

AN EXAMINATION OF RELATIONSHIPS BETWEEN PSYCHOSOCIAL SATISFACTION  
SCALES IN AN ONLINE STUDENT LEARNING ENVIRONMENT

by

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A DISSERTATION

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## ABSTRACT

Research suggests that students who are satisfied with their learning experiences are typically successful and there is a fundamental theory that suggests if the expectations of students are achieved they will be return customers. This study examined the relationships between the psychosocial satisfaction scales in an online student learning environment using validated constructs of satisfaction including, instructor support, student interactivity and collaboration, personal relevance, active learning, authentic learning, and autonomous learning.

Two survey instruments were used to collect data for this study including a pre-course survey administered during the first week of online classes and a post-course survey administered during the last week of online classes to all students enrolled in an online class during the spring term of 2010. Demographic variables of gender, age, and ethnicity, as well as computer efficacy and preparation effort, were included in a factorial two-way analysis of variance (ANOVA) used to measure the difference in expectation (pre-course) levels of students taking online courses based on demographic and other variables and the difference in actual experience (post-course) levels resulting in no significant differences for either test. A factorial ANOVA was also used to measure the differences in the degree of satisfaction of students taking online courses based on the same demographic and other variables resulting in no significant differences.

A repeated measures multivariate analysis of variance (MANOVA) was used to measure the difference in student expectations versus experiences with online courses using the constructs of satisfaction. The MANOVA did not support differences in expectations versus experiences across the satisfaction constructs. Finally, a MANOVA was used to measure differences in student satisfaction among the demographic and other variables across the satisfaction constructs

based on both expectations (pre-course) and experiences (post-course). The MANOVA did not support differences in satisfaction among the variables or satisfaction constructs for either expectations or actual experiences in an online learning environment.

This study provided a thorough analysis of the complexities of student satisfaction characteristics with respect to an online learning environment that could provide information relative to the factors that contribute to the success and satisfaction of students.

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## CHAPTER 1

### INTRODUCTION TO THE STUDY

About a decade ago, online learning emerged as a new force in American higher education. In the last several years, Internet usage has experienced phenomenal growth and has enabled institutions to extend course offerings beyond the traditional on-campus classroom environment to an electronic online environment (Allen & Seaman, 2008). With the proliferation of advanced technology and enhanced education delivery platforms, online courses are becoming increasingly popular; and the online learning environment is becoming a significant alternative to the traditional on-campus teaching environment at many colleges and universities. In essence, the growth of students obtaining their degrees at colleges and universities without the experience of physical contact or significant interaction with instructors or contact with other students has been remarkable. Research indicates that growth of online learning as an education delivery system has been tremendous during the past decade, exceeding the growth of enrollment in traditional education environments. As Allen and Seaman (2008) report,

Approximately 3.9 million students were taking at least one online course during the fall 2007 with an overall growth rate of 12.9 percent exceeding the 1.2 percent growth of all higher education students. Over 20% of all U.S. higher education students were taking at least one online course in the fall of 2007. (p. 1)

Some researchers forecast that distance learning delivered through the Internet in an online format will become the principal delivery method in the United States in the near future (Du, Havard & Li, 2005; Milheim 2004; Roach, 2004).

The continuing study of the perceptions, attitudes, and experiences both students and faculty have of online learning is critical, in order to better understand the dynamics related to effective teaching and successful learning. The literature offers a range of studies that support, as well as condemn, the notion of learning from a distance. For example, Bowman (2001) concluded in his study that courses taught on-campus in a more traditional manner were different than when taught in an online environment, even when the courses were taught by the same instructor. Bowman noted the importance of greater organization skills needed for the online course due to the lack of instructor-student interaction. Wilson (2001) was more interested in the way distance learning affected the attitudes of faculty in the Kentucky higher education system. The researcher found that instructors' perceptions of learning from a distance included the lack of preparedness and time as barriers to the acceptance of online learning. Wilson also noted that while instructors did not have a negative attitude toward online learning, they were not impassioned about their degree of participation or experience within that environment. Perreault, Waldman, Alexander, and Zhao (2002) conducted a study in business schools and noted that students who were taking courses in a distance learning environment were dissatisfied because they did not have direct contact with their instructors. The researchers believed it was important to also evaluate the way students and instructors communicated as well as how students communicated with each other, in order to assess the tools and skills required by each to improve their perceptions of distance learning. In another study, Ettinger and Maitland-Gholson (2004) tested the relevance of students' experience with online learning versus traditional courses. The researchers concluded that students with no previous online course experience were less engaging in that environment than in a traditional classroom. They attributed the difference to teacher presence and opined that many of the cues existing in face-to-face instruction, such as

appearance, dress, and attitude, are not transferred into an online environment. Instructors should develop an online presence to compensate for these missing cues (Ettinger & Maitland-Gholson; 2004; Morote, Franza, & Tatum, 2007).

