding

Over all, there were 58.9% of the 309 participants who indicated they utilized the Theory of Multiple Representation that did not support the use of telementoring. There were however, 41.2% who said that they did support the use of telementoring as a part of a course offering during a computer mediated discussion.

Information placed in Table 11 demonstrated online instructor's use of Cognitive Flexibility Theory. When thinking about this theory instructors were asked how often they moved from basic to more complex forms of comprehension when guiding students to use what they learned to solve unstructured problems.

Table 11

Do You Apply Cognitive Flexibility Theory When You Design an Online Course?

	Scale	Frequency	Percent
Valid	Always	95	30.4
	MOTO	115	36.7
	Occasionally	70	22.4
	LOTO	17	5.4
	Never	16	5.1
	Total	313	100.0

Note. Valid=Number of respondents who successfully responded to the question.
MOTO=More Often Than Occasionally
LOTO=Less Often Than Occasionally

The relationship between instructor support for telementoring and instructor use of cognitive flexibility theory as measured by Spearman rho was not statistically significant ($r = .034$, $p = .551$). This shows that there was no relationship. A cross-tabulation table was then obtained for an added comparison of the outcomes (See Table 12 for the results).

Table 12

Support for Telementoring by Cognitive Flexibility Theory Use Cross-Tabulation

Use of cognitive flexibility theory	Support for telementoring					
	Always	MOTO	Occasionally	LOTO	Never	Total
(count) Always	(5) 5.3%	(3) 3.2%	(18) 19.1%	(6) 6.4%	(62) 66.0%	(94) 100.0%
(count) MOTO	(9) 8.0%	(16) 14.2%	(25) 22.1%	(10) 8.8%	(53) 46.9%	(113) 100.0%
(Count) Occasionally	(0) .0%	(7) 10.1%	(14) 20.3%	(6) 8.7%	(42) 60.9%	(69) 100.0%
(count) LOTO	(0) .0%	(2) 12.5%	(1) 6.3%	(0) .0%	(13) 81.3%	(16) 100.0%
(count) Never	(0) .0%	(0) .0%	(1) 6.3%	(3) 18.8%	(12) 75.0%	(16) 100.0%
Percent within	4.5%	9.1%	19.2%	8.1%	59.1%	(308) 100.0%*
Total percentage of first four rows			40.9%			

Note. MOTO=More Often Than Occasionally
LOTO=Less Often Than Occasionally
*=Row totals may not add up to 100% due to rounding

A greater percentage of the individuals who responded to the related survey question on Cognitive Flexibility Theory when correlated with their support for the use of telementoring said they would never support telementoring. Of the 308 respondents, 59.1% did not support telementoring, and there were 40.9% who supported the utilization to telementoring to a certain extent.

Online instructors were asked in relation to Bruner's Three Form Theory if they scaffolded learning experiences so that students could demonstrate their knowledge and understanding through action, icons, and symbolism. Table 13 shows how often the instructors believed that they applied this theory to their work.

Table 13

Do You Apply Three Form Theory When You Design an Online Course?

	Scale	Frequency	Percent
Valid	Always	45	14.6
	MOTO	85	27.5
	Occasionally	80	25.9
	LOTO	55	17.8
	Never	44	14.2
	Total	309	100.0

Note. Valid=Number of respondents who successfully responded to the question.
MOTO=More Often Than Occasionally
LOTO=Less Often Than Occasionally

The correlation between application of Jerome Bruner's Three Form Theory and instructor support for telementoring as measured by Spearman's rho was significant (r = .148, p = .009). This shows that there is a relationship. Cross-tabulation results are shown in Table 14 below.

Table 14

Support for Telementoring by Bruner's Three Form Theory Use Cross-Tabulation

Use of three form theory	Support for telementoring					
	Always	MOTO	Occasionally	LOTO	Never	Total
(count) Always	(5) 11.1%	(3) 6.7%	(9) 20.0%	(2) 4.4%	(26) 57.8%	(45) 100.0%
(count) MOTO	(4) 7.1%	(9) 10.7%	(18) 21.4%	(5) 6.0%	(46) 54.8%	(84) 100.0%
(count) Occasionally	(3) 3.8%	(8) 10.1%	(17) 21.5%	(4) 5.1%	(47) 59.5%	(79) 100.0%
(count) LOTO	(0) .0%	(6) 11.1%	(11) 20.4%	(10) 18.5%	(27) 50.0%	(54) 100.0%
(count) Never	(1) 2.3%	(2) 4.5%	(3) 6.8%	(3) 6.8%	(35) 79.5%	(44) 100.0%
Percent within total table	4.9%	9.2%	19.0%	7.8%	59.2%	(306) 100.0%*
Total percentage of first four rows			40.9%			

Note. MOTO=More Often Than Occasionally
LOTO=Less Often Than Occasionally
*=Row totals may not add up to 100% due to rounding

Cross-tabulations of the data also showed that a higher percentage of the instructors said that they applied Bruner's Three Form Theory and that they would never support the utilization of a telementor during a computer mediated conference. Of the 306 respondents, there were 59.2% who did not support telementoring. There were however 40.9% who said they supported the use of telementoring to some frequency.

Paivio developed Dual-Coding Theory and held that learners used both aural and visual paths to process information when they made meaning. Online instructors were asked how often they utilized Paivio's theory. Table 15 illustrates their responses.

Table 15

Do You Apply Dual-Coding Theory When You Design an Online Course?

	Scale	Frequency	Percent
Valid	Always	73	23.4
	MOTO	74	23.7
	Occasionally	57	18.3
	LOTO	55	17.6
	Never	53	17.0
	Total	312	100.0

Note. Valid=Number of respondents who successfully responded to the question.
MOTO=More Often Than Occasionally
LOTO=Less Often Than Occasionally

The relationship between instructor support for telementoring and instructor use of cognitive flexibility theory as measured by Spearman rho was not statistically significant ($r = .013$, $p = .823$). This shows that there is no relationship. A cross-tabulation table was then obtained for an added comparison of the outcomes (See Table 16 for the results).

Table 16

Support for Telementoring by Paivio's Dual-Coding Theory Use Cross-Tabulation

Use of dual-coding theory	Support for telementoring					
	Always	MOTO	Occasionally	LOTO	Never	Total
(count) Always	(6) 8.2%	(8) 11.0%	(7) 9.6%	(5) 6.8%	(47) 64.4%	(73) 100.0%
(count) MOTO	(3) 4.2%	(5) 6.9%	(22) 30.6%	(4) 5.6%	(38) 52.8%	(72) 100.0%
(count) Occasionally	(2) 3.6%	(5) 8.9%	(13) 23.2%	(3) 5.4%	(33) 58.9%	(56) 100.0%
(count) LOTO	(1) 1.9%	(4) 7.5%	(8) 15.1%	(7) 13.2%	(33) 62.3%	(53) 100.0%
(count) Never	(3) 5.7%	(5) 9.4%	(8) 15.1%	(6) 11.3%	(31) 58.5%	(53) 100.0%
Percent within total table	4.9%	8.8%	18.9%	8.1%	59.3%	(307) 100.0%*
Total percentage of first four rows			40.7%			

Note. MOTO=More Often Than Occasionally
LOTO=Less Often Than Occasionally
*=Row totals may not add up to 100% due to rounding

Cross-tabulations that analyzed support for telementoring and application of Paivio's Dual-Coding Theory indicated that instructors did not support telementoring by the highest percentage. Results showed that 59.3% of the 307 online instructors said they did not support telementoring when correlated with their use of Paivio's Dual-Coding

Theory. The other 40.7% of the instructors indicated at some level of frequency that they would utilize a telementor.

Gagne's Conditions of Learning was described to the online instructors as a form of descriptive and instructional theory that tapped into learners' intellectual skills, verbal knowledge, cognitive skills, motor skills, and attitudes through the application of nine conditions of learning. Table 17 contains the results based on frequency.

Table 17

Do You Apply Gagne's Nine Conditions of Learning When You Design an Online Course?

	Scale	Frequency	Percent
Valid	Always	91	29.2
	MOTO	133	42.6
	Occasionally	43	13.8
	LOTO	28	9.0
	Never	17	5.4
	Total	312	100.0

Note. Valid=Number of respondents who successfully responded to the question.
MOTO=More Often Than Occasionally
LOTO=Less Often Than Occasionally

Results from a two-tailed Spearman rho test were not significant (r = .047, p = .411). This shows that there is no relationship. Further results obtained from a cross-tabulation table are available in Table 18.

