GENERAL SATISFACTION OF STUDENTS IN 100% ONLINE COURSES IN THE DEPARTMENT OF LEARNING TECHNOLOGIES AT THE UNIVERSITY OF NORTH TEXAS

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The purpose of this study was to examine whether there are significant relationships between the general satisfaction of students and learner-content interaction, learner-instructor interaction, learner-learner interaction, and learner-technology interaction in 100% online courses. There were 310 responses from the students. This study did not use data from duplicate students and instructors. Excel was used to find duplicate students and instructors; therefore, 128 responses were deleted. After examination of box plots, an additional four cases were removed because they were outliers on seven or more variables. Nineteen responses were deleted because they did not answer all questions of interest, resulting in a total sample of 159 students.

Multiple regression analysis was used to examine the relationship between the four independent variables and the dependent variable. In addition to tests for statistical significance, practical significance was evaluated with the multiple R^2, which reported the common variance between independent variables and dependent variable. The two variables of learner-content and learner-instructor interaction play a significant role in predicting online satisfaction. Minimally, the variable learner-technology can predict online satisfaction and is an important construct that must be considered when offering online courses. Results of this study provide help in establishing a valid and reliable survey instrument and in developing an online best learning environment, as well as recommendations for institutions offering online learning or considering the development of online learning courses.

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CHAPTER 1

INTRODUCTION

Internet-based learning and technology for distance education have been changing over the past 30 years, with the integration of telecommunication and advanced technology affecting distance education. The delivery of distance education utilizes the Internet, facilitates interaction, and encourages learners and instructors using multilearning technologies such as online conferencing, e-mail, Blackboard, and Listservs. Innovative high-speed network connections continue to expand (Howell, Williams, & Lindsay, 2003). The advent of the Internet has affected online distance education and has become an increasingly powerful tool for learning. Internet-based distance education is moving forward at a rapid rate, and the number of students who access their education in this way is growing as well. A major change in distance education has occurred because Internet-based distance education courses have increased their effectiveness from the learner's perspective (Ewing-Taylor, 1999). Distance education has increasingly come to represent the paradigm of using electronic means of communication via e-mail and the Internet to deliver a course to learners who are not in a traditional classroom with an instructor (Diaz, 2000).

The Internet has affected educational environments because it is an interactive and dynamic means to exchange information and instruction, offering various possibilities for learner interaction that can be interpersonal, including group chatting among learners in an online class. One of the most effective ways for increasing learner interaction appears to be discussion questions provided by the online instructor (Hiltz, 1995). Instructors have many concerns about online education, with their primary concern being how online education changes their roles and responsibilities and how they can adapt to this change. Muirhead (2000) indicated three areas to

be changed when courses are put online: (a) the provision of instructional and emotional support to students, (b) the expectations associated with authoring online courses while maintaining a full teaching load, and (c) the requirement to provide ongoing technological support to students. According to Ascough (2002), the role of the instructor in an online learning environment should be that of a facilitator or moderator due to less control of the class environment. Volery (2000) also suggested that the academic role of the instructor should be shifted from that of the traditional instructor and mentor toward that of a learning catalyst, because the level of interaction changes in online delivery. Therefore, besides being a facilitator, the instructor should also be an instructional designer (Zheng & Smaldino, 2003). To ensure the quality of online instruction, the online learning environment should be designed before the instructor begins the online course delivery. Wu and Hiltz (2004) examined students' learning from asynchronous online discussion in which the instructor plays an important role in motivating effective online discussion.

According to Edelstein and Edwards (2002), developing an effective system for students' interaction is one of the important concerns for a successful and engaging online course. The characteristics of an e-learning environment include (a) being learner centered; (b) providing active learning; (c) being instructor guided; and (d) promoting greater participation by all students (Palloff & Pratt, 1999). Ascough (2002) suggested that online interaction can be done through exploration, reflection, and discussion, which should lead to student learning.

The online environment offers written communication as its primary tool, with the online instructor providing feedback to students, generally within 24 to 48 hours via e-mail or discussion board. According to Palloff and Pratt (2003), instructor feedback is provided exclusively in a written format in online instruction. Marzano, Pickering, and Pollock (2001)

have suggested that instructional feedback has significant impact on student learning and that instructional feedback is one of the most useful teaching strategies an instructor can use in online environments. According to Baird and Fisher (2005), most online students possess the "always on" learning styles. The major responsibility of the online instructor is to maximize opportunities for all students (Schwartzman, 2007); thus, learning how to support such a group of online students is a relatively new and challenging task. In recent years, much research has been directed toward asynchronous bulletin board discussions in online courses (Dennen, 2005). How an online instructor can be visible to students, the so-called *instructor presence* in online courses, has been the focus of much research in online instruction (Coppola, Hiltz, & Rotter, 2002; D. R. Garrison, Anderson, & Archer, 2001; Wolsey, 2004).

The Internet provides an opportunity for people to actively construct understanding/knowledge, and the process involves interactions among prior knowledge (Rovai, 2004). In addition, concurrent experiences, other people, and the environment for learners all provide the potential for increasing learning (Marshall, Northcote, & Lenoy, 2001; Rovai, 2004). Learners now demand opportunities to take courses in an "anytime and anywhere" style (Baird & Fisher, 2005). Internet-based distance education is changing the face of higher education, and the number of learners enrolling in Internet-based courses is increasing. Higher education institutions are responding by rapidly expanding distance education opportunities through Internet-based instruction. Universities and colleges increasingly provide a great amount of time and resources to accommodate this diverse and ever-growing population of students with convenient and flexible Internet-based instruction (Kadlubowski, 2000). There exists significant potential for learner interaction and improved learning opportunities in online distance courses. Interaction between the instructor and the learner has been recognized as an important

contributor to a learner's satisfaction in online courses. Interaction between online students and the instructor includes a dialog based on course requirements utilizing e-mail, discussion, or chat (Northrup, 2002). Despite the fact that instructors neither see nor hear the students, it is possible to become familiar with them through their words, and instructor-student interactivity in online distance education can be a significant predictor of online satisfaction (Marks, Sibley, & Arbaugh, 2005).

Need for the Study

Educational institutions are rapidly adopting and implementing Internet-based online learning. With the increasing number of online courses and degrees offered from educational institutions, researchers should focus on factors relating to learner satisfaction in Internet-based online courses. A few studies have investigated the relationship between learner satisfaction, achievement, and interaction. The important factor of interaction between instructor and student is well-stated in the literature (Moore & Kearsley, 1996; Thurmond, 2003). According to Moore (1989), learners are more motivated when they have support from the instructor. Recent research has shown that the important factors in determining learner satisfaction in online courses are instructor variables, technology, and interactivity (Bollinger & Martindale, 2004).

As Internet-based online learning courses continue to expand, universities and colleges have the opportunity to reorganize their courses to encourage more instructor and student interaction. With great numbers of learners around the world taking online courses, challenges for universities and colleges are found in the diversity of learners' demands (I. E. Allen, Seaman, & Garrett, 2007). If Internet-based online learning is to succeed, instructors must understand the learner's needs and design learning environments that support learning and enhance success in online education, which depends on the instructor's ability to attain new, effective capabilities

that could impact course design and course management, satisfaction, and technology usage (Benbunan-Fich, Hiltz, & Harasim, 2005). To the extent that technology is used as a mediator in the online education environment, it offers opportunities to deal with various individual differences (Keefe, 2003). To date, much of the research concerning online learning has focused on descriptive comparisons of instructional delivery methods that rely on technology versus those that do not (Berge & Mrozowski, 2001; Bronack, Riedl, & Tashner, 2006; Phipps & Merisotis,1999; Waits, Lewis, & Greene, 2003). Thurmond, Wambach, Connors, and Frey (2002) asserted that the virtual learning environment, including e-mails, online conferences, chat groups, and online discussions, has a great impact on learner satisfaction. While Internet-based online education continues to grow, questions related to its effectiveness, quality, and satisfaction are ongoing in order to increase an understanding of learner characteristics and their satisfaction with online education.

Theoretical Framework

The theoretical framework for this study is based on the theory of transactional distance (Moore, 1980; Moore & Kearsley, 2005). The first attempt to define distance education and to articulate a theory appeared in 1972 (Moore, 1972), and in 1980 it was named the theory of transactional distance (Moore, 1980). The concept of transaction was derived from John Dewey. As explained by Boyd, Apps, and Associates (1980),

> It means the interplay among the environment, the individuals, and the patterns of behaviors in a situation. The transaction occurs between individuals-instructors and learners in an environment that has the special characteristics of separation of one from another and a consequent set of special teaching and learning behaviors. It is the physical separation that leads to psychological and communication gaps, a space of potential

misunderstanding between the input of the instructor and that of the learner; this is called the transactional distance. This distance is determined by the amount of dialogue which occurs between the learner and the instructor and the amount of structure that exists in the design of the course. (p. 22)

Moore's (1993) theory of transactional distance provided a theoretical framework from which to develop a successful distance learning environment by balancing the interaction of course structure and student-instructor dialogue based on the autonomy of the individual student (Stirling, 1997). Saba and Shearer (1994) carried on the concept of transactional distance by proposing a system dynamics model to examine the relationship between dialogue and structure in transactional distance. Interaction has been recognized as an important component in distance education (Moore, 1993). Moore (1993) and Moore and Kearsley (1996) provided the distinction among three types of interaction: learner-content, learner-instructor, and learner-learner.

Learner-Content Interaction

Education is the process of designed learning facilitated by an instructor (Moore & Kearsley, 1996). Through the interaction with content the learner constructs his or her own knowledge (Moore & Kearsley, 1996). According to the cognitive information processing theory, learning can occur only when instructional content is meaningful and relevant. Content is organized through either an instructor-centered or learner-centered approach, depending upon the stated outcome of the instruction or instructor preference (Northrup, 2001). Modern technologies provide the distance education learner the opportunity to interact with a variety of content resources. The Internet offers access to additional content and has the potential to significantly

expand the number of information resources and change the nature of learner-content interaction to a more learner-centered approach (Anderson, 2003).

Learner-Instructor Interaction

The instructor designs learning activities as well as informal and formal assessments to determine the learner's level of understanding (Moore & Kearsley, 1996). According to Boaz et al. (1999), the instructor should provide a learning environment in which questions are posted in the online discussion board. In their study of online nursing students, Thurmond et al. (2002) indicated that knowing their instructor and timely feedback from the instructor were significant factors in student overall satisfaction with the online course. Martyn (2005) examined the need to purposively create an environment which supports collaboration among all students as well as between students and the instructor. Online learning should be deliberately planned and analyzed for students to be successful in an online environment (Martyn, 2005). DeLoach and Greenlaw (2007) noted that instructors should facilitate, not lead, in online courses and that the discussion board should be used as a means to promote interaction.

Learner-Learner Interaction

Learner-learner interaction is the human interaction that utilizes two-way communication between one learner and other learners (Moore &Kearsley, 1996). According to Berge (1999), interpersonal interaction is important to learning. When learners are provided the opportunity to interact with one another, they can share meaning in an effort to make sense of what they are learning. Interpersonal interaction has been shown to facilitate learner motivation, satisfaction, and retention (Berge, 1999). This type of interaction helps online learning move from independent learning to a dynamic, collaborative learning environment (Anderson, 2003).

Hillman, Willis, and Gunawardena (1994) addressed a fourth type of interaction between the learner and the technology or technologies used in distance education courses. They observed that learners use these technologies to interact with the content and knowledge and with the instructor and other learners. Instructors cannot assume that each learner is familiar with the technologies used in a course or that the learners are comfortable with those technologies (Hillman et al., 1994).

Interaction serves a variety of functions in the educational transaction. Sims (1999) has listed these functions as allowing for learner control, facilitating program adaptation based on learner input, allowing various forms of participation and communication, and aiding the development of meaningful learning. Three types of interaction are prominent in Internet-based learning. First, academic interaction occurs when learners study online materials and when learners receive task-oriented feedback from the instructor (Moore, 1993). This type of interaction is content-centered. Academic interaction is a basic type of interaction in Internet-based interaction because it occurs when the learner reads online materials or participates in task-oriented learning activities. Second, collaborative interaction occurs when learners are discussing issues related to their learning on the bulletin board or solving problems as a group (Moller, 1998). Third, interpersonal or social interaction occurs when learners receive feedback from the instructor or their peers through personal encouragement and motivational assistance (Gunawardena & Zittle, 1997; McDonald & Gibson, 1998).

Social interaction enhances learner satisfaction in online courses. Some research supports the relationship between interaction, learning outcomes, and satisfaction in online courses. Social interaction impacts group formation, group dynamics, and the building of group structures in that it "affects both cognitive and socioemotional processes that take place during learning, group

forming, establishment of group structures, and group dynamics" (Kreijins, Kirschner, Jochems, & VanBuuren, 2004, p.155). Social interaction is necessary for learners; it not only allows them to get to know one another, but it also builds friendships, trust, and a sense of community. Strong social relationships may contribute to group cohesion, the degree of common understanding among group members, an orientation toward cooperation, and the desire to remain in their group (Kreijins, Kirschner, & Jochems, 2003).

Benbunan-Fich et al. (2005) suggested online interactive learning as a dynamic model that organizes research variables in terms of an input-process-outcomes model. Input factors are those that are expected to influence how technology affects the individual and collaborative learning processes, which determine the outcomes. In this model, the inputs include four factors: the individual student (learning styles, cultural values, ability, and motivation); instructor (skill and pedagogical model); technology (time difference, geographical dispersal, software interface); and course (size and organizational setting). The output factors include quality of learning, satisfaction as affected by technology, the pedagogy used by instructors, the expectations and skills of students, and the nature of higher education organizations themselves (Benbunan-Fich et al., 2005).

Woo (2006) investigated how the students in an Internet learning environment interact to accomplish authentic tasks and what meaningful experiences they have in their learning. Her study sought to identify the nature and process of interaction occurring in an Internet-based learning environment using authentic tasks. The study showed that including authentic tasks in an Internet-based learning environment led to meaningful interaction that directly influenced students' learning (Woo, 2006). According to Woo, social interaction plays an important role in enhancing students' learning, satisfaction, and group dynamics.

Purpose of the Study

The purpose of this study was to examine whether there are significant relationships between the general satisfaction of students and learner-content interaction, learner-instructor interaction, learner-learner interaction, and learner-technology interaction in 100% online courses in the Department of Learning Technologies at the University of North Texas (UNT).

Research Hypothesis

The purpose of this study was to examine the impact of learning interaction types on student's learning satisfaction. The research objectives were to identify the underlying dimensions of learning interaction types, to examine the impact of learning interaction types on student's learning satisfaction, and to determine the overall magnitude of satisfaction according to the importance of interaction types.

The research hypothesis to be addressed was as follows:

> What is the relationship between the general satisfaction of students and learner-content interaction, learner-instructor interaction, learner-learner interaction, and learner-technology interaction?