It appears that online education is poised to become a significant and enduring way for delivering higher education. The demand for online education is increasing in institutions, but whether or not online education truly becomes fundamental to higher education is a question that remains to be answered. Part of the answer to the question of whether online learning will endure seems to lie with student acceptance of it. Studies have shown that students “vote with their feet,” meaning they will only enroll in courses if they believe there is value to them and if they believe they will be satisfied (MacDonald, n.d.). Online courses are no exception to this. The literature indicates that students will enroll in online courses only if they expect they will have a good experience (Appleton-Knapp & Krentler, 2006; Oliver, 1999). Furthermore, a study conducted by Appleton-Knapp and Krentler revealed that students would recommend an online course to a friend if they were satisfied with their online experience.

Because of their importance to the success or failure of online learning, it is critical to better understand the factors that relate to student satisfaction with online courses, which we know little about to date. We do not have information about the kinds of students who do best in online courses. We do not know what kinds of online pedagogies tend to be the most successful. We do not know what kinds of interactions appear to be the most positive. Additional research is needed to examine the dynamics of the relationships between student satisfaction constructs in online courses, because in the rush to market to deliver online courses, such relationships on students have not been fully investigated.

While some initial investigations have begun, thus far they have proven unsatisfactory in answering the question of what are the primary relationships that exist between the many different characteristics associated with student satisfaction. The little work that has been done in this area has tended to focus on multiple types of the distance learning environment such as web-assisted courses, video courses, and hybrid courses using a combination of delivery methods, rather than focusing only on online courses (Priluck, 2004), which limits the usefulness of those studies. The research also seems to focus on comparing face-to-face learning environments with online distance learning environments to determine which are the most effective. The research does not focus specifically on aspects of online courses that are effective or their influence on satisfaction (e.g., Abrahamson, 1998; Bernard, Brauer, Abrami, & Surkes, 2004; Dellana, Collins, & West, 2000; Dutton, Dutton, & Perry 2002; Fortune, Shifflett, & Sibley, 2006; Hagle & Shaw, 2006; Newlin & Wang, 2002; Roavai, 2002; Russell, 1999; Sauers & Walker, 2004). According to Hermans, Haytko, and Mott-Stenerson (2009), researchers need to find characteristics that contribute to student satisfaction since “previous literature has focused upon one or two factors of satisfaction, whereas the literature suggests there are a multitude of such variables affecting satisfaction” (p. 2).

#### Statement of the Problem

Online learning has become something of a phenomenon in higher education, particularly when considering the rapid offering of instructional programs across many educational institutions (Hoyt & Shirvani, 2002). The growth of such programs during the past decade has been remarkable, exceeding the enrollment growth of traditional students. This growth is expected to continue (Allen & Seaman, 2007). Many higher education stakeholders, such as

administrators and policymakers, want online learning to succeed for a variety of reasons, such as increased opportunities for access and success of students who might not otherwise be able to take advantage of higher education (Fasse, Humbert, & Rappold, 2009).

In order to achieve success in making online learning an enduring part of higher education, it is critical to understand the driving factors that are responsible for its success. Faculty participation and acceptance of online learning, for example, are key considerations to its success or failure. This factor, however, has seen some recent attention in the research (e.g., Major, 2010). Administrator support and acceptance is also a key factor, and this factor too has seen some attention in the literature (Bower, 2001; Selim, 2005). Student acceptance of and satisfaction with online learning is a critical factor to its success, but it has not yet seen the same level of attention in the literature. This omission or lack of attention is perhaps due in part to the difficulty in measuring effectiveness as well as factors contributing to student satisfaction (Hoyt & Shirvani, 2002).