Table 18

Support for Telementoring by Gagne's Conditions of Learning Use Cross-Tabulation

Use of nine conditions of learning	Support for telementoring					
	Always	MOTO	Occasionally	LOTO	Never	Total
(count) Always	(5) 5.6%	(7) 7.9%	(16) 18.0%	(6) 6.7%	(55) 61.8%	(89) 100.0%
(count) MOTO	(9) 6.9%	(12) 9.2%	(29) 22.3%	(9) 6.9%	(71) 54.6%	(130) 100.0%
(count) Occasionally	(1) 2.3%	(6) 14.0%	(8) 18.6%	(6) 14.0%	(22) 51.2%	(43) 100.0%
(count) LOTO	(0) .0%	(3) 10.7%	(5) 17.9%	(1) 3.6%	(19) 67.9%	(23) 100.0%
(count) Never	(0) .0%	(0) .0%	(1) 5.9%	(1) 5.9%	(15) 88.2%	(17) 100.0%
Percent within total table	4.9%	9.1%	19.2%	7.5%	59.3%	(307) 100.0%*
Total percentage of first four rows			40.7%			

Note. MOTO=More Often Than Occasionally
LOTO=Less Often Than Occasionally
*=Row totals may not add up to 100% due to rounding

Online instructors who responded to the survey question related to Gagne's Nine Conditions of Learning said by 59.3% that they did not support telementoring. There were 40.7% who said to some frequency that they did support the use of telementoring.

Online instructors were told that Merrill's Instructional Theory held that learners could be motivated by processes of transactions that helped them make connections using

internal representations so they could select and sequence objects of knowledge. When asked if they applied Merrill's Instructional Theory to course design, the online instructors indicated how often they utilized this theory. See Table 19 for results.

Table 19

Do You Apply Merrill's Instructional Theory When You Design an Online Course?

	Scale	Frequency	Percent
Valid	Always	69	22.7
	MOTO	119	39.1
	Occasionally	66	21.7
	LOTO	26	8.6
	Never	24	7.9
	Total	304	100.0

Note. Valid=Number of respondents who successfully responded to the question.
MOTO=More Often Than Occasionally
LOTO=Less Often Than Occasionally

Results from the Spearman rho test, a two-tailed test, were not significant ($r = .097$, $p = .093$). This shows that there is no relationship. A cross-tabulation table was calculated to provide more detailed results (See Table 20).

Table 20

Support for Telementoring by Merrill's Instructional Theory Use Cross-Tabulation

Use of instructional theory	Support for telementoring					
	Always	MOTO	Occasionally	LOTO	Never	Total
(count) Always	(5) 7.2%	(8) 11.6%	(11) 15.9%	(4) 5.8%	(41) 59.4%	(69) 100.0%
(count) MOTO	(7) 6.0%	(7) 6.0%	(29) 25.0%	(9) 7.8%	(64) 55.2%	(116) 100.0%
(count) Occasionally	(2) 3.1%	(9) 13.8%	(9) 13.8%	(7) 10.8%	(38) 58.5%	(65) 100.0%
(count) LOTO	(0) .0%	(2) 7.7%	(6) 23.1%	(2) 7.7%	(16) 61.5%	(26) 100.0%
(count) Never	(0) .0%	(1) 4.2%	(1) 4.2%	(2) 8.3%	(20) 83.3%	(24) 100.0%
Percent within total table	4.7%	9.0%	18.7%	8.0%	59.7%	(300) 100.0%*
Total percentage of first four rows			40.4%			

Note. MOTO=More Often Than Occasionally
LOTO=Less Often Than Occasionally
*=Row totals may not add up to 100% due to rounding

Of the total number of online instructors in relationship to their utilization of Merrill's Instructional Transaction Theory, 59.7% said that they would never support telementoring and 40.4% said that they supported telementoring to some frequency.

Reigeluth's Elaboration Theory was described to the online instructors as a belief concerned with the organization of course material. They were asked how often they

presented material in the simplest form and carefully moved to more complex forms of content when designing their online course. Responses to this question are presented in Table 21.

Table 21

Do You Apply Reigeluth's Elaboration Theory When You Design an Online Course?

	Scale	Frequency	Percent
Valid	Always	97	31.4
	MOTO	128	41.4
	Occasionally	50	16.2
	LOTO	21	6.8
	Never	13	4.2
	Total	309	100.0

Note. Valid=Number of respondents who successfully responded to the question.
MOTO=More Often Than Occasionally
LOTO=Less Often Than Occasionally

The relationship between online instructor use of Reigeluth's Elaboration Theory and online instructor support for telementoring as measured by Spearman rho was not statistically significant ($r = .00$, $p = .998$). This shows that there is no relationship between the independent variable and the dependent variable. After the Spearman rho test was calculated, data were analyzed by calculating a cross-tabulation table. The cross-tabulation table provided a more detailed comparison of the outcomes and gave the

researcher a better view of how the online instructors responded (See Table 22 for the results).

Table 22

Support for Telementoring by Reigeluth's Elaboration Theory Use Cross-Tabulation

Use of elaboration theory	Support for telementoring					
	Always	MOTO	Occasionally	LOTO	Never	Total
(count) Always	(4) 4.2%	(7) 7.4%	(16) 16.8%	(7) 7.4%	(61) 64.2%	(95) 100.0%
(count) MOTO	(8) 6.3%	(17) 13.5%	(25) 19.8%	(8) 6.3%	(68) 54.0%	(126) 100.0%
(count) Occasionally	(3) 6.0%	(4) 8.0%	(13) 26.0%	(7) 14.0%	(23) 46.0%	(50) 100.0%
(count) LOTO	(0) .0%	(0) .0%	(2) 9.5%	(2) 9.5%	(17) 81.0%	(21) 100.0%
(count) Never	(0) .0%	(0) .0%	(2) 15.4%	(1) 7.7%	(10) 76.9%	(13) 100.0%
Percent within total table	4.9%	9.2%	19.0%	8.2%	58.7%	(305) 100.0%*
Total percentage of first four rows			41.3%			

Note. Valid=Number of respondents who successfully responded to the question.
MOTO=More Often Than Occasionally
LOTO=Less Often Than Occasionally
*=Row totals may not add up to 100% due to rounding

Participants indicated that they would never support the utilization of a telementor during a computer mediated conference at 58.7%. There were 41.3% online instructors who noted some frequency of support for telementoring.

Of Moore's Theory of Transactional Distance, participants were told that this theory supported the claim that when a course was highly structured that there was less pedagogical distance between the instructor and the learner. Table 23 illustrates how the instructors responded to the related survey question.

Table 23

Do You Apply Theory of Transactional Distance When You Design an Online Course?

	Scale	Frequency	Percent
Valid	Always	123	39.7
	MOTO	116	37.4
	Occasionally	46	14.8
	LOTO	17	5.5
	Never	8	2.6
	Total	310	100.0

Note. Valid=Number of respondents who successfully responded to the question.
MOTO=More Often Than Occasionally
LOTO=Less Often Than Occasionally

The relationship between instructor support for telementoring and instructor application of Moore's Theory of Transactional Distance was not statistically significant

($r = -.004$, $p = .945$). This shows that there is no relationship. Cross-tabulation results for these two variables are shown in Table 24 below.

Table 24

Support for Telementoring by Theory of Transactional Distance Use Cross-Tabulation

Use of theory of transactional distance	Support for telementoring					
	Always	MOTO	Occasionally	LOTO	Never	Total
(count) Always	(8) 6.6%	(10) 8.3%	(18) 14.9%	(7) 5.8%	(78) 64.5%	(121) 100.0%
(count) MOTO	(6) 5.3%	(12) 10.6%	(29) 25.7%	(10) 8.8%	(56) 49.6%	(113) 100.0%
(count) Occasionally	(1) 2.2%	(4) 8.7%	(9) 19.6%	(6) 13.0%	(26) 56.5%	(46) 100.0%
(Count) LOTO	(0) .0%	(2) 11.8%	(1) 5.9%	(1) 5.9%	(13) 76.5%	(17) 100.0%
(count) Never	(0) .0%	(0) .0%	(1) 12.5%	(1) 12.5%	(6) 75.0%	(8) 100.0%
Percent within total table	4.9%	9.2%	19.0%	8.2%	58.7%	(305) 100.0%*
Total percentage of first four rows			41.3%			

Note. MOTO=More Often Than Occasionally
LOTO=Less Often Than Occasionally
*=Row totals may not total 100% due to rounding

Percentage results from the cross-tabulations showed that instructors of online courses did not support the utilization of telementoring by 58.7%. Of those 305 instructor

responses correlated in the cross-tabulations, 41.3% said that they did support the use of telementoring as a part of the course offering during a computer mediated discussion.