Limitations

Search for knowledge assumed possible limitations in conducting this study. This research was limited to the evidence gathered from participants who were taking online courses in the Department of Learning Technologies at the University of North Texas (UNT) over a semester period. The extent to which the findings could be generalized to other universities would be limited. Student perceptions were highly dependent on their individual preconceptions and expectations that may not accurately perceive, recall, and report their communication behaviors in the online survey instrument. Item 15 on the survey asked participants if they had a

discussion board requirement in their online course. If there was a discussion board requirement, Items 16 to 19 asked students to choose from the following: "required (used)," "voluntary (used)," "required (not used)," "voluntary (not used)," or "not required." If they selected "required (not used)," "voluntary (not used)," or "not required," they did not mark Items 16 to 19. This led to missing data from students who did not participate in discussion board in online courses. Students who reported using the discussion board in their online course answered Questions 16 to 19. This study examined learners who participated in online courses developed at UNT.

Delimitations

This study was delimited to the Department of Learning Technologies at UNT. The survey participation selected for this study was restricted to learners enrolled in online learning courses in the Department of Learning Technologies at UNT. The return rate of the surveys was higher than expected because the researcher collected surveys in a controlled environment. The generalization of the study to an entire population of online learners involved in distance learning was limited.

Definitions of Terms

For the purposes of this study, the following definitions are provided to clarify terms included in the study.

Interaction: "Interaction is defined as reciprocal events that require at least two objects and two actions" (Wagner, 1994, p. 8). True interaction with other learners, the instructor, and the technology results in a reciprocal exchange of information. The exchange of information is intended to enhance knowledge development in the learning environment (Thurmond, 2003).

Distance education: A form of education characterized by the separation of instructors and students, the influence of an educational organization (vs. self-study or personal tutorials), the use of a computer network to present or distribute educational content, and the provision for interaction and communication among students and instructors (Paulsen, 2002).

Feedback: Feedback is defined as the exchange of information between student and instructor about an action, event, or process that results in enhanced student learning (Thurmond & Wambach, 2004).

Online learning: Online learning is defined as using Internet technology to deliver course content. Online courses can be either "asynchronous" (interacting at different times) or "synchronous" (interaction at the same time) in the classroom (Farahani, 2003). In fully online courses all learning material and course communication are delivered using the Internet (Berge, Collins, & Dougherty, 2000).

Satisfaction: Satisfaction is defined as affect or feeling or emotion resulting from one's evaluation of the situation. As affect, the concept of satisfaction includes both positive affect (satisfaction) and negative affect (dissatisfaction) (Savickas, 1994). Satisfaction is determined by the point of view of the individual, which is one's positive affective response to a situation (Osipow & Fitzgerald, 1996).

Transactional distance: Transactional distance defined as a psychological and communication space to be crossed, a space of potential misunderstanding between the inputs of instructor and those of the learner. If learning outcomes in any distance education course are to be maximized, transactional distance should be minimized (Moore, 1980).

Summary

This dissertation is divided into five chapters. Chapter 1 presented the background of the

study, need for the study, theoretical framework, purpose of the study, research hypothesis, limitations, delimitations, and definition of terms. Chapter 2 includes a comprehensive review of the literature. Chapter 3 addresses the specific research methodology used in this study. Chapter 4 presents a statistical analysis of the results of the research findings, and the last chapter includes a discussion of the findings and recommendations for future research.

CHAPTER 2

REVIEW OF THE LITERATURE

This chapter provides a relevant review of the literature and research to support this study. The major focus is on the types of interaction and learner satisfaction in online courses.

Distance Education

Distance education has become a fast-growing delivery method in higher education in the United States. According to a report by Allen et al. (2007), during the Fall 2006 semester approximately 20% of all higher education students in the United States were enrolled in at least one online course. In Fall 2005, enrollment in online courses experienced a 36.5% growth rate, and the following year online enrollment experienced an increase of 9.7%. Fall 2008 online enrollments were up 17% from a year before, with about 4.6 million students taking at least one class online, according to the 2009 Sloan Survey of Online Learning. Literally dozens of definitions of the term *distance education* can be found in the literature. Various researchers (Eastmond, 1995; Keegan, 1996; Moore & Kearsley, 1996) have specified important criteria and characteristics to be considered when attempting to define distance education. Keegan (1996) proposed a comprehensive study and review of distance education worldwide to analyze and present its strengths and weaknesses. The five parts of Keegan's new definition can be summarized as follows: (a) the quasi-permanent separation of teacher and learner throughout the length of the learning process, (b) the influence of an educational organization, (c) the use of technical media, (d) the provision of two-way communication, and (e) the quasi-permanent absence of the learning group throughout the length of the learning process so that people are taught as individuals rather than in groups. Eastmond (1995) conducted a qualitative research study on adult distance study through computer conferencing, relying on the first four of

Keegan's principles but rejecting the "absence of group learning" principle because computer conferencing promotes group connectivity and communication. Distance education is defined as institution-based, formal education in which the learning group is separated and in which interactive communications systems are used to connect learners, resources, and instructors (Simonson, 2003). Moore and Kearsely (2005) stated the following definition for distance education:

> Distance education is planned learning that normally occurs in a different place from teaching, requiring special course design and instruction techniques, communication through various technologies, and special organizational and administrative arrangements. (p. 2)

Online Courses

Schulman and Sims (1999) noted that the late 1990s witnessed tremendous development in education with the help of online technologies. According to Cannings and Stager (1998), a successful online learning course should include (a) communication, (b) community, (c) competing, (d) computation, (e) challenging problems, and (f) personal commitment to active learning. The opportunity exists for sharing almost everything online, including data, experiences, opinions, and an upgrade in thinking about online teaching and learning. According to Tian (2001), computer-based education should contain six components: (a) teachers, (b) students, (c) knowledge, (d) evaluations, (e) communications, and (f) the enabling technology. Instructors should possess the knowledge and should be able to teach using the new medium. Students should be willing to learn the knowledge presented online, and there must be some sort of evaluative instruments such as multiple choice questions, assignments, and projects. Without communication, it is difficult to have a fruitful academic outcome.

According to Arsham (2002), the content of an online course is generally the same as a traditional one except that the teaching and delivery methods are different. Instead of coming to class every day or week, the students take the course asynchronously. That is, students are learning anywhere and at any time by using a computer connected to the Internet. Teaching is done via Web pages and e-mail. Class discussion can be done with synchronous communication or discussion forums. Online education is a process by which students and instructors communicate with one another and interact with course content via Internet-based learning technologies (Curran, 2008).

Distance Learners

Bates (1995) observed that governments and individual students have quite different reasons for supporting open and distance learning. In many countries where conventional education cannot meet the demand, high-quality open and distance learning systems may provide a cost-effective method for satisfying the needs of students.

In the early years of distance education a student primarily chose to take distance education courses out of necessity. It may have been impossible to take a course at a distance from an institution, and enrollment at a distance could simply be a matter of convenience. The distance learning choices for students have been growing and improving such that a distance learning class now may have students who no longer "have" to be there but rather "choose" to be there (Eastmond, 1995).

Moore and Kearsley (1996) reported that most distance education students are adults between the ages of 25 and 50. They summarized the following issues that should be considered when one thinks about adult distance learners and how to teach them:

(a) Adults may need to be persuaded that course content is relevant to their needs; (b) adults have a sense of self-direction and personal responsibility; (c) adults have personal experience which they want included as a learning resource; (d) adults like to make decisions for themselves; (e) adult students are ready to use their accumulated base of information to solve problems in the present; and (f) adults volunteer to learn because of their intrinsic motivation. (p. 154)

Studies have supported understanding and involving the "learner" as an important factor for student success. Schrum (1995) conducted a case study of an online professional development course that she also instructed. The course was a graduate-level, 4-credit independent study jointly offered by the University of Oregon and the International Society for Technology in Education (ISTE). Schrum gathered data from students, educators, and course developers who had experience with online courses and conducted formal and informal interviews with more than 95 students included in the main study. She determined that more consideration of the learners is needed during the planning phase of online courses and that learners must be given a larger role in the design of online courses. In her study, Schrum found that student characteristics, including self-motivation, timeliness in completing the course, and support from significant others, contributed to students having a positive view upon completing the course.

Eastmond (1995) summarized three main assumptions regarding characteristics of distance education students who learn through computer conference courses that may distinguish them from other adults. Individual characteristics impact learner interaction, group development process, and satisfaction (Benbunan-Fich et al., 2005). Gender differences affect group interaction, group participation, and group dynamics (Jeong & Davidson-Shivers, 2006). During

an online discussion, females posted fewer rebuttals to the critiques of females than did males, and males posted more rebuttals to the critiques of females (Jeong & Davidson-Shivers, 2006). Learners' technical skills and ability to use the collaborative tools impact interaction and satisfaction (Benbunan-Fich et al., 2005). Technology impacts interaction, and the affordances of technology can enhance interaction (Kreijins et al., 2004). The primary assumptions include high levels of independence and self-direction, a prior level of knowledge and skill with computer telecommunications, and ownership of a home computer. Learners should be able to determine whether taking an online course will result in a positive experience based on their individual needs and characteristics.

Academic Interaction

Research has shown that some form of interaction influences student success, whether in a traditional teaching environment or in a distance education setting. Moore (1989) is frequently credited with defining three types of interaction in the distance education environment: learner-content, learner-instructor, and learner-learner.

1. Learner-content interaction provides the learner with an opportunity to construct new knowledge by incorporating the lesson information into previously existing cognitive structures.
2. Learner-instructor interaction, which is regarded as essential by most learners, provides the instructor the opportunity to assist students in their construction of new knowledge as well as providing guidance, support, and encouragement.
3. Learner-learner interaction allows distance students to join and form a community of learners dealing with a common topic or course. R. Garrison (2000) found that

students who interact regularly with their instructor and fellow students are more motivated and report a better learning experience.

Hillman et al. (1994) focused attention on another form of interaction for distance students, that of learner-technology. They noted that the interaction that takes place between the learner and the technology strongly influences the success of a distance student. Also, Sutton (2000) has suggested that a fifth type of interaction, vicarious interaction, be considered. According to Sutton, vicarious interaction occurs when a student actively observes and processes both sides of a direct interaction between two other students or between another student and the instructor. As distance education technology moves toward multi-media systems, it integrates a combination of technologies, both synchronous and asynchronous (McIsaac & Gunawardena, 1996). A further distinction should be made between synchronous and asynchronous interaction. This distinction between immediate and delayed interaction is important because it determines the "feel" of the distance learning experience. In synchronous interaction, students must participate at a fixed time, whereas in asynchronous interaction, students respond to each other according to their own schedules. This difference has major implications for the design and delivery of distance education. It also has important implications for the study requirements of the learner. Sometimes, learning might rely on real-time interaction, whereas at other times it can be accomplished asynchronously. Distance educators strive to provide opportunities for interaction to enhance the chance of student success with course objectives as well as success in the overall distance education environment. Keefe (2003) observed that the impact of interactions on student performance supports the view that high-quality student interactions are essential to positive student outcomes. “Student interaction is central to teaching and learning, and the online use of interaction needs to develop further to be as effective as face-to-face

interaction" (Keefe, 2003, p. 29). The most important role of instructors is to ensure a high degree of interactivity and participation (Kearsley, 2000) by facilitating student interaction (De Verneil & Berge, 2000). Woods and Baker (2004) stated that online environments offer an opportunity for increased interaction. High levels of interaction, particularly those that promote social engagement, can have positive effects on the learning experience.

Thurmond and Wambach (2004) described interaction as the exchange of information between learners and instructor about course activities that would lead to learning in online education. The effects of interaction have primarily been studied in contrived experimental learning situations in the form of outcome interaction provided after a learner responds to relatively simple and self-contained tasks with simple solutions (Mory, 2003). Instructor interaction is the primary means of facilitating a sense of interaction and helping students stay engaged and motivated to learn (Gilbert, Morton, & Rowley, 2007; Thurmond & Wambach, 2004; Vonderwell, 2003). The most effective interaction is that which is instant and provides precise information on how performance can be improved (McVey, 2008). This means that learners need to understand their mistakes and know how to avoid making them in the future. Instructional interaction provides students with information that either confirms what they know or changes their knowledge and beliefs (Mory, 2003). According to Higgins, Hartley, and Skelton (2002), interaction that is meaningful, high-quality, and timely helps learners become cognitively engaged in the content under study, as well as in their learning environment. Interaction is a significant factor in motivating further online learning. As noted by Cohen (1985), interaction is one of the more instructionally powerful and least understood features in instructional design. Educational interaction is any message generated in response to a learner's action (Mason & Bruning, 2001). Interaction is also an important factor in encouraging further

learning because it helps learners conclude performance expectations, judge their level of understanding, and become aware of misconceptions (Mason & Bruning, 2001). When online interaction is not clear, students often become anxious and lose motivation because they are confused about what and how well they are doing (Hara & Kling, 2001; Thurmond & Wambach, 2004).

Mason and Bruning (2001) argued that computer-based interaction has several advantages. First, computers provide interaction between learners and instructor in response to learners' learning progress. This interaction can remain unbiased, precise, and tolerant of learner characteristics. Thus, computer-based interaction can be used for the learners' learning styles and needs, an aim almost never attained in a traditional classroom (Mason & Bruning, 2001). According to Kulhavy and Stock (1989), effective interaction makes available to the learner two types of information: verification and elaboration. Verification is the simple judgment as to whether an answer is correct or incorrect, whereas elaboration is the informational component providing relevant signs to direct the learner toward a correct answer. Schimmel (1988) recommended allowing learners to get interaction types because they have previous knowledge and metacognitive skills, such as the ability to self-monitor a task's difficulty, which allows them to promote their own learning. Metacognition refers to the awareness and control of cognition through planning, monitoring, and regulating cognitive activities (Pintrich, Smith, Garcia, & McKeachie, 1991). Metacognitive interaction concerning learner progress directs the learner's attention to learning outcomes (Ley, 1999). When metacognition is activated, learners may become self-regulated. The meta-analysis of interaction in computer-based instruction, according to Azevedo and Bernard (1995), states that immediate delivery of an interaction message provides the best instructional advantage to the student. Mason and Bruning (2001) have noted

several factors to consider when making Internet-based interaction: student achievement levels, personality of the learning task, and previous knowledge.

According to Mason and Bruning (2001), the literature provides eight levels of interaction: (a) no interaction; (b) knowledge of response; (c) answer until correct; (d) knowledge of correct response; (e) topic contingent; (f) response contingent; (g) bug related; and (h) attribute isolation. All of these characteristics can be said to have advantages. Interaction is provided solely in written form in the online environment (Palloff &Pratt, 2003).

The categories provided by Blignaut and Trollip (2003) are as follows:

1. Corrective interaction: interaction that corrects the content of a student's answer to an assignment.
2. Informative interaction: interaction that comments on a student's answer to an assignment from a "content perspective."
3. Socratic interaction: interaction that asks "reflective questions" about the student's answer to an assignment. (p. 8)

Thurmond et al. (2002) emphasized that timely interaction from the instructor contributes significantly to the learners' satisfaction with online-based courses. Instructors need to carefully plan their schedules for learners' evaluation and interaction activities. Also, instructor responses to students are important to students' learning improvement. Their prompt response will decrease the learners' feelings of isolation that result from the lack of face-to-face interactions.