Examining the relationships between the satisfaction constructs as predictors of student satisfaction in online courses is essential to creating an effective and successful learning environment. This research will add to the existing limited knowledge of student satisfaction with online courses, because ultimately student satisfaction levels will affect decisions to enroll in additional online courses. Also, satisfaction can foster increased degrees of student learning and success in the online learning environment (Sahin & Shelley, 2008). Finally, an examination of online learning for students and their perception of satisfaction with the distance learning environment can be a significant concern to be considered when developing strategic plans for developing and continuing online learning programs.

## Purpose

The purpose of this study was to examine relationships of student satisfaction in online courses offered at a regional institution that includes online learning as part of its central mission. Satisfaction constructs were examined in six domains as described by Walker (2001),

Instructor support (the extent to which the instructor is approachable and provides feedback), student interaction (sense of being involved and feeling like a member of the class), personal relevance (the connection between students out-of-school experiences), authentic learning, (the extent to which students have the opportunity to solve real-world problems), active learning (the extent to which students have the opportunity to take an active role in learning), student autonomy (students have the opportunity to initiate ideas, make their own learning decisions), and satisfaction (a scale of enjoyment of distance learning). (p. 5)

Approximately 11,800 students participated in an online survey administered at the beginning of the 2010 spring term and again at the end of the term. The objective was to determine students' perceptions or expectations of online courses compared to their actual experience with courses taken, their perceived level of satisfaction prior to courses taken compared to their actual satisfaction with courses taken, and their plans for continuing their education in the online learning environment. The proposed study was designed to answer several research questions, outlined as follows:

*Research Question 1:* What are students' expectations of online courses?

*Hypothesis:* There is no significant difference in the expectations of students taking online courses based on demographics, computer efficacy, and effort.

*Research Question 2:* What are students' experiences with online courses?

*Hypothesis:* There is no significant difference in the experiences of students taking online courses based on demographics, computer efficacy, and effort.

*Research Question 3:* To what degree are the expectations of the online learning environment that exist under the constructs of instructor support, student interaction and

collaboration, personal relevance, authentic learning, active learning, student autonomy, and satisfaction different from actual experiences with the online learning environment?

*Hypothesis:* There is no significant difference in the expectations of and experiences with the online courses that should exist under the constructs of instructor support, student interaction and collaboration, personal relevance, authentic learning, active learning, student autonomy, and satisfaction.

*Research Question 4:* To what degree do demographics, computer efficacy, and effort, affect the difference between expectations and experiences related to student satisfaction of online courses under the constructs of instructor support, student interaction and collaboration, personal relevance, authentic learning, active learning, and student autonomy?

*Hypothesis:* There is no significant difference in student satisfaction among demographic, computer efficacy, and effort variables across the constructs of instructor support, student interaction and collaboration, personal relevance, authentic learning, active learning, and student autonomy in their distance learning courses based on expectations versus actual experience.

*Research Question 5:* To what degree are students satisfied with online courses?

*Hypothesis:* There is no significant difference in the satisfaction levels of students taking online courses based on demographics, computer efficacy, and effort.

The expectation disconfirmation theory served as a theoretical framework for the scope of this study. The framework was used to help develop the design of the study by essentially examining the relationships between the constructs of student satisfaction with online courses. The expectation disconfirmation theory was also used as a lens for interpreting the study results.

## Assumptions

Assumptions, as stated by Bryant (2004), “are the beliefs that we bring to the study that we select to accept as valid” (p. 56). Assumptions of this study were as follows:

1. Students completing the survey instrument provided accurate and honest answers.
2. The survey service selected by the University and used for participating in this study provided adequate survey applications as well as accurate student and course data.
3. The survey instrument developed by Walker (2005) was an adequate instrument for assessing methods of learning environment studies in evaluating psychosocial learning environments relative to measuring perceptions of student satisfaction within the constructs of instructor support, student interaction, personal relevance, authentic learning, active learning, autonomy, and overall satisfaction.
4. The participants who responded to the survey were representative of all online learning students age 19 years and older at a single site.