The final theory connected to the fourth sub-question of research question number one is Theory of Immediacy and Social Presence. The theory was described as supporting interaction through three core components namely cognitive presence, teaching presence, and social presence. Participants were asked how often they used the components to respond to learners' acts and questions as a way of providing immediacy, acknowledging their perceptions, and impacting their behavior. See Table 25 for frequency results.

Table 25

Do You Apply Theory of Immediacy and Social Presence When You Design an Online Course?

	Scale	Frequency	Percent
Valid	Always	115	37.0
	MOTO	112	36.0
	Occasionally	47	15.1
	LOTO	25	8.0
	Never	12	3.9
	Total	311	100.0

Note. MOTO=More Often Than Occasionally
LOTO=Less Often Than Occasionally

When the Spearman rho test was used to measure the relationship between instructor use of Theory of Immediacy and Social Presence and support for

telementoring, the results of the two-tailed test were not significant (r = .003, p = .952). This shows that there is no relationship. Cross-tabulations were calculated next to provide a deeper look at the data. See Table 26 for the results.

Table 26

Support for Telementoring by Immediacy and Social Presence Use Cross-Tabulation

Use of immediacy and social presence	Support for telementoring					
	Always	MOTO	Occasionally	LOTO	Never	Total
(count) Always	(7) 6.3%	(5) 4.5%	(23) 20.5%	(4) 3.6%	(73) 65.2%	(112) 100.0%
(count) MOTO	(7) 6.4%	(14) 12.7%	(27) 24.5%	(12) 10.9%	(50) 45.5%	(110) 100.0%
(count) Occasionally	(0) .0%	(4) 8.5%	(6) 12.8%	(6) 12.8%	(31) 66.3%	(47) 100.0%
(count) LOTO	(1) 4.0%	(4) 16.0%	(2) 8.0%	(1) 4.0%	(17) 68.0%	(25) 100.0%
(count) Never	(0) .0%	(1) 8.3%	(1) 8.3%	(2) 16.7%	(8) 66.7%	(12) 100.0%
Percent within total table	4.9%	9.2%	19.3%	8.2%	58.5%	(306) 100.0%*
Total percentage of first four rows			41.6%			

Note. MOTO=More Often Than Occasionally
LOTO=Less Often Than Occasionally
*=Row totals may not add up to 100% due to rounding

Cross-tabulation results from the Chi-square calculations showed that instructors of online courses did not support the use of telementoring by 58.5%. Results in support of the use of telementoring as a part of the course offering were at 41.6%.

The fifth sub-question from research question number one asked participants if the courses that they taught online were undergraduate, graduate, post-graduate, or a combination of grade levels.

e. Does an online instructor's choice to want or not want telementoring support during a computer mediated conference as a part of the course offering relate to the undergraduate, graduate, and post-graduate levels from which the course is taught?

Of the individuals who responded, 66% taught online courses from one specific grade level. A little more than 30% of the participants taught online courses from a combination of the different grade levels. Table 27 contains the frequency results.

Table 27

From Which Academic Level Have You Taught Online Courses?

	Scale	Frequency	Percent
Valid	Undergraduate	136	43.2
	Graduate	70	22.2
	Post-Graduate	7	2.2
	Undergraduate and graduate	82	26.0
	Undergraduate and post-graduate	4	1.3
	Graduate and post-graduate	7	2.2
	Undergraduate, graduate, and post-graduate	9	2.9
	Total	315	100.0

Note. Valid=Number of respondents who successfully responded to the question.

When the data was calculated using the Spearman rho test the results were not significant ($r = -.007$, $p = .896$). This shows that there is no relationship. Cross-tabs were then calculated. See Table 28 for results.

Table 28

Support for Telementoring by Academic Teaching Level Cross-Tabulation

Academic teaching level	Support for telementoring					
	Always	MOTO	Occasionally	LOTO	Never	Total
(count) Undergraduate	(4) 3.0%	(13) 9.8%	(26) 19.5%	(10) 7.5%	(80) 60.2%	(133) 100.0%
(count) Graduate	(7) 10.0%	(5) 7.1%	(15) 21.4%	(2) 2.9%	(41) 58.6%	(70) 100.0%
(count) Post-graduate	(1) 14.3%	(2) 28.6%	(0) .0%	(2) 28.6%	(2) 28.6%	(7) 100.0%
(count) Undergraduate and graduate	(2) 2.5%	(7) 8.6%	(13) 16.0%	(11) 13.6%	(48) 59.3%	(81) 100.0%
(count) Undergraduate and post-graduate	(0) .0%	(0) .0%	(2) 50.0%	(0) .0%	(2) 50.0%	(4) 100.0%
(count) Graduate and post-graduate	(0) .0%	(0) .0%	(1) 16.7%	(0) .0%	(5) 83.3%	(6) 100.0%
(count) Undergraduate, graduate, and post-graduate	(1) 12.5%	(1) 12.5%	(2) 25.0%	(0) .0%	(4) 50.0%	(8) 100.0%
Percent within total table	4.9%	9.1%	19.1%	8.1%	58.9%	(309) 100.0%*
Total percentage of first four rows	41.2%					

Note. MOTO=More Often Than Occasionally
LOTO=Less Often Than Occasionally
*=Rows may not add up to 100% due to rounding

Of the 309 participants who responded182 (58.9%) indicated that they did not support the use of a telementor and 127 (41.2%) said they supported telementoring to some degree.

Data presented next is related to the sixth sub-question connected to the first research question.

f. Does an online instructor's choice to want or not want telementoring support during a computer mediated conference as a part of the course offering relate to the number of years the instructor has taught online courses?

Respondents were asked to choose from a series of years to indicate how long they had taught online courses. Descriptive results showed that less than 15% of the online instructors have taught online courses for seven or more years. A little more than 80% of the respondents have taught online courses for six years or less. See Table 29 for results.

Table 29

How Many Years Have You Taught Online Courses?

	Scale	Frequency	Percent
Valid	Less than 1 year	22	7.0
	1 to 2 years	64	20.4
	3 to 4 years	96	30.7
	5 to 6 years	81	25.9
	7 to 8 years	29	9.3
	9 to 10 years	14	4.5
	11 or more years	7	2.2
	Total	313	100.0

Note. Valid=Number of respondents who successfully responded to the question.

Spearman rho test results for a two-tailed test that correlated the number of years taught online and support for telementoring were not significant ($r = -.072$, $p = .206$). This shows that there is no relationship. To find additional details between these two variables cross-tabulations were run. Results are available in Table 30.

Table 30

Support for Telementoring by Number of Years Taught Online Cross-Tabulation

Number of years taught online	Support for telementoring					
	Always	MOTO	Occasionally	LOTO	Never	Total
(count)	(1)	(2)	(5)	(0)	(14)	(22)
Less than 1 year	4.5%	9.1%	22.7%	.0%	63.6%	100.0%
(count)	(3)	(4)	(11)	(5)	(41)	(64)
1 to 2 years	4.7%	6.3%	17.2%	7.8%	64.1%	100.0%
(count)	(5)	(8)	(17)	(10)	(55)	(95)
3 to 4 years	5.3%	8.4%	17.9%	10.5%	57.9%	100.0%
(count)	(4)	(7)	(14)	(7)	(47)	(79)
5 to 6 years	5.1%	8.9%	17.7%	8.9%	59.5%	100.0%
(count)	(1)	(3)	(6)	(3)	(15)	(28)
7 to 8 years	3.6%	10.7%	21.4%	10.7%	53.6%	100.0%
(count)	(1)	(3)	(5)	(0)	(5)	(14)
9 to 10 years	7.1	21.4%	35.7%	.0%	35.7%	100.0%
(count)	(0)	(1)	(1)	(0)	(5)	(7)
11 or more years	.0%	14.3%	14.3%	.0%	71.4%	100.0%
Percent within total table	4.9%	9.1%	19.1%	8.1%	58.9%	(309) 100.0%*
Total percentage of first four rows			41.2%			

Note. MOTO=More Often Than Occasionally
LOTO=Less Often Than Occasionally
*=Row totals may not add up to 100% due to rounding

Cross-tabulations showed that among the 309 respondents, 58.9% said they did not support the use of a telementor, and 41.2% indicated support by some level of

frequency. Instructors who indicated that they taught online courses for 9 to 10 years said that they would never support telementoring at 35.7%. This result was the lowest result in the never category. Those who taught online for the fewest and most number of years indicated that they would never support telementoring by the greatest amount.