Research has shown that the quality of student discussion responses can be increased through the use of constructive interaction that is prompt, consistent, and ongoing (Ertmer & Stepich, 2004). Researchers emphasized that the major influencing factor was the receiving of rapid interaction. When learners recognize that instructors do not respond in a timely way, they

feel discouraged and shorten their participation. Hara and Kling (1999) reported that lack of timely interaction can result in learners' uncertainty about their performance in online courses and can contribute to their disappointment. Good interaction is more likely to occur if an encouraging learning environment is created because many opportunities for interaction are part of the course. Palloff and Pratt (1999) observed that learners gained affluent collaborative learning experiences through reflection and interaction with others in the online learning experience. Once course goals and assignments are identified, many ways to provide interaction can be implemented. According to Stevens and Levi (2005), the instructor's use of rubrics can promote timely, detailed interaction; encourage critical thinking; and facilitate learner/instructor communication. Students do not innately know how to provide good interaction to their peers and instructors in order to interact, teach, and help this learning (Pallof & Pratt, 1999). Interaction can be provided at multiple times and in multiple ways to learners.

Satisfaction

Previous research has suggested that learner satisfaction depends on the learners' learning experience and their perception of interactions. Learner satisfaction can be lasting if it is combined with a successful learning experience (D. R. Garrison & Cleveland-Innes, 2004; Sener & Humbert, 2003; Swan, 2001). Learner satisfaction is important because it encourages the learner's level of motivation (Chute, Thompson, & Hancock, 1999). Bean and Bradley (1986) determined that satisfaction has a significant effect on performance. According to researchers, satisfaction is a good predictor of academic success and retention (Astin, 1993). Johanson (1996) determined that student satisfaction is positively impacted when (a) the technology is provided reliably and conveniently, (b) the course is designed to encourage learner-centered instructional strategies, (c) the instructor's role is as a facilitator, and (d) there is a reasonable level of

flexibility. DeBourgh (1999) noted that student satisfaction is highly correlated with the performance of the instructor, particularly with his or her availability and response time, and Belanger and Jordan (2000) observed that learners should have access to reliable technology equipment; learners with limited access have a considerable disadvantage compared to those with unlimited access (Wegerif, 1998). In fact, access is one of the most important factors influencing learner satisfaction (Bower & Kamata, 2000). A number of researchers agreed that learners who are taking an online course must be familiar with the technology used in the course to succeed (Belanger & Jordan, 2000) and that those who have experienced difficulty in using the technology in an online course report lower satisfaction levels (Chong, 1998; Hara & Kling, 2000). According to DeBourgh (1999), however, being at ease with the World Wide Web (WWW) is not a predictor variable for satisfaction with online learning. Wright (1999) found that students were more satisfied with their online learning experiences than students enrolled in a similar course delivered in a traditional class format. In addition, St. Pierre and Olson (1991) identified student eagerness to take an online course again and their eagerness to recommend an online course to a friend as the best measures of student satisfaction.

Stokes (2003) concluded that satisfaction with online learning is not influenced by the quantity of previous online learning experiences, yet there is a significant difference between more- and less-experienced users in this context. However, Wegner, Holloway, and Garton (1999) suggested that there may be a connection between a student's first online learning experiences and his or her satisfaction. This area of inquiry has quickly become complex.

Students generally form their expectations through their previous educational experiences while searching for information about the institution or while discussing with people studying there. Moreover, student satisfaction is shaped continually by repeated experiences in the

learning environment (Elliott & Shin, 2002). Because online education is a relatively new experience for most learners, new needs will arise during the learning process.

Oliver (1993) proposed a model to integrate the satisfaction and the service quality dimensions. He proposed that, while service quality is formed by a comparison between ideals and perceptions of performance regarding quality dimensions, satisfaction is a function of disconfirmation of predictive expectations regarding both quality and nonquality dimensions. Also, it is possible to be satisfied with low quality if the performance meets and exceeds one's prediction of performance (Oliver, 1993). Therefore, care should be given to identifying changing needs and what is important to students.

Researchers studied learners' perceptions of online learning, including levels of satisfaction, and found a demand for relationship, or a learning community (Richardson & Swan, 2003). Previous studies have suggested that instructor and learner interactions are important in increasing a sense of relationship and satisfaction in the online community. Biner, Barone, Welsh, Summers, and Dean (1997) stated seven factors of learner satisfaction: instructor, technological aspects of the course, course management, onsite personnel, promptness of material delivery, support services, and out-of-class communication with the instructor. The researchers concluded that distance learners who perceived that the level of interaction was high were likely to be more satisfied with overall instruction than those who perceived that the level of interaction was low. Driver (2002) found a supporting result that students' perceptions of interaction were positively related to their overall satisfaction with a Web-enhanced course.

Satisfaction is an important affective component in online learning experiences. It relates to perceptions, attitudes, or feelings about online courses. For this reason, satisfaction is often considered as a predictor of learning outcomes in the affective domain of educational objectives

(LaPointe & Gunawardena, 2004). Learner satisfaction with computer-mediated communication is also used as a criterion to control the quality of online courses (M. Allen, Bourhis, Burrell, & Mabry, 2002). Aware of the importance of the affective aspect of online learning, many researchers have made an effort to determine what factors among perplexing elements in online environments influence student learning satisfaction with the computer-mediated learning experience. Gunawardena and Zittle (1997) examined 55 graduate students from five universities participating in the Fall 1993 inter-university GlobalEd computer conference. The stepwise regression analysis found that social presence, "the degree to which a person is perceived as 'real' in mediated communication" (p. 8), is a very strong predictor of satisfaction. Stokes (2001) examined the temperaments of 145 undergraduate students enrolled in courses that incorporate Web-based modules. The survey result suggested that temperaments (classified as guardian, artisan, idealist, and rational) were not a significant predictor of student satisfaction when other variables were controlled. A case study conducted by Hong (2002) examined 26 graduate students in the Master of Science program at a Malaysian university to investigate the relationships between students' variables (prior computer experience, gender, age, scholastic aptitude, and learning styles) and instructional variables (student-instructor interaction, student-student interaction, perception of course activities, perceptions of asynchronous Web-based conference, and amount of time spent on the course) with satisfaction and learning outcomes from a Web-based course.

Young (2006) stated that, in open-ended comments, students confirmed that consistent and timely communication led to positive perceptions of the course as well as greater success. In addition, discussions were well designed and facilitated. Young explains the following:

> Once the course begins, an effective teacher must give considerable attention to facilitating the course. The instructor is fully absorbed with communication, including e-mail, threaded discussions, and chats, and must work hard to meet the varied needs and demands of students. (p. 74)

Mullen and Tallent-Runnels (2006) studied differences in the perceived instructor demands and support, as well as student perceptions regarding their motivation, self-regulation, satisfaction, and perception of learning online versus the traditional classroom. They found a strong effect for differences between perceived instructor affective support in both the online and traditional classroom, but the relationship between student satisfaction and instructor affective support was strongest for the online case (Mullen & Tallent-Runnels, 2006). The study found that instructional variables impacted learners' online learning satisfaction.

Technology

Technologies contribute the benefit of integrating with content-related online learning circumstance in the virtual workplace. Learners may be physically distant, but they are able to contact each other at any time. Although they do not meet face-to-face, group members communicate with each other, exchanging ideas and information via the bulletin board or e-mail and in the chat room. Technologies can also provide a socially supportive environment for knowledge construction through collaborative learning (Stacey, 1999). According to Palloff and Pratt (2001), the technology should be considered as only a vehicle for the delivery of the course, and therefore it should be transparent and easy to use. In an online course, the learners can meet as a virtual group to discuss their projects, and they can also provide a record of the interaction and contents occurring among group members (Rains & Scott, 2006). The virtual space for the group or class provides the team members with a place both to work and to gather to create

personal profiles, carry on social conversations, build relationships, and improve the group's work (Tu, 2004).

The effective use of technologies provides an important role in communication and collaboration over time and distance. Technology can affect student interaction and satisfaction. Communication tools can be difficult to use and may hinder communication among group members, which, in turn, can make collaboration among group members difficult. When communication is problematic, the collaborative process is not able to function at an optional level (Ragoonaden & Bordeleau, 2000). In Ragoonaden and Bordeleau's (2000) study, technical difficulties greatly hampered communication and, consequently, the sharing of attached files. These technical difficulties created a high level of frustration among the learners. The various mechanisms of collaboration, such as explanations, sharing answers, negotiating answers, peer encouragement and sympathy, were not present (Ragoonaden & Bordeleau, 2000). The medium affects interactions and learners' satisfaction, and it may provide an environment for knowledge construction through collaborative learning, or it may hamper interaction among the learners.

With the advent of new communication technologies, the world is facing a technology paradigm shift. "Information and communication technologies have an enormous power and effect on a networked society" (Kesim & Agaoglu, 2007), which provides new mechanisms and concepts to be integrated into the distance learning environment. "Virtual classrooms, two-way interactive audio, video, and Internet-based interactions are being added on distance education" (Kesim & Agaoglu, 2007). Dziuban, Moskal, Brophy, and Shea (2007) suggested that "contemporary media culture in this country is the primary mechanism for socialization of our young people and the major incubator for change."

Summary

Online-based education is rapidly growing as computer and Internet use spreads and becomes more accessible. The number of courses offered online by universities and colleges has grown dramatically over the past few years. Several studies reported that advantages of online learning included an increased interaction between the instructor and students that could not be achieved in the traditional classroom setting (Eastmond, 1995; Harasim, Hiltz, Teles, & Turoff, 1995; Kearsley, 1997). With distance learning becoming more commonplace in higher education, there is a greater opportunity to capitalize on existing technologies that are familiar to a new generation of learners. Tsai et al. (2008) stated that "online enrollment increased from 1.98 million in 2003 to 2.35 million in 2004," and Smith (2007) found that "over 80% of 18-34 year olds have an Internet –based online learning." Previous studies indicated that the quality of interactions affects academic results, the level of learning, and students' perceptions of their learning experience.

This chapter provided an overview of previous research for this study regarding online education in the realm of distance education, online courses, distance learners, academic interaction, learner satisfaction, and technology in Internet-based instruction. Existing research in this chapter shows the need for additional study on interaction and satisfaction between instructors and learners to determine the effectiveness and satisfaction from the learner's perspective.

CHAPTER 3

METHODOLOGY

Overview

The purpose of this study was to examine the impact of learning interaction types (i.e., learner-content interaction, learner-instructor interaction, learner-learner interaction, and learner-technology interaction) on students' learning satisfaction.

This chapter presents the methods used in conducting the study and includes research design and questions, population, sample, and instrumentation implemented within the study. In addition, pilot test, procedure, data collection procedures, data analysis and summary are specified.

Research Question

The research question to be addressed was the following:

> What is the relationship between general satisfaction of students and learner-content interaction, learner-instructor interaction, learner-learner interaction, and learner-technology interaction?

Population

The research population for the study includes all undergraduate students enrolled in 100% online courses in the Department of Learning Technologies at the University of North Texas (UNT), Denton. The population included 479 undergraduate students who were taking at least one 100% online course, regardless of whether or not they were geographically at a distance from campus. The researcher of this study was interested in online learning in the Department of Learning Technologies at UNT, which offers completely online courses for undergraduate students.

Sample

It is a good idea to obtain a large sample of the population (Borg & Gall, 1996). The larger the sample, the more likely it is to represent the population from which it comes; larger samples are better than smaller samples because larger samples minimize the probability of errors, maximize the accuracy of population estimates, and increase the generalizability of the results (Pedhazur, 1997). For this reason, 479 undergraduate students who took one or more online courses could be surveyed. To minimize sampling error, all online students were given an equal opportunity to complete the survey. There were 310 responses from the students. This study did not use data from duplicate students and instructors. Excel was used to find duplicate students and instructors; therefore, 128 responses were deleted. After examination of box plots, an additional four cases were removed because they were outliers on seven or more variables. Nineteen responses were deleted because they did not answer all questions of interest, resulting in a total sample of 159 students.

Instrumentation

Online Satisfaction Survey (Original)

The survey instrument for this study was the Online Satisfaction Survey, developed by Strachota (2003) to identify the level of satisfaction in distance learning courses. Strachota developed the survey based on the typology of online interaction. Strachota noted that the five typologies of online interaction were learner-content interaction, learner-instructor interaction, learner-learner interaction, computer efficacy and general satisfaction. All survey items used a 4-point Likert scale, with (4) *strongly agree*, (3) *agree,* (2) *disagree,* and (1) *strongly disagree*.

Validity of Online Satisfaction Survey

Data should be valid, and content validity should be measured by having experts in the field examine the content of the instrument to ensure that all relevant measures are included (Wallen & Fraenkel, 2001). Strachota (2003) found that content validity could be determined by having all survey questions read for precision by two expert online faculty members. The instrument developer (Strachota, 2003) conducted a pilot test to establish construct validity. Factor loading for learner-content interaction ranged from 0.604 to 0.780; learner-instructor interaction factor loading ranged from 0.594 to 0.841; and learner-learner interaction factor loading ranged from 0.588 to 0.786. All these ranges are considered to have good internal or construct validity (Strachota, 2003).

Reliability of Online Satisfaction Survey

In general, the reliability of the instrument, or Cronbach's alpha, is the internal consistency or reliability coefficient for the required instrument. Cronbach's alpha scores range from 0 through 1, with a coefficient closer to 1 indicating higher reliability. Reliability coefficients should be at least 0.70 or higher to be considered reliable for affective instruments (Wallen & Fraenkel, 2001). The Online Satisfaction Survey instrument indicated Cronbach's coefficient alpha for the items within the construct of learner-content interaction = 0.90, learner-instructor interaction = 0.89, learner-learner interaction = 0.89, general satisfaction = 0.90. All these alpha scores resulted in a highly reliable instrument (Strachota, 2003).

Modified Online Survey

In this study, the original online survey satisfaction survey was slightly modified. The modified Online Satisfaction Survey for this study can be found in Appendix C. Tables 1 to 4 include all questions for this survey. Ten items of the demographics and 6 items of the online

survey section of the Online Satisfaction Survey were deleted. Online survey section items of the original Online Satisfaction Survey, 17, 18, 20, 21, 25, and 30, were deleted because they did not relate to this research study. Item 28 (Preparation for quiz/exams in this course facilitated my learning) of the modified online satisfaction survey was deleted because not all online courses in the Department of Learning Technologies at UNT have quiz/exams.

The modified online satisfaction survey by individual item questions is shown in Tables 1 to 4. Six items, 20, 22, 23, 32, 34, and 35, measured learner-content interaction (see Table 1).

Table 1

Learner-Content Interaction Questions

Number	Question	α
Learner-Content Interaction Questions		.88
20	The courses documents – lessons or modules notes used in this class facilitated my learning.	
21	The websites that are linked to this course facilitated my learning.	
23	The assignments and/or projects in this course facilitated my learning.	
32	The learning activities in this course required application of problem solving skills which facilitated my learning.	
34	I feel this online class experience has helped improve my written communication skills.	
35	The learning activities in this course required critical thinking which facilitated my learning.	