The data and results presented next were developed from the seventh sub-question from research question number one.

g. Does an online instructor's choice to want or not want telementoring support during a computer mediated conference as a part of the course offering relate to the number of years the instructor has taught at the college or university level?

Participants were provided with a series of years to choose from when they indicated how many years they have taught at the college or university level. Data from this question is presented in Table 31.

Table 31

How Many Years Have You Taught at the College or University Level?

	Scale	Frequency	Percent
Valid	4 or less years	42	13.5
	5 to 9 years	76	24.4
	10 to 14 years	67	21.5
	15 to 19 years	51	16.3
	20 to 24 years	15	4.8
	25 to 29 years	24	7.7
	30 or more years	37	11.9
	Total	312	100.0

Note. Valid=Number of respondents who successfully responded to the question.

The Spearman rho two-tailed test was not significant ($r = -.026$, $p = .646$). This shows that there is no relationship. A cross-tabulation was computed. See Table 32 for results.

Table 32

Support for Telementoring by Years Taught at College or University Cross-Tabulation

Years taught at college or university level	Support for telementoring					
	Always	MOTO	Occasionally	LOTO	Never	Total
(count) 4 or less years	(2) 4.8%	(3) 7.1%	(8) 19.0%	(4) 9.5%	(25) 59.5%	(42) 100.0%
(count) 5 to 9 years	(3) 4.0%	(6) 8.0%	(15) 20.0%	(5) 6.7%	(46) 61.3%	(75) 100.0%
(count) 10 to 14 years	(3) 4.5%	(5) 7.6%	(14) 21.2%	(6) 9.1%	(38) 57.6%	(66) 100.0%
(count) 15 to 19 years	(3) 6.1%	(5) 10.2%	(7) 14.3%	(3) 6.1%	(31) 63.3%	(49) 100.0%
(count) 20 to 24 years	(3) 21.4%	(0) .0%	(3) 21.4%	(1) 7.1%	(7) 50.0%	(14) 100.0%
(count) 25 to 29 years	(0) .0%	(1) 4.2%	(9) 37.5%	(1) 4.2%	(13) 54.2%	(24) 100.0%
(count) 30 or more years	(1) 2.8%	(7) 19.4%	(3) 8.3%	(3) 8.3%	(22) 61.1%	(36) 100.0%
Percent within total table	4.9%	8.8%	19.3%	7.5%	58.5%	(306) 100.0%*
Total percentage of first four rows			40.5%			

Note. MOTO=More Often Than Occasionally
LOTO=Less Often Than Occasionally
*=Rows may not add up to 100% due to rounding

Results from the cross-tabulation table that compared telementor support with the number of years that online instructors taught at the college or university level showed 59.5% of the instructors did not support telementoring and 40.5% showed some level of support.

The eighth sub-question from research question number one concerned the enrollment limit of the online courses.

h. Does an online instructors choice to want or not want telementoring support during a computer mediated discussion as part of the course offering relate to the enrollment limit of your completely online course?

Instructors were asked to indicate the enrollment limit of the online courses that they have taught. See Table 33 for results.

Table 33

What is Your Course Enrollment Limit?

	Scale	Frequency	Percent
Valid	Less than 10 students	13	4.2
	10 to 19 students	14	15.1
	20 to 34 students	151	48.6
	35 to 59 students	67	21.5
	60 to 99 students	12	3.9
	100 to 200 students	10	3.2
	More than 200 students	11	3.5
	Total	311	100.0

Note. Valid=Number of respondents who successfully responded to the question.

Spearman rho results for a two-tailed test were not significant (r = -.027, p = .642). This shows that there is no relationship. Cross-tabs were calculated for additional information. See Table 34 for results.

Table 34

Support for Telementoring by Enrollment Limit Cross-Tabulation

	Support for telementoring					
Enrollment limit	Always	MOTO	Occasionally	LOTO	Never	Total
(count)	(8)	(8)	(20)	(2)	(65)	(103)
Less than 10 students	7.8%	7.8%	19.4%	1.9%	63.1%	100.0%
(count)	(4)	(12)	(23)	(13)	(49)	(101)
10 to 19 students	4.0%	11.9%	22.8%	12.9%	48.5%	100.0%
(count)	(2)	(6)	(12)	(5)	(38)	(63)
20 to 34 students	3.2%	9.5%	19.0%	7.9%	60.3%	100.0%
(count)	(0)	(2)	(3)	(3)	(14)	(22)
35 to 59 students	.0%	9.1%	13.6%	13.6%	63.6%	100.0%
(count)	(1)	(0)	(1)	(2)	(16)	(20)
60 to 99 students	5.0%	.0%	5.0%	10.0%	80.0%	100.0%
(count)	(0)	(0)	(1)	(0)	(9)	(10)
100 to 200 students	.0%	.0%	10.0%	.0%	90.0%	100.0%
(count)	(0)	(1)	(0)	(2)	(8)	(11)
200 or more students	.0%	9.1%	.0%	18.2%	72.7%	100.0%
Percent within total table	4.9%	8.8%	19.0%	8.2%	59.2%	(306) 100.0%*
Total percentage of first four rows			40.9%			

Note. MOTO=More Often Than Occasionally
LOTO=Less Often Than Occasionally
*=Row totals may not add up to 100% due to rounding

Overall, 59.2% of the respondents did not support telementoring. There were 40.9% who supported telementoring as a part of a computer mediated discussion.

Finally, according to Spearman rho a test, when data on participants who taught online courses was correlated with online instructor support for the use of telementoring, the results were not significant ($r = -.004$, $p = .946$). This shows that there is no relationship. However, when data on online instructors who had been assisted by a telementor was correlated with data on their support for telementoring using a Spearman rho two-tailed test, the results were significant ($r = .498$, $p = .00$). This shows that there is a relationship. Such a result warranted the analysis of research questions two and three from this study.

Research Question Two Results

2. Are there recognizable patterns in instructor preference on the characteristics that a telementor should have before one acts as a telementor during a computer mediated conference as a part of the course offering?

Research question two asked online instructor's preference questions about the characteristics that they wanted a telementor to have. The 58.9% of the online instructors who indicated that they would never support the use of a telementor did not respond to preference questions concerning telementors.

The purpose of research question number two was to obtain the online instructors' preference as stakeholders who have or would work directly with the telementors. Their input was considered valuable. Research question two contained three sub-questions about telementor characteristics. The first sub-question concerned a telementor's training.

a. Does an instructor prefer a telementor to be trained in the course management system through which the online course is offered before taking a telementoring role?

When the responses of 139 online instructors who indicated some frequency of support for telementoring were correlated with preference responses concerning the need for a telementor to be trained in the appropriate course management system, the Spearman rho two-tailed test results were significant ($r = .260$, $p = .002$). This shows that there is a relationship. However, when data on instructors who had been assisted by a telementor was correlated with data on the need for a telementor to be trained in the appropriate course management system, the Spearman rho two-tailed test results were not significant ($r = .013$, $p = .879$). This shows that there is no relationship.

Cross-tabulations showed that 85.6% of the online instructors who supported telementoring and 36.8% of the instructors who had been assisted by a telementor indicated that they wanted a telementor to be trained to use the course management system through which the course was offered.

The second sub-question of research question number two concerned the telementors access to support from other telementors.

b. Does an instructor prefer a telementor to interact with the other telementors to gain support and seek advice about meeting students' needs?

When data from instructors who supported telementoring was correlated with data on their preferences concerning the need for telementors to seek support from other telementors, the Spearman rho two-tailed test results were significant ($r = .203$, $p = .019$).

This shows that there is a relationship. When data from telementors who had been assisted by a telementor was correlated with data on preferences concerning the need for telementors to seek support from other telementors, the Spearman rho two-tailed test results were not significant (r = -.102, p = .237). This shows that there is no relationship.

Cross-tabulations showed that 90.8% of the online instructors who supported telementoring and 37.2% of the instructors who had been assisted by a telementor indicated that they wanted a telementor to interact with other telementors for support.

The third sub-question from research question number two concerned the need for a telementor to pass a telementor training program.

c. Does an instructor prefer a telementor to pass a telementor training program before taking a telementoring role?