Five items, 19, 21, 24, 29, and 37, measured learner-instructor interaction (see Table 2); 8 items, 16, 17, 18, 25, 26, 30, 33, and 36, measured learner-learner interaction (see Table 3), item 18 was coded reverse for negatively keyed; and 5 items, 27, 31, 38, 39, and 40, measured general satisfaction (see Table 4).

Table 2

Learner-Instructor Interaction Questions

Number	Question	α
Learner-Instructor Interaction Questions		.84
19	In this class, the instructor is an active member of the discussion group offering direction to posted comments.	
21	I received timely feedback (within 24 – 48 hours) from my instructor.	
24	I was able get individualized attention from my instructor when needed.	
29	In this class the instructor functioned as the facilitator of the course by continuously encouraging communication.	
37	Although I could not see the instructor in this class, I always felt their presence.	

Table 3

Learner-Learner Interaction Questions

Number	Question	α
Learner-Learner Interaction Questions		.86
16	In this class the online discussion board provides an opportunity for problem solving with other students.	
17	In this class the online discussion board provides an opportunity for critical thinking with other students.	
18	The discussion board in this course is a waste time.	
25	This course created a sense of community among students.	
26	In this class I was able to share my viewpoint with fellow students.	
30	In this class I was able to ask for clarification from a fellow student when needed.	
33	I received timely (within 24 – 48 hours) feedback from students in the class.	
36	This online course encouraged students to discuss ideas and concepts covered with other students.	

Table 4

General Satisfaction Questions

Number	Question	α
General Satisfaction Questions		.86
27	I am very satisfied with this online course.	
31	I would like to take another online course.	
38	I would recommend this course to others.	
39	I learned as much in this online course as compared to a face-to-face course.	
40	I feel online courses are as effective as face-to-face courses.	

Computer Self-Efficacy Survey (Original)

A computer self-efficacy instrument was used to measure learner-technology interaction. This instrument was developed by Cassidy and Eachus (2002), who developed the computer self-efficacy survey to assist in "identifying individuals, in particular students, who will find it difficult to exploit a learning environment which relies on computer technologies" (p. 1). Cassidy and Eachus defined self-efficacy as the beliefs a person has about his or her capabilities to successfully perform a particular behavior or task. The use of a computer is essential in 100 % online courses. The Computer Self-Efficacy instrument utilized a 6-point Likert scale of 1 – 6, with 1 (*strongly disagree*) through 6 (*strongly agree*).

According to Cassidy and Eachus (2002), "Self-efficacy beliefs have repeatedly been reported as a major factor in understanding the frequency and success with which individuals use computers" (p. 134). This was supported by a study by Compeau and Higgins (1995), who found that individuals with high self-efficacy used computers more, enjoyed using them more, and experienced less computer-related anxiety. Therefore, learners with limited computer experience were likely to have low satisfaction with learner-technology interaction. According to

Cassidy and Eachus, "Low self-efficacy may be a significantly limiting factor for students exploring new applications vital for academic progress, a prime example being the Internet" (p. 136). Through stepwise regression analyses Cassidy and Eachus found that computer experience (63.5%) and familiarity (4.23%) were the most important predictors of computer self-efficacy.

Validity of the Computer Self-Efficacy Survey

The original instrument was piloted and tested by Cassidy and Eachus (2002), with n = 101 university randomly sampled students. The original instrument had 47 items but was reduced to 30 items through a process of selection based on reliability coefficients and factor loadings (Cassidy & Eachus, 2002). The instrument was tested a second time to evaluate the psychometric properties of the refined scale and to investigate the relationship between self-efficacy and computer experience, use of software packages, training, computer ownership, and gender. The second assessment included a sample of n = 212, with subjects representing five different groups with varying computer skills. High discriminant validity was found by comparing total self-efficacy scores across all five groups. According to Cassidy and Eachus, the construct validity of the scale showed significant positive correlations between self-efficacy and both computer experience (r = 0.79, p < .05, n = 212) and familiarity with software packages (r = 0.75, p < .05, n = 210).

Reliability of the Computer Self-Efficacy Survey

Internal consistency of the 30-item scale, measured by Cronbach's alpha was high (n = 184), with an alpha = 0.97. Test retest reliability (n = 74) over a 1- month period was also high and statistically significant, with r = 0.86, p < .0005 (Cassidy & Eachus, 2002).

Modified Computer Self-Efficacy

The modified Computer Self-Efficacy instrument utilized a 6-point Likert scale of 1 – 6,

with 1 (*strongly disagree*) through 6 (*strongly agree*). For this research, learner-technology interaction is synonymous with computer self-efficacy. All questions of interest for this survey are included in Appendix C. Items 46 through 73 of the modified Computer Self-Efficacy survey were used to measure learner-technology interaction (see Table 5). This survey used reverse coding for negatively keyed-Items 48, 49, 51, 53, 56, 57, 58, 60, 62, 64, 65, 66, 68, 69, 71, and 73. Since the scale was 1 to 6, with 6 being *strongly agree*, points were assorted to the reverse coding questions like this: If the answer was 1, give 6 points; if the answer was 2, give 5 points; if the answer was 3, give 4 points; if the answer was 4, give 3 points; if the answer was 5, give 2 points; and if the answer was 6, give 1 point. Data obtained from this instrument assisted in the research of learner-technology interaction. Two items, "5. Computers frighten me" and "8.DOS-based computer packages don't cause many problems for me," of the original Computer Self-Efficacy Survey were removed because these items were not related to this research study. These two items related to DOS-based computer packages and training and computer ownership.

Pilot Test

Because validity and reliability are properties of data and not instruments, a pilot test was conducted to see whether changes to the instruments affected validity and reliability coefficients. This pilot test was conducted (n = 34 100% online students) in the Department of Learning Technologies at UNT during the Spring 2011 semester. The survey instrument was presented as a link with commercial SurveyMonkey. Reliability of all survey items was conducted as part of a pilot test with n = 34. Through factor analysis of the data, the instrument was reduced to 52 items because two items had low factor loading that were not a good measure of satisfaction.

Table 5

Learner-Technology Interaction Questions

Scale	Number	Question	*α*
Learner-Technology Interaction			.96
	46	Most difficulties I encounter when using computers, I can usually deal with.	
	47	I find working with computers very easy.	
	48	I am very unsure of my abilities to use computers.	
	49	I seem to have difficulties with most of the packages I have tried to use.	
	50	I enjoy working with computers.	
	51	I find that computers get in the way of learning.	
	52	Computers make me much more productive.	
	53	I often have difficulties when trying to learn how to use a new computer software package.	
	54	Most of the computer packages I have had experience with, have been easy to use	
	55	I am very confident in my abilities to use computers.	
	56	I find it difficult to get computers to do what I want them to.	
	57	At times I find working with computers very confusing.	
	58	I would rather that we did not have to learn how to use computers.	
	59	I usually find it easy to learn how to use a new software package.	
	60	I seem to waste a lot of time struggling with computers.	
	61	Using computers makes learning more interesting.	
	62	I always seem to have problems when trying to use computers.	
	63	Some computer software packages definitely make learning easier.	
	64	Computer jargon baffles me.	
	65	Computers are far too complicated for me.	
	66	Using computers are something I rarely enjoy.	
	67	Computers are good aids to learning.	
	68	Sometimes, when using a computer, things seem to happen and I don't know why.	
	69	As far as computers go, I don't consider myself to be very competent.	
	70	Computers help me to save a lot of time.	
	71	I find working with computers very frustrating.	
	72	I consider myself a skilled computer user.	
	73	When using computers I worry that I might press the wrong button and damage it.	

Removal of the two items, “I felt frustrated by the lack of feedback from the instructor” and “This online course did not meet my learning needs,” resulted in high factor loading with appropriate items loading within the construct.The final modified instrument included 6 items that measured learner-content interaction, 5 items that measured learner-instructor interaction, 8 items that measured learner-learner interaction, 5 items that measured general satisfaction, and 28 items that measured learner-technology interaction. Reliability for learner-content interaction was 0.836, learner-instructor interaction was 0.881, learner-learner interaction was 0.769, general satisfaction was 0.859, and learner-technology interaction was 0.922. Therefore, removal of the 2 items mentioned above resulted in valid and highly reliable data that could be used for this study which is concerned with measuring the outcome of student satisfaction.

Procedure

This study design was correlational. Online students completed the modified Online Satisfaction Survey. The Computer Self-Efficacy instrument developed by Cassidy and Eachus (2002) was used as part of this research study to measure learner-technology interaction.

Data Collection Procedures

A link to the survey instrument was distributed to each of the participants from the instructors’ online courses during the last 2 weeks of the 10-week Summer session, 2011. Official permission to conduct the study was based on guidelines set forth in the application received from the Institutional Review Board (IRB) at the University of North Texas. The Department of Learning Technologies offered 47-100% online courses in the 10-week Summer 2011 session. According to a review of the literature on Internet surveys, Schonlau, Fricker, and Elliot (2001) found that Web survey response rates ranged from 7 to 44 %. Today Web surveys have become more commonplace because they are far less time- consuming than other survey

approaches. An additional advantage is that this method avoids the expense of postage, printing, and interviewing costs (Schaefer & Dillman, 1998). Six demographic items were used to collect basic background information about the students for determining individual differences. The demographic questions were asked at the beginning of the survey to increase a higher response rate by offering "bonus" points toward the final course grade. In addition, in the previous research (Strachota, 2003), the demographic questions were placed at the beginning of the survey. Dillman (2000) and Couper (2000) noted that many online surveys suffer from low response rates or poor data quality for reasons including technical issues or confidentiality concerns. However, Frick, Bachtinger, and Reips (1999) stated the following:

> Asking participants for personal information early in the experiment would lead to drop-out as well as different answering behavior in questions that are likely to be influenced by social desirability. Participants' answers might be more strongly influenced by social norms, if they believe they could be identified. Or they might discontinue participation in the experiment if they realize that their behavior would force them to answer contrary to what is usually desired or accepted (p. 4).

Data for this study were collected through the online SurveyMonkey. The Online Satisfaction Survey was linked to the Blackboard announcement page. If online students took more than one online course and completed the survey more than once, only the first response was retained to avoid duplicate data. If graduate students completed the survey, they were excluded to ensure an undergraduate sample because this study was interested in 100 % online course taking undergraduate students. Survey questions 1 through 6 measured demographics; Items 7 through 14 measured the importance of online classes, Internet access, technical support, course introduction and tutorial, and computer versus face-to-face courses. Item 15 asked about

participation in the course discussion board. Items 16 through 19 asked unique questions regarding the discussion board. Specifically, Question 15 asked students if they participated in the discussion board in their online course. If students chose "required (used)" and "voluntary (used)," they marked Questions 16 to 19 to determine interaction between instructor and students in the online environment. If students chose "required (not used)," "voluntary (not used)," and "not required," they skipped to Item 20. For missing data on Items 16 to 19, listwise deletion was used to keep the largest sample sizes while counting for missing data at the variable level. Items 20 through 40 measured satisfaction and Items 46 through 73 measured learner-technology interaction. For the purpose of this study, Item 41 to 45 were not analyzed because these items were not related to this study.

This survey took between 15 to 20 minutes to complete. Respondents enrolled in at least one 100% online distance education course offered through the Department of Learning Technologies at UNT were asked to participate in an invitation distributed via e-mail during the 10-week Summer 2011 session. All students were encouraged to complete the survey. After the first survey was sent, if the respondent numbers were fewer than 40%, the researcher e-mailed a reminder link to the students in order to acquire more respondents for the survey. One week after the second reminder, an e-mail was sent to the instructor asking him or her to remind students to complete the survey. Respondents were given a total of 2 weeks from the invitation date to complete the survey. The e-mails contained information about the survey and a link to the questionnaire. Participants were instructed to answer questions in the context of the online course in which they were currently enrolled. Student responses were collected and stored electronically by the commercial SurveyMonkey tool and downloaded for analysis.

Data Analysis

By employing the Statistical Package for the Social Sciences (SPSS), descriptive analysis and multiple regression analysis were used to examine research questions. Descriptive statistics such as the mean and standard deviation explain the overall tendency regarding each construct - learner-content interaction, learner-instructor interaction, learner-learner interaction, learner-technology interaction, and general satisfaction. Factor analysis with varimax rotation was conducted on survey items according to each variable to determine if items continued to factor under the same given construct.

Multiple regression analysis was used to analyze the relationships between independent variables and the dependent variable. Each online class was too small in size to run multiple regression on each class (min $n = 1$, max $n = 12$). There were no differences expected between classes because all online courses were similar and because all participants were taking courses in the Department of Learning Technologies with the same environment. The diversity, age range, and background of students were similar. The format of each course was similar. For example, each course included a syllabus, content divided into learning modules, course assignment guidelines, a course calendar, and assignment evaluation that included feedback. In addition, online students submitted their assignments via an assignment dropbox, the discussion board, e-mail, and assessment comments which provided for instructor-learner interaction.

Multiple regression analysis was used to examine the relationship between the four independent variables and the dependent variable. In addition to tests for statistical significance, practical significance was evaluated with the multiple R^2, which reported the common variance between independent variables (learner-content interaction, learner-instructor interaction,

learner-learner interaction, learner-technology interaction) and dependent variable (general satisfaction) (Thompson, 2006).

It was hypothesized that the independent variables would have a positive impact on students' satisfaction. In the regression analysis, several statistical assumptions including nonlinearity, reliability of measurement, homoscedasticity, and normality needed to be addressed (Osborne & Waters, 2002). If the relationship between independent variables and the dependent variable was not linear, the results of the regression analyses underestimated the true relationship (Osborne & Waters, 2002; Pedhazur, 1997). This study examined residual plots to detect nonlinearity. Bivariate scatterplots between the dependent variable and the independent variables were examined to confirm linear relationships between variables. If the researcher fit a linear model to data which were nonlinearly related, predictions were likely to be seriously in error, especially when extrapolated beyond the range of the sample data. If data violated this assumption, a curvilinear transformation was performed.

Reliability of each construct was determined by testing Cronbach's alpha value. The reliability of the instrument, or the Cronbach's alpha, is the internal consistency or reliability coefficient for the required instrument. Cronbach's alpha scores range from zero through 1, with a coefficient closer to 1 indicating higher reliability. Reliability coefficients should be at least 0.70 or higher to be considered reliable for affective instruments (Wallen & Fraenkel, 2001). Unreliable measurement causes relationships to be underestimated, increasing the risk of Type II errors. Effect sizes of other variables can be overestimated if covariate is not reliably measured because the full effect of the covariate(s) would not be removed (Osborne & Waters, 2002). In the event of low reliability coefficients for the constructs measured, items might be deleted from each construct to increase scale reliability.

Homoscedasticity means that the variance of errors is the same across all levels of the independent variable. When the variance of errors differs at different values of the independent variable, heteroscedasticity is indicated (Osborne & Waters, 2002). For this study, the scatterplots of standardized residuals and standardized predicted values were examined to evaluate the homoscedasticity assumption. Violations of homoscedasticity made it difficult to gauge the true standard deviation of the forecast errors, usually resulting in confidence intervals that were too wide or too narrow (Osborne & Waters, 2002).

Regression assumed that variables have normal distributions. Non-normally distributed variables could be distorted relationships and significance tests. There was useful information to test this assumption: Visual inspection of data plots, skewness, and kurtosis gave this research about normality. If these assumptions were violated, this study would be inefficient or biased or misleading. Violations of normality compromised the estimation of coefficients and the calculation of confidence intervals. Outliers could be identified either by visual inspection of histograms or frequency distributions (Osborne & Waters, 2002).

Beta weights, structure coefficients, and commonality analysis were used to clarify the regression results in this study. A multiple regression was conducted in order to identify which variables were the strongest predictors by investigation of structure coefficients, with the largest coefficient indicating the strongest relationship with the dependent variable. Commonality analysis was the interpretation regarding the regression effects in this study, and software provided by Nimon (2010) was used to conduct the analyses. According to Nimon, beta weights and structure coefficients provide valuable insight regarding regression effects. By conducting a commonality analysis, the study identified which variables had the most common variance

(multicollinearity). The ones with high levels of "common variance" had high multicollinearity (Nimon, Lewis, Kane, & Haynes, 2008).

This study was assessed with multiple R^2 measure of effect size to find practical significance that looked at whether the difference was large enough to be of value in a practical sense. The multiple regression (R) was a strength of relationship index that indicated the degree to which the predicted scores were correlated with the observed scores for a sample. The significance test for R evaluated whether the population multiple correlation coefficient was equal to zero (Green & Salkind, 2006).

Summary

Drawn from an online satisfaction survey developed by Strachota (2003), and a computer self-efficacy instrument developed by Cassidy and Eachus (2002), this research investigated the impact of learner-content interaction, learner-instructor interaction, learner-learner interaction, and learner-technology interaction on the general satisfaction of students.

Descriptive analysis, reliability, and data analyses were used to examine research questions. Specifically, multiple regression analysis evaluated beta weights, structure coefficients, and a regression commonality analysis to further clarify the results. Detailed results and discussion of the statistical output of the data and implications are presented in Chapters 4 and 5.

CHAPTER 4

RESULTS

Overview

The purpose of this study was to examine whether there are significant relationships between the general satisfaction of students and learner-content interaction, learner-instructor interaction, learner-learner interaction, and learner-technology interaction in 100% online courses in the Department of Learning Technologies at the University of North Texas (UNT). This chapter presents an analysis of the survey responses from the Online Satisfaction Survey and the Computer Self-Efficacy Survey.

There were 310 responses from the students. This study did not use data from duplicate students and instructors. Excel was used to find duplicate students and instructors; therefore, 128 responses were deleted. An additional four cases were removed because they were outliers on seven or more variables. Nineteen responses were deleted because they did not answer all questions of interest, resulting in a total sample of 159 students. Three hundred ten surveys were completed from the 479 online student population for a response rate of 64.7%. According to Schonlau et al. (2001), a 64.7% response rate is considered to be satisfactory. Web survey response rates generally ranged from 7% to 44%.

This chapter presents descriptive statistics, reliability, and data analyses relevant to answering the research question: What is the relationship between the general satisfaction of students and learner-content interaction, learner-instructor interaction, learner-learner interaction, and learner-technology interaction?

Descriptive Statistics

Table 6 illustrates the demographics of the survey participants. Data were collected

during the last 2 weeks of the 10-week Summer 2011 session. Survey completers in the Department of Learning Technologies at UNT consisted of 80 males (50.30%) and 79 females (49.70%). The largest ethnic group among the survey participants was White (62.30%), and the second largest ethnic group was African American (19.50%). Other ethnic groups, such as Asian/Pacific Islander, Hispanic/Latino, American Indian or Alaska Native and Other, were present as small groups. Results of the survey were representative of the online population at UNT, with Whites over-represented and African Americans and other groups under-represented. The survey participants were taking online classes full-time (62.90%) and part-time (37.10%). The students were asked to provide information regarding their working status; 101 (63.50%) were working full-time while taking online classes, and 37 students (23.30%) were working part-time.

Table 7 illustrates the data reported when survey participants were asked how long they had been attending online classes; 18.90% reported as having attended online classes for 2 years but less than 3 years; 31.40% reported as having attended online classes for 3 years or more, and 30.20% had been attending class at UNT for 1 year, but less than 2 years.

When asked about the importance of taking online courses, 62.30% of the respondents indicated that it was very important; 20.80%, important; and 13.80%, somewhat important. Overall, 96.90% of the respondents indicated that taking online courses was somewhat important, important, or very important. When participants were asked concerning their primary computer access, 93.10% of the respondents indicated that it was at home.

Table 6

Demographics of Sample, n = 159

Demographic Information	*n*	%
Gender		
Male	80	50.30
Female	79	49.70
Ethnicity		
African American	31	19.50
Asian and Pacific Islander	6	3.80
White	99	62.30
Hispanic/ Latino	17	10.70
American Indian or Alaska Native	2	1.30
Other	4	2.50
Student Status		
Full Time	100	62.90
Part Time	59	37.10
Work Status		
Full Time	101	63.50
Part Time	37	23.30
Do Not Work	21	13.20

Online students who took courses were satisfied with their access to courses at UNT (98.20% agreed or strongly agreed) and reported that the technical support was adequate (94.40% agreed or strongly agreed). Finally, when asked about login instructions, design, and structure, 85.50% agreed or strongly agreed that they were satisfied.

Table 7

Survey Responses – Online Courses and Level of Support, n =159

Demographic Information	*n*	%
Attending Class at UNT		
Less Than A Year	31	19.50
1 Year, But Less Than 2 Years	48	30.20
2 Years, But Less than 3 Years	30	18.90
3 Years, Or More	50	31.40
Importance of Taking Online Courses		
Not Important	5	3.10
Somewhat Important	22	13.80
Important	33	20.80
Very Important	99	62.30
Primary Computer Access From		
Home	148	93.10
UNT Campus	4	2.50
Work	6	3.80
Other	1	.60
Access To this Course To UNT is Adequate		
Strongly Disagree	1	.60
Disagree	2	1.30
Agree	54	34.00
Strongly Agree	102	64.20
Technical Support is Adequate		
Strongly Disagree	2	1.30
Disagree	7	4.40
Agree	82	51.60
Strongly Agree	68	42.80
Login Instructions, Design, and Structure Are Easy to Use		
Strongly Disagree	5	3.10
Disagree	18	11.30
Agree	69	43.40
Strongly Agree	67	42.10

Table 8 presents the online course survey results regarding the Blackboard tutorial, course links, and course availability. When participants were asked if they had completed the Blackboard tutorial before taking their course, 62.90% responded that they had completed the

tutorial before taking the online course. Also, they had the visited course links before starting their online course (76.10%). Interestingly, when asked if online courses were not available would they like to take their course as a face-to-face course, 50.30% of the survey participants responded "Yes" and 49.70% responded "No".

Table 8

Online Survey of Blackboard Tutorial, Course Link, and Course Availability, n =159

Demographic Information	*n*	%
Did You Complete the Blackboard Tutorial Before Taking Course		
Yes	100	62.90
No	59	37.10
Did You Visit the Course Link Prior to Starting Your Online Course?		
Yes	121	76.10
No	38	23.90
If This Online Class Was Not Available, Would You Take This Course As a Face-to-Face Course?		
Yes	80	50.30
No	79	49.70

Statistical Assumptions

This study used multiple regression analysis. Statistical assumptions follow, including normal distribution of variables, an assumed linear relationship between independent and dependent variables, reliability of variables, and assumption of homoscedasticity (Osborne &Waters, 2002).

An initial scatter plot (see Figure 1) analysis was conducted to visually confirm the assumptions of a normal distribution and linear relationship between the variables, and no violations were found. As noted by Osborne and Waters (2002), the assumption of homoscedasticity was addressed. Homoscedasticity means that the variance of errors is the same across all levels of the independent variable. If the variance of error differs, homoscedasticity is

evident. This study addressed the assumption of homoscedasticity by visual examination of a scatterplot of standardized residuals and standardized predicted value via the SPSS readout analysis, and no violations were found.

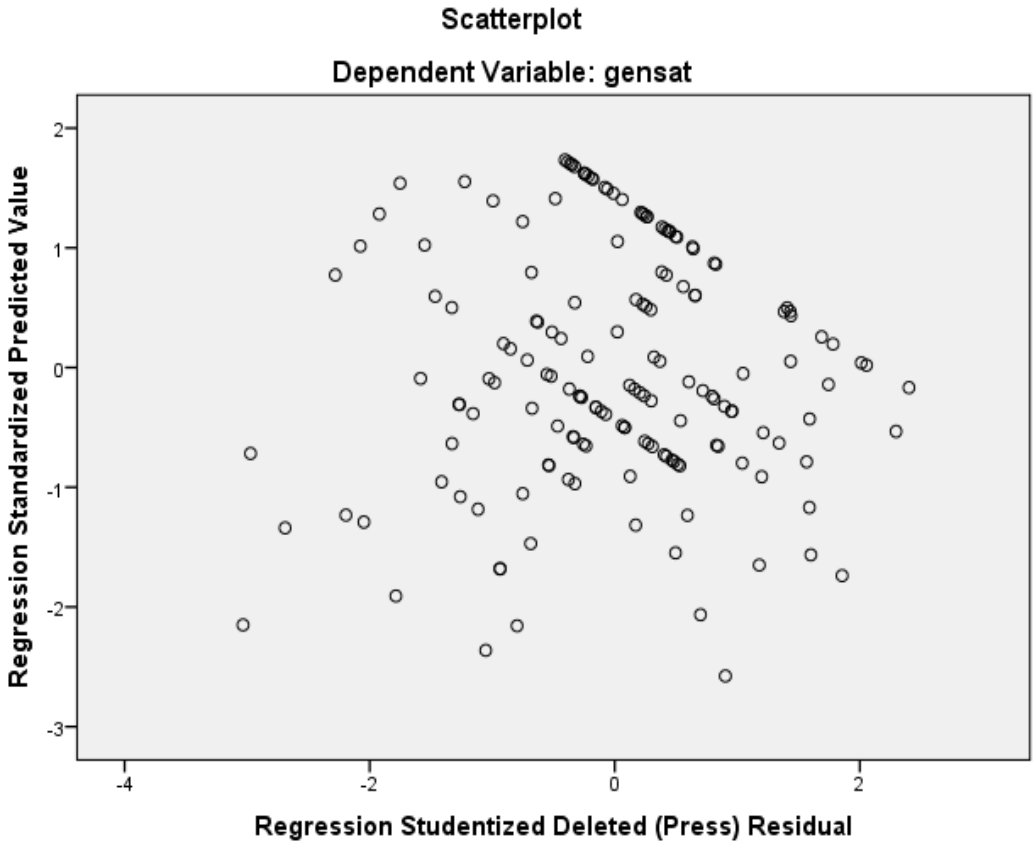

Figure 1. Scatterplot depicting relationship between regression variables.

Regarding the reliability assumption, a Cronbach's alpha was performed for reliability, and learner-content interaction = 0.88, learner-instructor interaction = 0.84, learner-learner interaction = 0.86, learner-technology interaction = 0.96, and general satisfaction = 0.86. According to Wallen and Fraenkel (2001), reliability should be at least 0.70 and preferably higher. The reliability measure moderately exceeds 0.70, and therefore the survey is considered to be highly reliable.

Data Analysis

For this study, a regression analysis was used to examine the relationship between the independent variables (learner-content interaction, learner-instructor interaction, learner-learner interaction, learner-technology interaction) and the dependent variable (general satisfaction). Regarding measures, Tables 9 and 10 provide descriptive and correlations relationship.

Table 9

Descriptive Statistics of Variables

	n	Min	Max	Mean	SD
LCont	159	10	24	19.61	2.92
LInst	159	7	20	15.43	2.91
LLearn	159	14	32	25.22	3.79
LTech	159	72	168	139.94	21.75
GenSat	159	8	20	16.31	3.09

Table 10

Correlation of Results

	LCont	LInst	LLearn	LTech	GenSat
LCont	.877				
LInst	.713**	.835			
LLearn	.657**	.617**	.856		
LTech	.262**	.186*	.230**	.958	
GenSat	.755**	.717**	.546**	.330**	.863

** Correlation is significant at the 0.01 level (2-tailed).

* Correlation is significant at the 0.05 level (2-tailed).

Regression results revealed that the R value recorded as 0.809; the R^2 value was 0.654; and results also revealed an adjusted R^2 of 0.645, meaning that 64% of the variance in general satisfaction can be explained by the independent variables (see Table 11). A statistically

significant ($p < .001$) relationship between the independent variables (learner-content interaction, learner-instructor interaction, learner-learner interaction, learner-technology interaction) and the dependent variable (general satisfaction) was established both visually and statistically.

Beta weights and structure coefficients were conducted in this study. Regression results reported that learner-content and learner-instructor interaction variables were the strongest predictors, as shown by beta weights and structure coefficients. Learner-learner interaction had a low beta weight (- 0.023) but had a decent structure coefficient (0.682).

Table 11

Regression Results for Dataset

Predictor	R	R^2	R^2_{adj}	β	p	*Unique*	*Common*	*Total*	r_s	*% of* R^2
	.809	.654	.645							
LC				.469	< .001	.089	.487	.576	.934	87.20
LI				.371	< .001	.062	.452	.515	.885	78.30
LL				-.023	.721	.001	.298	.298	.682	46.50
LT				.143	.004	.019	.091	.110	.409	16.70

Note: Unique = x's unique effect. *Common* = Σx's common effects. *Total = Unique + Common*. % of R^2 = *Total*/R^2. LC=Learner-Content Interaction, LI=Learner-Instructor Interaction, LL=Learner-Learner Interaction, LT=Learner-Technology Interaction.

Commonality coefficients for the learner-content interaction revealed a coefficient of 0.089 for the unique effects and a coefficient of 0.487 for the common effects (see Table 11). As unique effects revealed how much variance is exclusive to an observed variable, the 0.089 coefficient clarified that 9% of the variance in general satisfaction is due to the learner-content interaction. Additionally, the 0.487 commonality coefficients generated for the common effects between predictors in this study (see Table 11). Table 12 provides commonality analysis results for this study.

Commonality coefficients for the learner-instructor interaction revealed a coefficient of 0.062 for the unique effects and a coefficient of 0.452 for the common effects (see Table 11). As

unique effects revealed how much variance is exclusive to an observed variable, the 0.062 coefficient clarified that 6% of the variance in general satisfaction was due to the learner-instructor interaction. Additionally, the 0.452 commonality coefficients generated for the common effects between predictors in this study (see Table 11).