When online instructor responses that showed some frequency of support for telementoring were correlated with preferences concerning the need to pass a telementor training program, the Spearman rho two-tailed test results were not significant (r = .108, p = .214). This shows that there is no relationship. However, when data from those who had been assisted by a telementor was correlated with data on preferences concerning the need to pass a telementor training program, the Spearman rho two-tailed test results were significant (r = -.182, p = .034). This shows that there is a relationship.

Cross-tabulations showed that 84.1% of the online instructors who supported telementoring and 33% of the instructors who had been assisted by a telementor indicated that they wanted a telementor to pass a telementor training program.

Research Question Three Results

3. Are there recognizable patterns in instructor preference on how a telementor should be utilized during a computer mediated conference as part of the course offering?

Research question number three focused on the role of a telementor as part of a course offering during a computer mediated discussion. This question had six sub-questions to which specific survey questions were created. The first sub-question was about telementors and students interacting.

   a. Does an instructor prefer a telementor to interact and discuss with students during a computer mediated discussion?

When data from online instructors who supported telementoring to some frequency was correlated with data on instructor preferences concerning telementor and student interaction, the Spearman rho two-tailed test results were significant ($r = .203$, $p = .019$). This shows that there is a relationship. Responses from online instructors who had been assisted by a telementor when correlated with preferences concerning telementor and student interaction using a two-tailed Spearman rho test was also significant ($r = .296$, $p = .001$). This shows that there is a relationship.

Cross-tabulations showed that 87.8% of the online instructors who supported telementoring and 37.2% of the instructors who had been assisted by a telementor indicated that they wanted a telementor to interact and discuss with students during a computer mediated discussion as part of a course offering.

The second sub-question from research question number three focused on telementors responding to student questions.

b. Does an instructor prefer a telementor to first respond to learners' questions and refer questions that can't be answered to the instructor?

When data from online instructors who supported telementoring was correlated with preferences on a telementor first responding to learners' questions and referring questions that could not be answered to the instructor, the Spearman rho two-tailed results were significant ($r = .214$, $p = .013$). This shows that there is a relationship. When data from online instructors who had been assisted by a telementor was correlated with preferences on a telementor first responding to learners' questions and referring questions that could not be answered to the instructor, the Spearman rho two-tailed results were also significant ($r = .301$, $p = .00$). This shows that there is a relationship.

Cross-tabulations showed that 82.1% of the online instructors who supported telementoring and 34.3% of the instructors who had been assisted by a telementor indicated that they wanted a telementor to first answer students' questions and refer questions that could not be answered to the instructor.

The third sub-question from research question number three focused on the question that concerned collecting student questions for instructor response.

c. Does an instructor prefer a telementor to collect students' questions then present them to the instructor for a response?

When responses from online instructors who supported telementoring were correlated with preference responses that concerned collecting student questions for instructor response, the two-tailed Spearman rho test results were significant ($r = .301$, $p = .00$). This shows that there is a relationship. When responses from online instructors who had been assisted by a telementor were correlated with preference responses that

concerned collecting student questions for instructor response, the two-tailed Spearman rho test results were not significant ($r = -.053$, $p = .542$). This shows that there is no relationship.

Cross-tabulation results showed that 79.8% of the online instructors who supported telementoring and 33.1% of the online instructors who had been assisted by a telementor preferred that telementors collect students' questions.

Sub-question four connected to research question three referred to the issue of social support in the online course.

d. Does an instructor prefer a telementor to provide learners with encouragement and friendship during a computer mediated discussion to aid in social improvement and help learners' build an online community?

When data on support for telementoring was correlated with data concerning preferences on providing students with social support, the two-tailed Spearman rho results were significant ($r = .337$, $p = .00$). This shows that there is a relationship. When data from telementors who had been assisted by a telementor was correlated with data concerning preferences on providing students with social support the results were not significant ($r = .150$, $p = .084$). This shows that there is no relationship.

Cross-tabulations showed that 87.4% of the online instructors who supported telementoring and 36.5% of the instructors who had been assisted by a telementor indicated that they wanted a telementor to provide students' with social support.

Technical support was the topic for sub-question six of the third research question.

e. Does an instructor prefer a telementor to provide learners with qualified technical suggestions and direct them to the correct place for support during a computer mediated discussion?

When responses from online instructors who supported telementoring to some frequency were correlated with preferences on telementors providing students with technical support, the two-tailed Spearman rho test results were significant (r = .331, p = .00). This shows that there is a relationship. When responses from online instructors who had been assisted by a telementor were correlated with preferences on telementors providing students with technical support, the two-tailed Spearman rho test results were not significant (r = .-.005, p = .953). This shows that there is no relationship.

Cross-tabulations showed that 89.3% of the online instructors who supported telementoring and 37.4% of the instructors who had been assisted by a telementor indicated that they wanted a telementor to provide students' with technical support.

The sixth sub-question focused on telementors participating during the computer mediated conference as a scholarly guide.

f. Does an instructor prefer a telementor to act as a scholarly guide when students do not understand the course content and requirements during a computer mediated discussion?

When responses from instructors who supported telementoring were correlated with preference responses concerning the need for telementors to provide students with scholarly support, the two-tailed Spearman rho test results were significant (r = .299, p = .00). This shows that there is a relationship. When responses from instructors who had been assisted by a telementor were correlated with their preference responses concerning

the need for telementors to provide students with scholarly support, the two-tailed Spearman rho test results were also significant ($r = .208$, $p = .015$). This shows that there is a relationship.

Cross-tabulations showed that 83.5% of the online instructors who supported telementoring and 36.6% of the instructors who had been assisted by a telementor indicated that they wanted a telementor to provide students' with scholarly support. See Table 35 and Table 36 for a cumulative picture of the results for the research questions.

Table 35

Results: Research Question One

Independent variables	Significant support for telementoring	Not significant support for telementoring
Taught online		**X**
Has been assisted by a telementor	**X**	
Discipline		**X**
Number of online courses taught		**X**
Gender		**X**
Use of the theory of multiple representation		**X**
Use of cognitive flexibility theory		**X**
Use of three form theory	**X**	
Use of dual-coding theory		**X**
Use of the nine conditions of learning		**X**
Use of instructional theory		**X**
Use of elaboration theory		**X**
Use of transactional distance theory		**X**
Use of immediacy and social presence theory		**X**
Academic level taught online		**X**
Number of years taught online		**X**
Number of years taught at the university or college level		**X**
Course enrollment limit		**X**

Table 36

Results: Research Question Two and Three

Prefer a telementor to…	Support the use of telementoring significant	Support the use of telementoring not significant	Has been assisted by a telementor significant	Has been assisted by a telementor not significant
be trained to use the course management system	**X**			**X**
be able to interact with other telementors	**X**			**X**
pass a telementor training program		**X**	**X**	
interact with the students	**X**		**X**	
first respond to students' questions	**X**		**X**	
collect students' questions	**X**			**X**
help build social support	**X**			**X**
provide students with technical support	**X**			**X**
provide students with scholarly support	**X**		**X**	

Summary

When the variables were correlated with data from online instructors who supported telementoring to some level of frequency, there were eight significant data sets of results. Significant Spearman rho test results showed the following: (a) online instructors prefer that a telementor be trained to use the appropriate course management system; (b) online instructors prefer a telementor to interact with other telementors for support; (c) online instructors prefer a telementor to interact and discuss with the students during a computer mediated discussion; (d) online instructors prefer a telementor to first try to answer students' questions and refer questions that they could not answer to the instructor; (e) online instructors prefer a telementor collect questions from the students; (f) online instructors prefer a telementor to provide students with social support; (g) online instructors prefer a telementor to provide students with technical support; and (f) online instructors prefer telementors to provide students with scholarly support.

When the variables were correlated with data from instructors who had been assisted by a telementor, there were four significant data sets of results. First, online instructors preferred that telementors pass a telementor training program. Second, they preferred that telementors interact and discuss with students during a computer mediated discussion. Third, online instructors assisted by a telementor preferred that the telementors first try to answer students' questions and then refer questions that they could not answer to the instructor. Finally, they preferred telementors act as a scholarly guides.

CHAPTER V

DISCUSSION

Conclusions

This study was original in that the research explored a new facet of online instruction. In this study, online instructors were asked questions that helped provide evidence about their character. In addition, they were asked preference questions concerning the practice of telementoring when utilized during a computer mediated discussion as part of a course offering.