Commonality coefficients for the learner-learner interaction revealed a 0.000 for unique effects and a 0.298 for the common effects. As unique effects reveal how much variance is exclusive to an observed variable, this explains that less than 0.01% of the 65% of the variance in general satisfaction is attributed to the learner-learner interaction. In addition, the 0.298 commonality coefficient generated for the common effects between learner-learner interaction and general satisfaction clarified that there is an overlap between the variables on explain variance.

Commonality coefficients for the learner-technology interaction revealed a coefficient of 0.019 for the unique effects and a coefficient of 0.091 for the common effects. As unique effects revealed how much variance is exclusive to an observed variable, the 0.019 coefficient clarified that 2% of the variance in general satisfaction was due to the learner-technology interaction. Additionally, the 0.091 commonality coefficients generated for the common effects between predictors in this study.

Table 12

Commonality Analysis Results

Variables	Coefficient	% Total
Unique to LLearn	.000	.04
Unique to LCont	.089	13.66
Unique to LInst	.062	9.52
Unique to LTech	.019	2.90
Common to LLearn LCont	.010	1.59
Common to LLearn LInst	-.004	-.56
Common to LCont LInst	.161	24.53
Common to LLearn LTech	.000	-.04
Common to LCont LTech	.014	2.16
Common to LInst LTech	-.002	-.25
Common to LLearn LCont LInst	.226	34.50
Common to LLearn LCont LTech	.007	1.07
Common to LLearn LInst LTech	.002	.37
Common to LCont LInst LTech	.012	1.89
Common to LLearn LCont LInst LTech	.057	8.64
Total	.654	100.00

Summary

This study examined whether there was a significant relationship between the dependent variable and the independent variables in 100% online courses in the Department of Learning Technologies at the University of North Texas (UNT).

This chapter presented descriptive statistics, including demographics of the sample, survey responses, and an online survey of Blackboard tutorial, course links, and course availability. Also, this chapter showed whether predictors can explain online course satisfaction. Preliminary scatter plot graphing of the survey data implied that a liner relationship existed between predictors and general satisfaction. Regression analysis reflected that most predictors were positively correlated to general satisfaction. Among the predictors, learner-content and learner-instructor interaction variables were the strongest. The learner-technology interaction

variable was a moderate predictor. An examination of beta weights, structure coefficients, and commonality analysis was conducted and confirmed the regression analysis results.

Chapter 5 provides a summary of the study, a discussion of the research findings, and recommendations for future research.

CHAPTER 5

DISCUSSION, IMPLICATIONS, RECOMMENDATIONS, AND CONCLUSIONS

This chapter is a discussion of the data analyses presented in Chapter 4. This research was conducted to identify the underlying dimensions of learning interaction types, to examine the impact of learning interaction types on students' learning satisfaction, and to determine the overall magnitude of satisfaction according to the importance of interaction types.

Multiple regression analysis was used to examine the relationship between the four independent variables and the dependent variable. In addition to tests for statistical significance, practical significance was evaluated with the multiple R^2 , which reported the common variance between independent variables and the dependent variable. Beta weights, structure coefficients, and commonality analysis were implemented to clarify the regression results in this study.

Discussion of Findings

Impact of Learner-Content Interaction on Satisfaction

Regarding the results of the research, students were significantly satisfied with taking online courses. Through the use of regression analysis, learner-content interaction was found to have the most explained variance (87.20%) in predicting online satisfaction. Although all four interactions were necessary in an online environment, learner-content interaction was consistently identified as the most important construct throughout this study.

It was evident from the data that students enrolled at the University of North Texas (UNT) tend to have multiple responsibilities for school and work. Descriptive statistics identified that 62.90% of the online students who participated in this research study were full-time students while 63.50% worked full-time. Therefore, more than half of the students who participated in

this study had multiple responsibilities of school and work. Managing and balancing time for school and work can be difficult.

The time constraints of students require a high-quality course with high-quality course content. Online students can become frustrated when they do not understand the course requirements and content. Of those students who participated in this study, 96.90% felt the course they had taken was either important or very important. According to Higgins et al.(2002), interaction that is meaningful and high-quality helps learners become engaged in the content under study, as well as in their online learning environment. This finding supports the conclusions of Moore (1989), Schulman and Sims (1999), Cannings and Stager (1998), Tian (2001), Arsham (2002), Blignaut and Trollip (2003), and Curran (2008). This study supported that learner-content interaction focuses on the need for high-quality content for online learning, success, and career preparation. Therefore, quality content of interaction is critical to an online course.

Impact of Learner-Instructor Interaction on Satisfaction

Through the use of regression analysis, learner-instructor interaction was found to be the second most important construct in predicting online satisfaction. Of those students, 78.30% felt that learner-instructor interaction was an important criterion for online satisfaction. According to Thurmond and Wambach (2004), interaction between instructor and learner about online activities led to learning in an online learning environment. This finding supports the conclusion of Kearsley (2000), Mory (2003), Vonderwell (2003), Thurmond and Wambach (2004), Gilbert et al. (2007), and McVey (2008). Learner-instructor interaction was identified as the second most important criterion for a satisfying online learning experience. Results of this study show that students overall tended to be satisfied with learner-instructor interaction.

Impact of Learner-Learner Interaction on Satisfaction

Of those students who participated in this study, 46.50% felt that learner-learner interaction was important for their online course satisfaction. This study showed that students could be a vehicle for interaction and mimics the face-to-face environment, where students are often not forced to speak. Students in this research benefitted from vicarious interaction. According to Sutton (2000), vicarious interaction occurs when a passive student actively observes and processes the ongoing interactions between other students and the instructor but does not actively post any discussions. This study supports Sutton's view of the value of vicarious interaction as an option that instructors might consider for their online courses.

Impact of Learner-Technology Interaction on Satisfaction

Through the use of regression analysis, learner-technology interaction was found to be a significant construct in predicting online satisfaction. Learner-technology interaction accounted for approximately 16.70% of explained variance. For this study, learner-technology interaction refers to the technological skill level of the online learners. It is important that online learning students meet the demands and technological needs of the online environment so that they can focus on the content of the course rather than the technology. According to Mason and Bruning (2001), computer-based interaction can be used for the learners' learning styles and needs, an aim almost never attained in a traditional classroom. This finding supports the conclusions of Hillman et al. (1994), McIsaac and Gunawardena (1996), Ragoonaden and Bordeleau (2000), Mason & Bruning (2001), Palloff and Pratt (2001), Kesim and Agaoglu (2007), and Dziuban et al. (2007), whose studies of the effective use of technology have played an important role in the examination of the online learning environment.

This analysis supports the conclusion that three of the four constructs significantly contribute to the prediction for online learning satisfaction: learner-content, learner-instructor, and learner-technology. Learner-learner interaction did not significantly contribute to the prediction.

Implications for Teaching and Learning in Online Courses

This study was conducted to examine whether there was a significant relationship between the general satisfaction of students and learner-content interaction, learner-instructor interaction, learner-learner interaction, and learner-technology interaction in 100% online courses in the Department of Learning Technologies at UNT. Implications are needed to identify whether the learning outcome is as great in the online learning environment. The instructor should determine whether online course student satisfaction is based on the online course expectations and competencies.

Leaner-Content Interaction

This study found that high-quality content was identified as the most important variable for a satisfying online course experience. Therefore, adequate faculty support is needed in developing high-quality content. Institutions that offer online courses should have support systems including online content experts, curriculum specialists, and instructional designers. Faculty should be trained in how to develop and transfer information into an online environment. Also, faculty should learn how to create modules of information, how to search and critique, and how to create interactivity that may be dependent on specific software applications.

Because high-quality content is perceived by online students to be the most important factor for a satisfying online course, institutions using online learning should budget curriculum development and instructional design for faculty. As online learning grows and the number of

faculty members who teach online course increases, it is recommended that institutions realize the advantages of their experienced online faculty and establish faculty support and mentoring programs for new faculty who want to learn how to develop courses for an online learning environment. The practice guidelines are more detailed and focus on specific constructs that play a significant role in online learning. Best practice guidelines specific to learner-content interaction might include the following:

1. Comprehensive details within the syllabus - (a) course description, (b) identification of textbooks or supplemental resources materials, (c) schedule of learning activities and due dates, including assignments and online discussion requirements (Graham et al, 2000), (d) instructor contact information, (e) grading criteria for each learning activity, (f) attendance policy specific to course participation, (g) a statement regarding returning e-mail responses within a set timeframe, and (h) on-campus and virtual office hours.
2. Content delivered in a module format which incorporates chunking of small amounts of information that can be reinforced through web links (Moore et al., 2001).
3. Engaging students in application activities and encouraging active learning through a variety of suggested means such as: problem-based learning, case studies, online discussions, and project-based learning with teams (Bonk & Reynolds, 1997).

Learner-Instructor Interaction

This researcher encourages institutions that are planning to teach online courses to consider adopting the best practice guidelines to learner-instructor interaction which might include:

1. An initial e-mail correspondence or discussion board introduction from the instructor to the student requesting information regarding previous experience and coursework, technological skills and access issues, and learning preferences.
2. Responding to student through e-mail in a prompt manner.
3. Providing timely feedback regarding graded assignments.
4. Using the discussion board for communication exchanges regarding opened-ended questions focusing on problem solving and critical thinking.

Faculty should have ongoing communication with all online students in the course. Inactive students should be contacted to determine why they are not engaged in the course.

Results of this study show that online students overall tend to be quite satisfied with online interaction. Further, this study shows that institutions that establish best practice guidelines for learner-content interaction and learner-instructor interaction may be better equipped to meet the needs of both the online instructor and learner than those that do not.

Learner-Learner Interaction

This researcher recommends that appropriate interaction should be provided in the online course design to facilitate communications among students. This communication can be provided by means of e-mail, telephone, discussion board, online chats, or the use of smart-phone connection systems. Students might be required to have mandatory face-to-face meetings within their online course. The use of discussion groups might improve problem solving, critical thinking, and self-expression among students.

Learner-Technology Interaction

This study supports the recommendation that institutions with an online environment provide guidelines for online students regarding the demands of the online environment and

assist them in having the proper technology skills prior to taking online courses. Further recommendations include a college online course Web page that provides an orientation to taking online courses, suggestions for online course navigation, computer hardware and software basic requirements, and computer skills for the technology needs of the online environment.

Recommendations for Future Research

This study found that leaner-content interaction was the most important variable for online satisfaction. This study should be replicated in other colleges and universities to determine whether the findings are unique to the Department of Learning Technologies at UNT. This study might be expanded to include graduate students to see whether they differ in satisfaction from undergraduate students. A further study might be conducted to compare learner-content interaction in online courses with face-to-face courses. Additional research might focus on the faculty perceptions as to which constructs are the most important to a satisfying online experience.

Conclusion

In this chapter the researcher addressed the findings and recommendations based on the research question. Results of this study can assist future researchers in establishing a valid and reliable survey instrument and in developing a good online learning environment and recommendations for institutions offering online learning or considering developing online courses.

The two variables of learner-content interaction and learner-instructor interaction play a significant role in predicting online satisfaction. Quality content of interaction is critical to an online course. Minimally, the variable learner-technology can predict online satisfaction and is an important construct that must be considered when offering online courses.

While the purpose of the study was successfully achieved, recommendations for further research have been advanced. Finally, the researcher discussed the implications of high-quality teaching and learning as two important constructs for online courses.

APPENDIX A

A LETTER OF PERMISSION SURVEY INSTRUMENT

Subject: Re: ASKING YOUR PERMISSION FOR YOUR SURVEY INSTRUMENT
From: Elaine Strachota (strachoe@matc.edu)
To: [redacted]
Date: Wednesday, February 29, 2012 11:08 PM

Brian,
this is my permission to put my survey instrument in the appendix of your dissertation. You will reference me as the author. Best of luck to you.

Elaine Strachota, Ph.D, MS., OTR.
Milwaukee Area Technical College
700 W. State St.
Milwaukee, WI 53233
Occupational Therapy Assistant Faculty
& Fieldwork Coordinator
Liberal Arts & Sciences Faculty
414-297-7160
strachoe@matc.edu

>>> byungmun ahn 02/29/12 10:37 PM >>>
Hi, Dr. Strachota
this is Byungmun Ahn goes by Brian. You maybe remember me. you gave me your permission for your instrument for my dissertation.
I am getting very close to finish my paper.
Regarding graduate school of University of North Texas, they need another permission letter.
May I put your survey instrument in the appendix of my dissertation?
please let me know. I am going to let you know my results of research.
thank you.
Byungmun Brian Ahn
University of North Texas
ATPI

APPENDIX B

ORIGINAL SURVEY INSTRUMENT

Online Satisfaction Survey

(Filling out this survey indicates that I am at least 18 years old and I am giving my informed consent to be a participant in the survey.)

The distance learning department has recently developed a new satisfaction survey. We ask that every online student complete this survey so that you can give us feedback regarding your level of satisfaction and offer ideas as to how online delivery can be improved. Participation however is on a voluntary basis. This survey will take approximately 15-20 minutes to complete. Data collected will be used for research purposes and to improve the quality of our online program. Your responses are confidential. If you are enrolled in several online courses identify only one of the courses and then complete this survey relative to that specific course. Answer questions however specific to the course you have identified. Please answer each question by either typing in the answer or by clicking in the circle. Thank You.

Demographics

1. Student ID number: _____

2. Online course enrolled in : _____
(course number: Example: otasst - 131)

3. I am:
- ○ Male
- ○ Female

4. I am:
- ○ 18-25 Years Old
- ○ 26-35 Years Old
- ○ 36-45 Years Old
- ○ Older than 45

5. I am:
- African American
- Asian and Pacific Islander
- White
- Hispanic/Latino
- American Indian or Alaska Native
- Other

6. I am:
- single
- married

7. I have children:
- No
- Yes

8. [0] How Many

9. Student status:
- full-time
- part time

10. I work:
- full-time
- part-time
- do not work

11. I have been attending this college for ___ year(s).
- 1
- 2
- 3
- 4 or more

12. I have a previous degree:

- No
- Yes (Please select your level of education below.)

13. No Degree

14. I live _____ miles from the nearest MATC campus.

- 0-5 miles
- 6-10 miles
- 11-20 miles
- 21-30 miles
- 31-40 miles
- Over 40 miles

15. Out of State _____
(Name of state or country)

16. Zip Code: _____

Online Survey

17. I have successfully completed an online class before:

- No
- Yes

18. If yes, how many? 0

19. How important was taking this class to you?

- not important
- somewhat important
- important
- very important

20. Why did you take this class? (Example: Required Course, Elective, Personal Growth, etc.)

21. I am also enrolled in face-to-face class this semester:

- No
- Yes

22. My primary computer access was from:

- home
- MATC
- work
- library
- other

23. On the scale below: Was access to your course (via the Internet) to MATC adequate?

Very Good 4 3 2 1 Poor

24. On the scale below: Was technical support adequate (Helpdesk, Distance Learning, etc. for Log-in problems, Navigation, etc.)

Very Good 4 3 2 1 Poor - Did Not Use

25. Was CITRIX adequate for your online needs?

Very Good 4 3 2 1 Poor - Did Not Use

26. Were the login instructions given, course design and navigation structure easy to use and understand?

Very Good 4 3 2 1 Poor

27. Did you attend an on-campus orientation on the Blackboard Learning Management system?

Yes No

28. Did you visit the MATC Online Orientation Web Page prior to starting you online course?

29. If your online class was not available, would you take this course as a face-to-face course this semester?

- Yes
- No

30. The online course that I am enrolled in has a discussion or chat group:

- No
- Yes

31. Participation in the discussion or chat group was:

- Discussion was not used
- voluntary
- required

Discussion Survey

If you answered Yes to having a discussion or chat group, please complete the following questions. If you answered No please skip to the Satisfaction Survey.

32. In this class the online discussion board provided opportunity for problem solving with other students	Strongly Disagree	Disagree	Agree	Strongly Agree
33. In this class the online discussion board provided opportunity for critical thinking with other students	Strongly Disagree	Disagree	Agree	Strongly Agree

34. The discussion board in this course was a waste of time	○ Strongly Disagree	○ Disagree	○ Agree	○ Strongly Agree
35. In this class the teacher was an active member of the discussion group offering direction to posted comments	○ Strongly Disagree	○ Disagree	○ Agree	○ Strongly Agree

Satisfaction Survey

For each of the following mark: Strongly Disagree, Disagree, Agree, Strongly Agree.

36. The courses documents – lesson or lecture notes used in this class facilitated my learning	○ Strongly Disagree	○ Disagree	○ Agree	○ Strongly Agree
37. I received timely feedback (within 24 –48 hours) from my teacher	○ Strongly Disagree	○ Disagree	○ Agree	○ Strongly Agree
38. The websites that were linked to this course facilitated my learning	○ Strongly Disagree	○ Disagree	○ Agree	○ Strongly Agree

39. I felt frustrated by the lack of feedback from my teacher	○ Strongly Disagree	○ Disagree	○ Agree	○ Strongly Agree
40. The assignments and/or projects in this course facilitated my learning	○ Strongly Disagree	○ Disagree	○ Agree	○ Strongly Agree
41. I was able to get individualized attention from my teacher when needed	○ Strongly Disagree	○ Disagree	○ Agree	○ Strongly Agree
42. This course created a sense of community among students	○ Strongly Disagree	○ Disagree	○ Agree	○ Strongly Agree
43. In this class I was able to share my viewpoint with fellow students	○ Strongly Disagree	○ Disagree	○ Agree	○ Strongly Agree
44. I am very satisfied with this online course	○ Strongly Disagree	○ Disagree	○ Agree	○ Strongly Agree
45. Preparation for quiz/exams in this course facilitated my learning	○ Strongly Disagree	○ Disagree	○ Agree	○ Strongly Agree
46. In this class the teacher functioned as the facilitator of the course by continuously encouraging communication	○ Strongly Disagree	○ Disagree	○ Agree	○ Strongly Agree

47. In this class I was able to ask for clarification from a fellow student when needed	○ Strongly Disagree	○ Disagree	○ Agree	○ Strongly Agree
48. I would like to take another online course	○ Strongly Disagree	○ Disagree	○ Agree	○ Strongly Agree
49. The learning activities in this course required application of problem solving skills which facilitated my learning	○ Strongly Disagree	○ Disagree	○ Agree	○ Strongly Agree
50. I received timely (within 24 - 48 hours) feedback from students in the class	○ Strongly Disagree	○ Disagree	○ Agree	○ Strongly Agree
51. I feel this online class experience has helped improve my written communications skills	○ Strongly Disagree	○ Disagree	○ Agree	○ Strongly Agree
52. The learning activities in this course required critical thinking which facilitated my learning	○ Strongly Disagree	○ Disagree	○ Agree	○ Strongly Agree
53. This online course encouraged students to discuss ideas and concepts covered with other students	○ Strongly Disagree	○ Disagree	○ Agree	○ Strongly Agree

54. This online course did not meet my learning needs	○ Strongly Disagree	○ Disagree	○ Agree	○ Strongly Agree
55. Although I could not see the teacher in this class, I always felt his/her presence	○ Strongly Disagree	○ Disagree	○ Agree	○ Strongly Agree
56. I would recommend this course to others	○ Strongly Disagree	○ Disagree	○ Agree	○ Strongly Agree
57. I learned as much in this online course as compared to a face-to-face course	○ Strongly Disagree	○ Disagree	○ Agree	○ Strongly Agree
58. I feel online courses are as effective as face-to-face courses	○ Strongly Disagree	○ Disagree	○ Agree	○ Strongly Agree

Recognizing that all of the below mentioned items are important, identify what you feel is the number one criteria for a satisfying online experience: (rank order these items: 1= most important, 2= moderately important, 3 = least important, and finally please comment)

59. ____ course content, design and structure
60. ____ teacher-student interaction
61. ____ student-student interaction

Comment why you ranked this item as #1

62.

Computer User Survey

63. Experience with computers

- ○ none
- ○ very limited
- ○ some experience
- ○ quite a lot
- ○ extensive

Please indicate the computer software packages you have used (check all that apply)

64. ☐ Word processing software packages
65. ☐ Spreadsheets
66. ☐ Databases
67. ☐ Presentation packages (PowerPoint, Astound, etc.)
68. ☐ Statistics packages
69. ☐ Desktop publishing
70. ☐ Multimedia

71. Have you taken any computer courses?

- ○ yes
- ○ no

Below you will find a number of statements concerning how you might feel about computers. Please indicate the strength of your agreement/disagreement with the statements using the four point scale below where 1 = strong disagreement and 4 = strong agreement with a particular statement.

Strongly Disagree 1 2 3 4 Strongly Agree

You can indicate how you feel by choosing a number between 1 and 4. Click on the button which most closely represents how much you agree or disagree with the statement. There are no 'correct' responses, it is your own views that are important.

72. Most difficulties I encounter when using computers, I can usually deal with.
Strongly Disagree ○ 1 ○ 2 ○ 3 ○ 4 Strongly Agree
73. I find working with computers very easy.
Strongly Disagree ○ 1 ○ 2 ○ 3 ○ 4 Strongly Agree
74. I am very unsure of my abilities to use computers.
Strongly Disagree ○ 1 ○ 2 ○ 3 ○ 4 Strongly Agree
75. I enjoy working with computers.
Strongly Disagree ○ 1 ○ 2 ○ 3 ○ 4 Strongly Agree
76. Computers make me much more productive.
Strongly Disagree ○ 1 ○ 2 ○ 3 ○ 4 Strongly Agree
77. I often have difficulties when trying to learn how to use a new computer software package.
Strongly Disagree ○ 1 ○ 2 ○ 3 ○ 4 Strongly Agree
78. I am very confident in my abilities to use computers.
Strongly Disagree ○ 1 ○ 2 ○ 3 ○ 4 Strongly Agree
79. At times I find working with computers very confusing.
Strongly Disagree ○ 1 ○ 2 ○ 3 ○ 4 Strongly Agree
80. Using computers makes learning more interesting.
Strongly Disagree ○ 1 ○ 2 ○ 3 ○ 4 Strongly Agree
81. I always seem to have problems when trying to use computers.
Strongly Disagree ○ 1 ○ 2 ○ 3 ○ 4 Strongly Agree
82. Some computer software packages definitely make learning easier.
Strongly Disagree ○ 1 ○ 2 ○ 3 ○ 4 Strongly Agree
83. Computers are good aids to learning.
Strongly Disagree ○ 1 ○ 2 ○ 3 ○ 4 Strongly Agree

84. I find working with computers very frustrating.
Strongly Disagree ○ 1 ○ 2 ○ 3 ○ 4 Strongly Agree
85. I consider myself a skilled computer user.
Strongly Disagree ○ 1 ○ 2 ○ 3 ○ 4 Strongly Agree
86. When using computers I worry that I might press the wrong button and damage it.
Strongly Disagree ○ 1 ○ 2 ○ 3 ○ 4 Strongly Agree

87. How important do you feel computer skills are when taking an online course?

88. What level of computer skills do you feel are necessary?

89. What do you feel are the advantages of online learning?

90. What do you feel are the disadvantages of online learning?

Submit Query | Reset

APPENDIX C

MODIFIED SURVEY INSTRUMENT REPRODUCED WITH PERMISSION FROM ELAINE STRACHOTA

Online Satisfaction Survey

You are being chosen as a subject in a satisfaction survey being conducted in the Department of Learning Technologies. I would like you to complete this survey so that you can give me feedback regarding your level of satisfaction with this online course. This survey will take 15-20 minutes to complete. Data collected will be used for my doctoral dissertation. Your responses will be confidential and **NOT** given to your instructor. If you are taking more than one online LTEC/ATTD/CECS course this semester, you will be asked to complete a survey for EACH instructor. PLEASE NOTE YOU WILL NEED TO COMPLETE THE LEARNER-TECHNOLOGY (QUESTIONS 46 -73) ONLY ONCE.

To receive your "BONUS" points you must provide all the information requested (I need this information to notify your instructor for you to receive your "BONUS POINTS"). Thank you.

Course prefix_____ Course number_____ Instructor name_____ Your name_____

Demographics

1. How many online courses have you taken (including this semester)?
   _____ course(s).

2. I am:
   - Male
   - Female

3. I am:
   - African American
   - Asian and Pacific Islander
   - White
   - Hispanic/Latino
   - American Indian or Alaska Native
   - Other

4. Student status:
   - Full-time (undergraduate -12 hours or more; graduate – 9 hours or more)
   - Part time

5. I work:
   - Full-time
   - Part time
   - Do not work

6. I have been attending classes at UNT for :
    - Less than a year
    - 1 year, but less than 2 years
    - 2 year, but less than 3 years
    - 3 year, or more

Online Survey

7. Taking online courses are important for me.
    - Not important
    - Somewhat important
    - Important
    - Very important

8. My primary computer access is from:
    - Home
    - UNT campus
    - Work
    - Public Library
    - Other (i.e., Starbucks, bookstore), please specify_____.

9. Access to this course (via the Internet) to UNT is adequate?
   Strongly Disagree ( ) 1 ( ) 2 ( ) 3 ( ) 4 Strongly agree

10. Technical support is adequate (Helpdesk, Charlie Andrews, your instructor).
    Strongly Disagree ( ) 1 ( ) 2 ( ) 3 ( ) 4 Strongly agree

11. Login instructions, course design and navigation structure are easy to use and understand?
    Strongly Disagree ( ) 1 ( ) 2 ( ) 3 ( ) 4 Strongly agree

12. Did you complete the Blackboard tutorial before taking your first course?
    - Yes
    - No

13. Did you visit the course link prior to starting your online course?
    - Yes
    - No

14. If this online class was not available, would you take this course as a face-to-face course?

- Yes
- No

15. Participation in the discussion board in this course is:
    - Required (used)
    - Required (not used)
    - Voluntary(used)
    - Voluntary(not used)
    - Not required

Discussion Survey

If you answered YES (Required and Voluntary) to having a discussion board in question 15 above, please complete the following questions. If you answered NO (Required (not used), Voluntary (not used), and Not Required) please skip to the Satisfaction Survey, question 20 to 45. For each of the following mark: Strongly Disagree, Disagree, Agree, Strongly Agree.

16. In this class the online discussion board provides an opportunity for problem solving with other students.
    Strongly Disagree ( ) 1 Disagree ( ) 2 Agree ( ) 3 Strongly Agree ( ) 4

17. In this class the online discussion board provides an opportunity for critical thinking with other students.
    Strongly Disagree ( ) 1 Disagree ( ) 2 Agree ( ) 3 Strongly Agree ( ) 4

18. The discussion board in this course is a waste time.
    Strongly Disagree ( ) 1 Disagree ( ) 2 Agree ( ) 3 Strongly Agree ( ) 4

19. In this class, the instructor is an active member of the discussion group offering direction to posted comments.
    Strongly Disagree ( ) 1 Disagree ( ) 2 Agree ( ) 3 Strongly Agree ( ) 4

Satisfaction Survey

For each of the following mark: Strongly Disagree, Disagree, Agree, Strongly Agree as written level of agreement.

20. The courses documents – lessons or modules notes used in this class facilitated my learning.
    Strongly Disagree ( ) 1 Disagree ( ) 2 Agree ( ) 3 Strongly Agree ( ) 4

21. I received timely feedback (within 24 – 48 hours) from my instructor.
    Strongly Disagree ( ) 1 Disagree ( ) 2 Agree ( ) 3 Strongly Agree ( ) 4

22. The websites that are linked to this course facilitated my learning.
    Strongly Disagree ( ) 1 Disagree ( ) 2 Agree ( ) 3 Strongly Agree ( ) 4

23. The assignments and/or projects in this course facilitated my learning.
    Strongly Disagree ( ) 1 Disagree ( ) 2 Agree ( ) 3 Strongly Agree ( ) 4

24. I was able get individualized attention from my instructor when needed.
    Strongly Disagree ( ) 1 Disagree ( ) 2 Agree ( ) 3 Strongly Agree ( ) 4

25. This course created a sense of community among students.
    Strongly Disagree ( ) 1 Disagree ( ) 2 Agree ( ) 3 Strongly Agree ( ) 4

26. In this class I was able to share my viewpoint with fellow students.
    Strongly Disagree ( ) 1 Disagree ( ) 2 Agree ( ) 3 Strongly Agree ( ) 4

27. I am very satisfied with this online course.
    Strongly Disagree ( ) 1 Disagree ( ) 2 Agree ( ) 3 Strongly Agree ( ) 4

28. Preparation for quiz/exams in this course facilitated my learning.
    Strongly Disagree ( ) 1 Disagree ( ) 2 Agree ( ) 3 Strongly Agree ( ) 4

29. In this class the instructor functioned as the facilitator of the course by continuously encouraging communication.
    Strongly Disagree ( ) 1 Disagree ( ) 2 Agree ( ) 3 Strongly Agree ( ) 4

30. In this class I was able to ask for clarification from a fellow student when needed.
    Strongly Disagree ( ) 1 Disagree ( ) 2 Agree ( ) 3 Strongly Agree ( ) 4

31. I would like to take another online course.
    Strongly Disagree ( ) 1 Disagree ( ) 2 Agree ( ) 3 Strongly Agree ( ) 4

32. The learning activities in this course required application of problem solving skills which facilitated my learning.

Strongly Disagree ( ) 1 Disagree ( ) 2 Agree ( ) 3 Strongly Agree ( ) 4

33. I received timely (within 24 – 48 hours) feedback from students in the class.
    Strongly Disagree ( ) 1 Disagree ( ) 2 Agree ( ) 3 Strongly Agree ( ) 4

34. I feel this online class experience has helped improve my written communication skills.
    Strongly Disagree ( ) 1 Disagree ( ) 2 Agree ( ) 3 Strongly agree ( ) 4

35. The learning activities in this course required critical thinking which facilitated my learning.
    Strongly Disagree ( ) 1 Disagree ( ) 2 Agree ( ) 3 Strongly Agree ( ) 4

36. This online course encouraged students to discuss ideas and concepts covered with other students.
    Strongly Disagree ( ) 1 Disagree ( ) 2 Agree ( ) 3 Strongly Agree ( ) 4

37. Although I could not see the instructor in this class, I always felt their presence.
    Strongly Disagree ( ) 1 Disagree ( ) 2 Agree ( ) 3 Strongly Agree ( ) 4

38. I would recommend this course to others.
    Strongly Disagree ( ) 1 Disagree ( ) 2 Agree ( ) 3 Strongly Agree ( ) 4

39. I learned as much in this online course as compared to a face-to-face course.
    Strongly Disagree ( ) 1 Disagree ( ) 2 Agree ( ) 3 Strongly Agree ( ) 4

40. I feel online courses are as effective as face-to-face courses.
    Strongly Disagree ( ) 1 Disagree ( ) 2 Agree ( ) 3 Strongly Agree ( ) 4

Recognizing that all of the below mentioned items are important, identify what you feel is the number one criteria for a satisfying online experience: (rank order these items: 1 = most important, 2 = moderately important, 3 = least important)

41. Learner-content interaction
    ( ) 1 ( ) 2 ( ) 3
42. Learner-instructor interaction
    ( ) 1 ( ) 2 ( ) 3
43. Learner-learner interaction
    ( ) 1 ( ) 2 ( ) 3
44. Learner-technology interaction
    ( ) 1 ( ) 2 ( ) 3

45. General satisfaction
( ) 1 ( ) 2 ( ) 3

Learner-Technology

NOTE: IF YOU ARE TAKING MORE THAN ONE ONLINE LTEC/ATTD/CECS COURSE THIS SEMESTER, PLEASE COMPLETE THIS SECTION ONLY ONCE.
Below you will find a number of statements concerning how you might feel about computers. Please indicate the strength of your agreement or disagreement with the statements using the six point scale below. Strongly Disagree, Very Disagree, Somewhat Disagree, Some Agree, Very Agree, Strongly Agree

Click on the button which most closely represents how much you agree or disagree with the statement. There are no 'correct' responses. It is your own views that are important.