Students who learned online were said to have needs and responsibilities when they participated in computer mediated discussions (Gunawardena & Duphorne, 2000; Hacker & Neiderhauser, 2000; Shin and Chan, 2004). Other researchers illustrated a concern for social relationships among students and instructors as computer mediated discussion boards were used more frequently as part of a possible pedagogical shift (Khine, Yeap, & Lok, 2003). Telementoring was described as an alternative strategy to better meet online students' needs and reduce online instructors' responsibilities (Stein & Glazer, 2003; Chang, 2004; Buchanan, Myers, & Hardin, 2005).

Studies showed students to have positive attitudes about telementor support (Tagg, 1994; Poole, 2000; Durrington & Yu, 2004). In addition, researchers cautioned against implementing telementor programs that lacked training and guidance (Tsikalas et al., 2000; Chan, 2004). Finally, the importance of evaluating programs and turning to the stakeholders to be a part of the evaluation process was stressed (Fetterman, 1994; Greene, 1997; Rossi, 1999). Empirical contributions to the field indicated that research on telementoring, and information connected to students' achievement and perspectives

existed, but research on instructors' characteristics and perspectives on telementoring still needed to be collected (Single & Muller, 1999; Tsikalas et al., 2000; Chang, 2004; Buchanan et al. 2005).

This research study developed out of the need for further research that focused on the characteristics and preferences of online instructors in connection with telementoring and computer mediated discussions. Instructors who participated in this study were chosen as part of a convenience study from colleges and universities across the United States of America. One improvement that could have been made to the study was to randomly select the participants. Favorable aspects of the study were that the instructors responded to a survey that was anonymous and that the data was collected over a short time period.

Research Findings

Research Question One Findings

The research findings from this study came from three separate areas, and the findings can be divided by the three major research questions. Research question number one asked if there were any recognizable characteristic patterns in instructor preference on telementoring support during a computer mediated discussion. While the study did not reveal any significant characteristic patterns it did reveal a pattern concerning instructor preferences in relation to telementoring and computer mediated discussions.

Evidence from the data showed that when online instructors' characteristics were correlated to find relationships with support for telementoring that online instructors did not support the utilization of telementoring for every characteristic explored except for one. There was significant evidence of support for the utilization of a telementor when

the online instructors indicated that they had been assisted by a telementor. Based on the Spearman rho results, one could deduce that had the number of individuals who had been assisted by a telementor in the study been greater, the outcome for online instructor support for telementoring could have been different.

When cross-tabulation results on academic teaching level were looked at more deeply, the instructors who taught online courses to post-graduate students did not choose the never support telementoring frequency option to a lesser degree compared to other instructors who taught different academic levels. The post-graduate online instructors also said that they would support telementoring more often than occasionally at a higher level compared to their peers. One explanation for this result is that many of the post-graduate students could be non-traditional students. The non-traditional students may have different needs, thus these instructors may have been more willing to consider alternatives such as telelmentoring.

Instructors who taught online courses from nine to ten years showed more support and less willingness to immediately reject the use of telementoring compared to other instructors who taught online for a fewer number of years. This result may have occurred because the instructors who taught for nine to ten years may have established careers and have been more secure in their teaching environment. Instructors who indicated that they taught more than 11 years noted by the highest percentage that they did not support the use of telementoring as a part of a computer mediated discussion. It is possible that these instructors were more set in their ways and were less willing to change. Instructors who taught online from 25 to 29 years showed some level interest (85.9%) in telementoring when they indicated occasional support as their most often chosen category. These

instructors may have more knowledge about telementoring or they may have had enough confidence in themselves that they were willing to consider using telelmentoring.

In the end, there was a high enough percentage (41.3%) of online instructors who supported the utilization of telementoring to some degree to produce results related to research questions two and three. The second research question was about instructor preferences that concerned telementor characteristics. The third research question concerned online instructor preferences in relation to how telementors were utilized during the computer mediated discussion as part of the course offering.

Research Question Two Findings

Findings from research question number two concerned online instructors preferences on telementor characteristics. The first sub-question asked if instructors preferred that a telementor be trained to utilize the course management system through which the course was to be taught. Results showed that online instructors who supported the use of a telementor wanted telementors to be trained to use the course management system to a greater percentage than online instructors who had been assisted by a telementor. Previous experience in working with a telementor when teaching online could be seen as a factor in the percentage differences.

Sub-question two from the second research question involved the online instructors' preferences on telementors interacting with other telementors for support. Results showed that online instructors who supported telementoring wanted telementors to interact with each other to a greater percentage compared to the responses from instructors who had been assisted by a telementor. Online instructor experience with being assisted by a telementor could be the reason for the percentage differences.

The third sub-question for research question number two related to whether or not online instructors felt that telementors should be required to pass a telementor training program before serving as a telementor. Results showed that online instructors who supported telementoring wanted telementors to pass a telementor training program to a greater percentage compared to online instructors who indicated that they had been assisted by a telementor. Such a result signals the possibility that online instructors do not want to lose their own time by having to train telementors. It also shows that once instructors have been assisted by a telementor that the need is not as high of a priority.

The Spearman rho test results for the sub-questions from research question number two differed by significance. The Spearman rho results from the dependent variable, support for telementoring, were significant in sub-questions one and two. Spearman rho results from the dependent variable, instructors who had been assisted by a telementor, were significant in sub-question three. In addition, a pattern appeared when cross-tabulations results were used to compare the two dependent variables, because the percentage responses from those who supported telementoring were always greater. It appeared that previous experience with a telementor could have been the reason for the percentage differences

Research Question Three Findings

Research question three focused on the role of a telementor during the computer mediated discussion. In the first sub-question from the third research question a greater percentage of the instructors who supported telementoring preferred that the telementor interact with the students compared to the responses from instructors who had been assisted by a telementor. Such results could indicate that instructors may find the

discussion facet of a course to be time consuming and assistance in this area could be of value. It could also indicate that the online instructors saw the role of the telementor as a guide for students. The difference in percentage results could have occurred because of the difference in experience.

The second sub-question from research question number three focused on preferences concerned with telementors responding to students' questions. When online instructors who supported telelmentoring were asked if they preferred telementors to try to respond to students' questions before turning to the instructor for answers, cross-tabulation results showed that the instructors wanted the behavior to occur to a greater percentage compared to responses from instructors who had been assisted by a telementor. These results could show that instructors who had been assisted by a telementor trusted the telementor to respond to students' questions according to the difficulty of the question.

Sub-question number three involved instructors being asked if they preferred telementors to collect students' questions and let the instructor answer the questions. Instructors who had been assisted by a telementor could have shown support for this behavior to a smaller percentage because they felt that the complexity of the material and the ability of the telementor to respond to the questions made a difference. In such a situation, an instructor could trust one telementor more than the other to respond to students' questions. Previous experience with telementors could have been a factor as well.

In the fourth sub-question, instructors who supported telementoring said to a greater percentage that they wanted a telementor to provide students with social support

when the percentage was compared with cross-tabulation results of those who had been assisted by a telementor. This type of result may have shown that online instructors did not place social relationships as high of a priority as other facets of the online learning experience after they experienced telementoring assistance.

The fifth sub-question connected to research question number three referred to instructor preference concerning telementors providing online students with technical support. Instructors who supported telementoring showed support to a greater percentage compared to instructors who had been assisted by a telementor. One could deduce after seeing these results that the instructors wanted to avoid technical interaction problems and such support would keep the instructor from having to deal with problems connected to technical support. The difference between the dependent variables percentage results could have occurred because after working with a telementor, technical support was no longer so important.

The final sub-question from the third research question pertained to telementors acting as scholarly guides. A greater percentage of the instructors who supported telementoring supported the use of a telementor as a scholarly guide compared to instructors who had been assisted by a telementor. It would appear that after instructors experienced telementor support their attitudes about the need for a telementor to act as a scholarly guide changed. with having a telementor made a difference i some instructors more secure when it came to letting a telementor act as a scholarly guide.

Overall, when the Spearman rho test results for the sub-questions from research question number three were compared they differed by significance. The Spearman rho results from the dependent variable, support for telementoring, were significant in all six

of the sub-questions. Spearman rho results from the dependent variable, instructors who had been assisted by a telementor, were only significant in sub-questions one, two, and six. One could assume that experience with a telementor could impact instructors' preferences. In addition, a pattern appeared when cross-tabulations results were used to compare the two dependent variables, because the percentage responses from those who supported telementoring were always greater. Previous experience with a telementor could also have been the reason for the percentage differences. Here again, one could assume that instructors' preferences and attitudes about telementoring change after being assisted by a telementor.

Additional unexpected findings were found when looking at data of online instructors who taught online and already used a telementor as part of the course offering. These instructors tended to apply Bruner's Three Form Theory, Paivio's theory, and the Theory of Multiple Representations to some frequency. It is reasonable to say that administrators who have considered implementing a telementoring program should keep the significant results from instructors who have been assisted by a telementor in mind.

Limitations

Since the data for this study comes directly from the instructors who choose to participate by responding to and submitting the cross-sectional survey, it is impossible to control the independent variables. Another barrier is that although instructors were provided with a definition of the term telementor, it is possible that instructors may have had a different understanding of the term. This factor may have impacted the instructors' responses. In addition, considering that obtaining the email and postal addresses of instructors who teach at colleges and universities from across the United States is a large

task, it is possible that some instructors and email addresses were missed or that their firewalls did not let the email containing information about participating in the study through. Finally, the study participants were part of a convenience sample as opposed to a random sample which limited the ability to generalize results.

Recommendations for Future Research

As a result of conducting this study, five possible ideas for future studies developed. The first four suggestions developed after directly exploring the field of telementoring. The final suggestion became evident after learning how frequently the online instructors applied the different course design theories.

First, there is a need to conduct a study that determines instructors' perceptions concerning telementoring after they were made more aware of telementoring. Although the participants who participated in this survey were supplied with a definition of the term telementor, it was new to many of them and a universal definition has not yet been developed. It would be interesting to learn if the participant's opinions changed after instructors became better informed about the topic of telementoring.

Second, one could conduct a study in which a telementor was and was not provided. The instructor would have to be the same for all students and the course would need to be the same. The only difference would be that a telementor was added to the scenario. Learning outcomes could be evaluated to see if the telementor made an impact, and preference questions could be asked of the students and the instructor.

Third, a researcher could locate an established telementoring program similar to the program at Florida State University where telementors assist online instructors with a telementor training program that has already been developed. Instructors who work with

telementors as part of their course offering could be asked further preference questions about telementoring. Although this research study showed results from online instructors who had worked with a telementor, a future study could include a larger number of participants.

Fourth, anyone could conduct this study again. If one were to conduct this study again after so many years, it would be interesting to see of the results changed. Improvement suggestions for this study would be to randomly choose the participants and improve upon the survey questions.

Fifth, one could ask the students their perspective on what they think a telementor's role should be as part of a course discussion. As stakeholders, their perspective would help when designing telementor training programs and creating online courses.

The final suggestion for a future study developed from instructors' responses to the survey questions related to the theories that could be applied during course design. Instructors reported how much they utilized the different theories, but they did not have an opportunity to share the different ways in which the theories were applied. Online instructors have a great deal of experience in their field and others could benefit by learning from them.

Summary

In conclusion, this study was original in that it gave online instructors an opportunity to voice their opinion about a practice that has developed in the field. As seen in the results there are not many online instructors who have had the opportunity to work with a telementor. As the field of online learning has grown and the instructors'

responsibilities have increased telementoring has been suggested as a possible solution to time constraints and pressures (Stein & Glazer, 2003; Chang, 2004; Buchanan, Myers, & Hardin, 2005). It was important to get the opinion of the instructors considering that they were one of the stakeholders potentially impacted by the addition of a telementor to a course offering. This study showed that the majority of instructors did not want a telementor to assist during computer mediated discussions no matter what characteristics the instructor had. Results also showed that those who had worked with telementors supported the addition by a large percentage. Conclusions made considering these two results showed that online instructors may need the opportunity to learn more about telementoring. Outcomes from the preference questions related to telementor characteristics and how telementors should be utilized provided information to be added to the field. While this study did not produce significant results on instructor's characteristics, it did reveal a pattern related to instructors' preferences.

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APPENDIX A

IRB RESEARCH PROPOSAL ACCEPTANCE LETTER

IRB RESEARCH PROPOSAL ACCEPTANCE LETTER

DUQUESNE UNIVERSITY
INSTITUTIONAL REVIEW BOARD
424 RANGOS BUILDING ♦ PITTSBURGH, PA 15282-0202

Dr. Paul Richer
Chair, Institutional Review Board
Phone (412) 396-6326 Fax (412) 396-5176
e-mail: richer@duq.edu

April 19, 2006

Re: "Tele-mentoring and computer mediated discussions: a description of online instructors' support"
(#06/33)

Ms. MarySue Cicciarelli
500 W. Hidden Lane
Peoria, Il 61614

Dear Ms. Cicciarelli:

Thank you for submitting your research proposal and the requested revisions.

Based upon the recommendation of IRB member, Dr. Joe Kush, along with my own review, I have determined that your research proposal is consistent with the requirements of the appropriate sections of the 45-Code of Federal Regulations-46, known as the federal Common Rule. The intended research poses no greater than minimal risk to human subjects. Consequently, under rules 46.101 and 46.110, your proposed research is approved on an expedited basis.

This approval must be renewed in one year as part of the IRB's continuing review. You will need to submit a progress report to the IRB in response to a questionnaire that we will send. In addition, if you are still utilizing your consent form, you will need to have it approved for another year's use, even though we do not stamp the approval, as it is on-line. In correspondence with our office, please refer to the ID number after your title above.

If, prior to the annual review, you propose any changes in your procedure or consent process, you must inform the IRB Chair of those changes and wait for approval before implementing them. In addition, if any procedural complications or adverse effects on subjects are discovered before the annual review, they immediately must be reported to the IRB Chair before proceeding with the study.

When the study is complete, please provide us with a summary, approximately one page. Often the completed study's Abstract suffices. Please keep a copy of your research records, other than those you have agreed to destroy for confidentiality, over a period of five years after the study's completion.

Thank you for contributing to Duquesne's research endeavors.

If you have any questions, feel free to contact me at any time.

Sincerely yours,

Paul Richer, Ph.D.
IRB Chair

C: Dr. Gibbs Kanyongo
Dr. Joe Kush
IRB Records

APPENDIX B

ONLINE INSTRUCTOR CHARACTERISTICS AND PREFERENCE FOR TELEMENTOR SUPPORT SURVEY (OIC AND PTS)-1

ONLINE INSTRUCTOR CHARACTERISTICS AND PREFERENCE FOR

TELEMENTOR SUPPORT SURVEY (OIC AND PTS)-1

As you respond to the questions below, please use the following definition of a telementor relationship: A telementoring relationship occurs within a structured course that is developed between a more skilled or experienced (telementor) individual and a lesser skilled individual(s) (learners). The paired relationship mainly takes place through the use of electronic communications such as an asynchronous discussion board or email. The purpose of the relationship is for the learner(s) to develop and build skills, gain knowledge and confidence, and become a part of an online learning community.

1. Are you an online course(s) instructor? If any of the choices except for "Never" is selected, please move to question number 2. If "Never", please do not respond to any more questions and submit the survey.
   - ☐ Always
   - ☐ More often than occasionally
   - ☐ Occasionally
   - ☐ Less often than occasionally
   - ☐ Never

2. Does a telementor assist you and your online students during computer mediated discussions as part of the course offering?
   - ☐ Always
   - ☐ More often than occasionally
   - ☐ Occasionally
   - ☐ Less often than occasionally
   - ☐ Never

3. What is your gender?
   - ☐ Female
   - ☐ Male

4. How many years have you taught at the university or college level (anywhere)?

- ☐ 4 years or less
- ☐ 5-9 years
- ☐ 10-14 years
- ☐ 15-19 years
- ☐ 20-24 years
- ☐ 25-29 years
- ☐ 30 or more years

5. How many years have you taught online courses?

- ☐ Less than 1 year
- ☐ 1-2 years
- ☐ 3-4 years
- ☐ 5-6 years
- ☐ 7-8 years
- ☐ 9-10 years
- ☐ 11 or more years

6. How many online courses have you taught?

- ☐ 1-2 courses
- ☐ 3-4 courses
- ☐ 5-6 courses
- ☐ 7-8 courses
- ☐ 9-10 courses
- ☐ 11-12 courses
- ☐ 13-14 courses
- ☐ 15 or more courses

7. From which academic level have you taught an online course?

- ☐ Undergraduate
- ☐ Graduate
- ☐ Post-Graduate
- ☐ Undergraduate and Graduate
- ☐ Undergraduate and Post-Graduate
- ☐ Graduate and Post-Graduate
- ☐ Undergraduate, Graduate, and Post-Graduate

8. What is the enrollment limit of your completely online course?

- ☐ Less than 10 students
- ☐ 10-19 students
- ☐ 20-34 students
- ☐ 35-59 students
- ☐ 60-99 students
- ☐ 100-200 students
- ☐ More than 200 students

9. The Theory of Multiple Representation holds that more than one way of learning should be represented in the course design so that learners' multiple ways of learning are accounted for. When you design an online course do you meet learners' various learning needs by applying the Theory of Multiple Representation to course design?