46. Most difficulties I encounter when using computers, I can usually deal with.
Strongly Disagree ( ) 1
Very Disagree ( ) 2
Somewhat Disagree ( ) 3
Somewhat Agree ( ) 4
Very Agree ( ) 5
Strongly Agree ( ) 6

47. I find working with computers very easy.
Strongly Disagree ( ) 1
Very Disagree ( ) 2
Somewhat Disagree ( ) 3
Somewhat Agree ( ) 4
Very Agree ( ) 5
Strongly Agree ( ) 6

48. I am very unsure of my abilities to use computers.
Strongly Disagree ( ) 1
Very Disagree ( ) 2
Somewhat Disagree ( ) 3
Somewhat Agree ( ) 4
Very Agree ( ) 5
Strongly Agree ( ) 6

49. I seem to have difficulties with most of the packages I have tried to use.

Strongly Disagree ( ) 1
Very Disagree ( ) 2
Somewhat Disagree ( ) 3
Somewhat Agree ( ) 4
Very Agree ( ) 5
Strongly Agree ( ) 6

50. I enjoy working with computers.
Strongly Disagree ( ) 1
Very Disagree ( ) 2
Somewhat Disagree ( ) 3
Somewhat Agree ( ) 4
Very Agree ( ) 5
Strongly Agree ( ) 6

51. I find that computers get in the way of learning.
Strongly Disagree ( ) 1
Very Disagree ( ) 2
Somewhat Disagree ( ) 3
Somewhat Agree ( ) 4
Very Agree ( ) 5
Strongly Agree ( ) 6

52. Computers make me much more productive.
Strongly Disagree ( ) 1
Very Disagree ( ) 2
Somewhat Disagree ( ) 3
Somewhat Agree ( ) 4
Very Agree ( ) 5
Strongly Agree ( ) 6

53. I often have difficulties when trying to learn how to use a new computer software package.
Strongly Disagree ( ) 1
Very Disagree ( ) 2
Somewhat Disagree ( ) 3
Somewhat Agree ( ) 4
Very Agree ( ) 5
Strongly Agree ( ) 6

54. Most of the computer packages I have had experience with, have been easy to use.
    Strongly Disagree ( ) 1
    Very Disagree ( ) 2
    Somewhat Disagree ( ) 3
    Somewhat Agree ( ) 4
    Very Agree ( ) 5
    Strongly Agree ( ) 6

55. I am very confident in my abilities to use computers.
    Strongly Disagree ( ) 1
    Very Disagree ( ) 2
    Somewhat Disagree ( ) 3
    Somewhat Agree ( ) 4
    Very Agree ( ) 5
    Strongly Agree ( ) 6

56. I find it difficult to get computers to do what I want them to.
    Strongly Disagree ( ) 1
    Very Disagree ( ) 2
    Somewhat Disagree ( ) 3
    Somewhat Agree ( ) 4
    Very Agree ( ) 5
    Strongly Agree ( ) 6

57. At times I find working with computers very confusing.
    Strongly Disagree ( ) 1
    Very Disagree ( ) 2
    Somewhat Disagree ( ) 3
    Somewhat Agree ( ) 4
    Very Agree ( ) 5
    Strongly Agree ( ) 6

58. I would rather that we did not have to learn how to use computers.
    Strongly Disagree ( ) 1
    Very Disagree ( ) 2
    Somewhat Disagree ( ) 3
    Somewhat Agree ( ) 4
    Very Agree ( ) 5
    Strongly Agree ( ) 6

59. I usually find it easy to learn how to use a new software package.
Strongly Disagree ( ) 1
Very Disagree ( ) 2
Somewhat Disagree ( ) 3
Somewhat Agree ( ) 4
Very Agree ( ) 5
Strongly Agree ( ) 6

60. I seem to waste a lot of time struggling with computers.
Strongly Disagree ( ) 1
Very Disagree ( ) 2
Somewhat Disagree ( ) 3
Somewhat Agree ( ) 4
Very Agree ( ) 5
Strongly Agree ( ) 6

61. Using computers makes learning more interesting.
Strongly Disagree ( ) 1
Very Disagree ( ) 2
Somewhat Disagree ( ) 3
Somewhat Agree ( ) 4
Very Agree ( ) 5
Strongly Agree ( ) 6

62. I always seem to have problems when trying to use computers.
Strongly Disagree ( ) 1
Very Disagree ( ) 2
Somewhat Disagree ( ) 3
Somewhat Agree ( ) 4
Very Agree ( ) 5
Strongly Agree ( ) 6

63. Some computer software packages definitely make learning easier.
Strongly Disagree ( ) 1
Very Disagree ( ) 2
Somewhat Disagree ( ) 3
Somewhat Agree ( ) 4
Very Agree ( ) 5
Strongly Agree ( ) 6

64. Computer jargon baffles me.
Strongly Disagree ( ) 1
Very Disagree ( ) 2
Somewhat Disagree ( ) 3
Somewhat Agree ( ) 4
Very Agree ( ) 5
Strongly Agree ( ) 6

65. Computers are far too complicated for me.
Strongly Disagree ( ) 1
Very Disagree ( ) 2
Somewhat Disagree ( ) 3
Somewhat Agree ( ) 4
Very Agree ( ) 5
Strongly Agree ( ) 6

66. Using computers are something I rarely enjoy.
Strongly Disagree ( ) 1
Very Disagree ( ) 2
Somewhat Disagree ( ) 3
Somewhat Agree ( ) 4
Very Agree ( ) 5
Strongly Agree ( ) 6

67. Computers are good aids to learning.
Strongly Disagree ( ) 1
Very Disagree ( ) 2
Somewhat Disagree ( ) 3
Somewhat Agree ( ) 4
Very Agree ( ) 5
Strongly Agree ( ) 6

68. Sometimes, when using a computer, things seem to happen and I don't know why.
Strongly Disagree ( ) 1
Very Disagree ( ) 2
Somewhat Disagree ( ) 3
Somewhat Agree ( ) 4
Very Agree ( ) 5
Strongly Agree ( ) 6

69. As far as computers go, I don't consider myself to be very competent.
    Strongly Disagree ( ) 1
    Very Disagree ( ) 2
    Somewhat Disagree ( ) 3
    Somewhat Agree ( ) 4
    Very Agree ( ) 5
    Strongly Agree ( ) 6

70. Computers help me to save a lot of time.
    Strongly Disagree ( ) 1
    Very Disagree ( ) 2
    Somewhat Disagree ( ) 3
    Somewhat Agree ( ) 4
    Very Agree ( ) 5
    Strongly Agree ( ) 6

71. I find working with computers very frustrating.
    Strongly Disagree ( ) 1
    Very Disagree ( ) 2
    Somewhat Disagree ( ) 3
    Somewhat Agree ( ) 4
    Very Agree ( ) 5
    Strongly Agree ( ) 6

72. I consider myself a skilled computer user.
    Strongly Disagree ( ) 1
    Very Disagree ( ) 2
    Somewhat Disagree ( ) 3
    Somewhat Agree ( ) 4
    Very Agree ( ) 5
    Strongly Agree ( ) 6

73. When using computers I worry that I might press the wrong button and damage it.
    Strongly Disagree ( ) 1
    Very Disagree ( ) 2
    Somewhat Disagree ( ) 3
    Somewhat Agree ( ) 4
    Very Agree ( ) 5
    Strongly Agree ( ) 6

APPENDIX D

COMPUTER USER SELF-EFFICACY SURVEY INSTRUMENT

Computer User Self-Efficacy Survey

The purpose of this questionnaire is to examine attitudes toward the use of computers. The questionnaire is divided into two parts. In Part 1 you are asked to provide some basic background information about yourself and your experience of computers, if any. Part 2 aims to elicit more detailed information by asking you to indicate the extent to which you, personally, agree or disagree with the statements provided.

Part 1:

Your Name: _____

Your Age: _____

Your sex: □M □F

Experience with computers:

□ none

□ very limited

□ some experience

□ quite a lot

□ extensive

Please indicate (tick) the computer packages (software) you have used

□ Wordprocessing packages

□ Spreadsheets

□ Databases

□ Presentation packages (e.g., Harvard Graphics, Coreldraw)

□ Statistics packages

□ Desktop Publishing

□ Multimedia

Other (specify) _____

Do you own a computer?

□Yes □No

Have you ever attended a computer-training course?

□Yes □No

100

Part 2:

Below you will find a number of statements concerning how you might feel about computers. Please indicate the strength of your agreement/disagreement with the statements using the 6-point scale shown below. Tick the box (i.e., between 1 and 6) that most closely represents how much you agree or disagree with the statement. There are no *correct* responses, it is your own view that are important.

1. Most difficulties I encounter when using computers, I can usually deal with.

strongly disagree □ 1 □ 2 □ 3 □ 4 □ 5 □ 6 strongly agree

2. I find working with computers very easy.

strongly disagree □ 1 □ 2 □ 3 □ 4 □ 5 □ 6 strongly agree

3. I am very unsure of my abilities to use computers.

strongly disagree □ 1 □ 2 □ 3 □ 4 □ 5 □ 6 strongly agree

4. I seem to have difficulties with most of the packages I have tried to use.

strongly disagree □ 1 □ 2 □ 3 □ 4 □ 5 □ 6 strongly agree

5. Computers frighten me.

strongly disagree □ 1 □ 2 □ 3 □ 4 □ 5 □ 6 strongly agree

6. I enjoy working with computers.

strongly disagree □ 1 □ 2 □ 3 □ 4 □ 5 □ 6 strongly agree

7. I find that computers get in the way of learning.

strongly disagree □ 1 □ 2 □ 3 □ 4 □ 5 □ 6 strongly agree

8. DOS-based computer packages don't cause many problems for me.

strongly disagree □ 1 □ 2 □ 3 □ 4 □ 5 □ 6 strongly agree

9. Computers make me much more productive.

strongly disagree □ 1 □ 2 □ 3 □ 4 □ 5 □ 6 strongly agree

10. I often have difficulties when trying to learn how to use a new computer package.

strongly disagree □ 1 □ 2 □ 3 □ 4 □ 5 □ 6 strongly agree

11. Most of the computer packages I have experience with, have been easy to use.

strongly disagree □ 1 □ 2 □ 3 □ 4 □ 5 □ 6 strongly agree

12. I am very confident in my abilities to make use of computers.

strongly disagree □ 1 □ 2 □ 3 □ 4 □ 5 □ 6 strongly agree

13. I find it difficult to get computers to do what I want them to.

strongly disagree □ 1 □ 2 □ 3 □ 4 □ 5 □ 6 strongly agree

101

14. At times I find working with computers very confusing.

strongly disagree □ 1 □ 2 □ 3 □ 4 □ 5 □ 6 strongly agree

15. I would rather that we did not have to learn how to use computers.

strongly disagree □ 1 □ 2 □ 3 □ 4 □ 5 □ 6 strongly agree

16. I usually find it easy to learn how to use a new software package.

strongly disagree □ 1 □ 2 □ 3 □ 4 □ 5 □ 6 strongly agree

17. I seem to waste a lot of time struggling with computers.

strongly disagree □ 1 □ 2 □ 3 □ 4 □ 5 □ 6 strongly agree

18. Using computers make learning more interesting.

strongly disagree □ 1 □ 2 □ 3 □ 4 □ 5 □ 6 strongly agree

19. I always seem to have problems when trying to use computers.

strongly disagree □ 1 □ 2 □ 3 □ 4 □ 5 □ 6 strongly agree

20. Some computer packages definitely make learning easier.

strongly disagree □ 1 □ 2 □ 3 □ 4 □ 5 □ 6 strongly agree

21. Computer jargon baffles me.

strongly disagree □ 1 □ 2 □ 3 □ 4 □ 5 □ 6 strongly agree

22. Computers are far too complicated for me.

strongly disagree □ 1 □ 2 □ 3 □ 4 □ 5 □ 6 strongly agree

23. Using computers is something I rarely enjoy.

strongly disagree □ 1 □ 2 □ 3 □ 4 □ 5 □ 6 strongly agree

24. Computers are good aids to learning.

strongly disagree □ 1 □ 2 □ 3 □ 4 □ 5 □ 6 strongly agree

25. Sometimes, when using a computer, things seem to happen and I don't know why.

strongly disagree □ 1 □ 2 □ 3 □ 4 □ 5 □ 6 strongly agree

26. As far as computers go, I don't consider myself to be very competent.

strongly disagree □ 1 □ 2 □ 3 □ 4 □ 5 □ 6 strongly agree

27. Computers help me to save a lot of time.

strongly disagree □ 1 □ 2 □ 3 □ 4 □ 5 □ 6 strongly agree

28. I find working with computers very frustrating.

strongly disagree □ 1 □ 2 □ 3 □ 4 □ 5 □ 6 strongly agree

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29. I consider myself to be a skilled computer user.

strongly disagree □ 1 □ 2 □ 3 □ 4 □ 5 □ 6 strongly agree

30. When using computers I worry that I might press the wrong button and damage it.

strongly disagree □ 1 □ 2 □ 3 □ 4 □ 5 □ 6 strongly agree

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