- ☐ Always
- ☐ More often than occasionally
- ☐ Occasionally
- ☐ Less often than occasionally
- ☐ Never

10. Online courses that guide learners to develop a conceptual understanding by moving from basic to more complex forms of comprehension such as reasoning and making inferences through hands on learning reflect cognitive theory and constructivism. When learners can perform at those more complex levels, and they can transfer what they know to solve unstructured problems, their behavior reflects Cognitive Flexibility Theory. When designing an online course does the course reflect cognitive theory and constructivism so that learners are able to transfer those skills to abilities described through Cognitive Flexibility Theory?

    - ☐ Always
    - ☐ More often than occasionally
    - ☐ Occasionally
    - ☐ Less often than occasionally
    - ☐ Never

11. Jerome Bruner's Three Form Theory holds that there are three ways from which learners see the world; through action, icons, and symbols. Learners use action to perform or demonstrate their perspective. Icons or mental images are used by learners to present a path, summary, or pattern. Finally, learners use symbolism as an abstract way of showing how they visualize reality. When designing an online course do you scaffold learning experiences so that students can demonstrate their knowledge and understanding through action, icons, and symbolism?

    - ☐ Always
    - ☐ More often than occasionally
    - ☐ Occasionally
    - ☐ Less often than occasionally
    - ☐ Never

12. Paivio describes Dual-Coding Theory as a theoretical construct of processing information internally. This theory holds that learners use both aural and visual paths to process information and make meaning. The aural modality has a stronger influence on some learners. For other learners it is the visual modality that has more influence on the ability to learn. When you design an online course do you incorporate activities that utilize both aural and visual modalities to help guide learning?

    - ☐ Always
    - ☐ More often than occasionally
    - ☐ Occasionally
    - ☐ Less often than occasionally
    - ☐ Never

13. Gagne's Conditions of Learning is a form of descriptive and instructional theory that taps into learners' intellectual skills, verbal knowledge, cognitive skills, motor skills, and attitudes through the application of nine conditions of learning. When you design an online course do you apply the following nine learning conditions: 1. gain their attention, 2. inform the learners of the objective at hand, 3. stimulate recall of prior learning, 4. present the content, 5. provide learning guidance, 6. elicit performance, 7. provide feedback, 8. assess performance, and 9. enhance student ability to retain and transfer learning?

    - ☐ Always
    - ☐ More often than occasionally
    - ☐ Occasionally
    - ☐ Less often than occasionally
    - ☐ Never

14. Merrill's Instructional Theory holds that learners can be motivated by processes of transactions that help them make connections so they can select and sequence objects of knowledge. When you design an online course do you create activities that guide learners to transact or connect their internal representations of knowledge with external structures of knowledge?

    - ☐ Always
    - ☐ More often than occasionally
    - ☐ Occasionally
    - ☐ Less often than occasionally
    - ☐ Never

15. Reigeluth presents Elaboration Theory, a belief that is concerned with the organization of course material. When you design an online course do you present material in the simplest form and carefully move to more complex forms of content?

    - ☐ Always
    - ☐ More often than occasionally
    - ☐ Occasionally
    - ☐ Less often than occasionally
    - ☐ Never

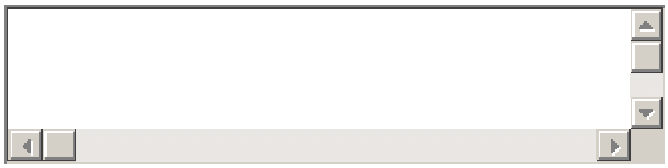
16. Moore's Theory of Transactional Distance focuses on interaction, course structure, and learner autonomy. This theory supports the claim that when a course is highly structured there is less pedagogical distance between the instructor and the learner. When you design an online course is the course highly structured so that interaction is frequent enough for a learner's autonomy to develop?

    - ☐ Always
    - ☐ More often than occasionally
    - ☐ Occasionally
    - ☐ Less often than occasionally
    - ☐ Never

17. Theory of Immediacy and Social Presence is a model of online learning which supports the significance of social presence during an asynchronous discussion. This theory holds that learning takes place through the interaction of three core components: cognitive presence, teaching presence, and social presence. When you design and implement an online course, do you respond to learners' acts and questions with immediacy and acknowledge their perceptions to impact their behavior?

    - ☐ Always
    - ☐ More often than occasionally
    - ☐ Occasionally
    - ☐ Less often than occasionally
    - ☐ Never

18. From which department or discipline do you teach an online course(s)?



19. Do you support the utilization of a telementor during a computer mediated discussion as a part of a course offering? If any of the choices except for "Never", please move to the next question. If "Never", please do not respond to any more questions and submit the survey.

    - ☐ Always
    - ☐ More often than occasionally
    - ☐ Occasionally
    - ☐ Less often than occasionally
    - ☐ Never

		Always	More often than occasionally	Occasionally	Less often than occasionally	Never
20.	Does your institution utilize a telementor as part of a course offering?	☐	☐	☐	☐	☐
21.	Do you prefer a telementor to be trained to use the course management system through which the online course is offered?	☐	☐	☐	☐	☐
22.	Do you prefer that a telementor interact with other telementors to gain support and seek advice about meeting students' needs?	☐	☐	☐	☐	☐
23.	Do you prefer that a telementor pass a telementor training program before acting as a telementor?	☐	☐	☐	☐	☐
24.	Do you prefer a telementor to interact and discuss with learners during an asynchronous mediated discussion?	☐	☐	☐	☐	☐
25.	Do you prefer a telementor to first answer learners' questions and refer questions that can't be answered to the instructor?	☐	☐	☐	☐	☐
26.	Do you prefer a telementor to collect learners' questions then present them to the instructor for a response?	☐	☐	☐	☐	☐
27.	Do you prefer that a telementor provides learners with encouragement and friendship during a computer mediated discussion to aid in social improvement and help learners build an online community?	☐	☐	☐	☐	☐
28.	Do you prefer that a telementor provide learners with qualified technical suggestions and guide them to the correct place for technical support during a computer mediated discussion?	☐	☐	☐	☐	☐

29.	Do you prefer that a telementor act as a scholarly guide when learners do not understand the course content and requirements during a computer mediated discussion?	☐	☐	☐	☐	☐

APPENDIX C

EMAIL TO POTENTIAL PARTICIPANTS

EMAIL TO POTENTIAL PARTICIPANTS

Dear Online Instructor,

I am an Ed.D. student at Duquesne University, Pittsburgh, Pennsylvania. At this time, I am gathering data to determine whether or not and under what circumstances online instructors support the use of a telementor (additional individual there to help the instructor and students) during a computer mediated conference. As an online instructor, you hold a stake and are impacted by administrative decisions regarding the use of telementors. By taking approximately twenty minutes to answer the questions on this survey you will be contributing to research on distance education and possibly impact decisions that could be influenced by the results from this study.

Completing and submitting the survey will signal your consent to participate in this study. Your confidentiality will be preserved at all times. The only stipulation for participation is that you must teach a completely online course. Data results will be presented in aggregate form. You have exactly two weeks from the date you received this letter to respond and submit a survey. Please only respond to the survey once, and submit the survey even if you only needed to respond to one question. Two thousand online instructors who teach for a college or university from across the United States will be asked to participate in this study.

Survey questions are in Likert scale form, and it should take approximately twenty minutes to complete the assessment. Your participation is vital to the success of this study. However, if you decide not to take part after you have accessed and begun to respond to the questions, all you have to do is close the link to the survey without

submitting your responses. To participate, you may access the survey online at:

http://CTLSilhouette.wsu.edu/surveys/ZS49432

Members of Duquesne University's IRB board have approved this study, the survey questions, and the study's procedures. Any questions that you may have about this study can be directed to me, MarySue Cicciarelli, by directing an email to: scicciarelli@insightbb.com or to the members of my committee whose contact information is presented below.

Thank you for your time and consideration.

Sincerely,

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