## Significance of the Study

The arrival of the Internet “to the field of education has provided new opportunities for teaching and learning” (Chung & Ellis, 2003, p. 1). Because of this new technology, educational learning environments are changing so dramatically that it has become essential to determine how student learners are accepting and reacting to this new delivery medium, the design elements that work in the online environment, and the learner-satisfaction characteristics related to instructor support, student interaction and collaboration, personal relevance, authentic learning, active learning, and student autonomy. Johnson and Buchanan (2001) suggested that as more nontraditional students enroll in higher education institutions, it is important that we

understand how these students learn online; therefore, the study of the psychology of online behavior will add value to the design of educational materials. Winne (1995) posited that colleges and universities have to better understand and assess the way knowledge is obtained in the distance learning environment and the manner by which online delivery of educational programs can be used. Killion (2001) stated that additional research is needed in order to better understand the nuances between effective and ineffective online learning and without such research most institutions will progress toward the online environment only by using a trial and error method.

This study provides further research and information into an online learning delivery medium that was at one time an anomaly but is now considered as a new paradigm for the delivery of instruction. Educators need empirical research to support their approaches to developing and teaching online courses in order to “feed the strengths” and “starve the weaknesses” as they make decisions to develop additional programs. Assessments from prior studies of online programs serve to add information about student-learner perceptions, but do not address the student’s characteristics or constructs of prior computer experience, self-regulation, instructor support, student autonomy, active learning, interactivity, and student satisfaction prior to taking courses (Thurmond & Wamback, 2004). The framework used for measuring student satisfaction will evaluate various constructs, referred to as “student inputs” as a means to control differences allowing the effects of the online learning environment to be measured by the experience encountered from the distance education environment.

The results of this study will serve to benefit several higher education stakeholder groups in various ways. First, the study can contribute to the volume of research of online learning environments, which is only beginning to be established. It can contribute to the scholarly body

of knowledge about higher education institutions, particularly knowledge about student satisfaction, as well as student experiences in online courses.

Second, this study can benefit policymakers and practitioners. Higher education administrators responsible for developing policies that address how online learning can best be used to help individuals achieve not only access but also success in higher education will find the results of the study to be beneficial. Individuals responsible for directing, developing, and implementing instructional technology will find the results of the study useful for making informed decisions about how to achieve at least one important student outcome: satisfaction. It will thus be of use to those who hope to develop and maintain successful online programs.

Third, the findings of this study will be of use to faculty members who are either currently teaching or planning to teach online. By outlining not only what students expect but also what works well for students in an online environment, the study will provide information that could be invaluable to instructors responsible for designing and teaching online courses.

### Limitations and Delimitations

This study solicited opinions of perceptions and actual experiences of over 11,800 students in the population of all students age 19 and older enrolled in an online course at a large, regional university in the Southeast during the 2010 spring term. The responses to the survey instrument were solicited from students enrolled in at least one online course at this single institution. Several delimitations and limitations bear mention here. Creswell (2005) offered that delimitations speak to the conduct by which the scope of the study may have been narrowed. He further suggested that limitations in a study are described as problems or weaknesses identified by the researcher.

Because the study took place at a single site, it may not be generalizable to students taking courses at other institutions or other institutional types such as community colleges and private universities. Additional testing of other participants would be required to discover whether the associations achieved by this study are analogous in other studies and under different circumstances. Participants for this study were self-selected because they were asked to voluntarily participate; therefore, the results may not be generalizable to all students enrolled in online courses at the institution. This study of students taking online courses did not include consideration of different software and hardware used by students to enhance course delivery. Differences in technology could affect the participation of online students in many ways, but a review of benefits and consequences of different technology was outside the capacity of this study.

The sample used for this study was large for the institution, but small compared to all students taking online classes in the U.S. There is also potential for response bias, which is a limitation resulting from the use of a survey instrument. This type of limitation is relative to the accuracy of the student completing the survey, in terms of representative data from the participants. An additional limitation of the study is referred to as response return rate limitation, a limitation of surveys delivered online.

### Organization of the Dissertation

The study contains five chapters. Chapter 1 provided an introduction that detailed the purpose of the study, the research problem, justification, significance of the study, a definition of the research objectives, and limitations of the study. Chapter 2 contains a review of the literature of the results of previous studies on student satisfaction in the online learning environment.

Chapter 3 describes the methods used to collect data in the study as quantitative descriptive statistical information. Chapter 4 presents an analysis of data collected, and Chapter 5 provides a review of the overall study, includes a discussion of the findings and recommendations for both practice and future research as well as a conclusion.

## CHAPTER 2

### LITERATURE REVIEW

The literature review considers the following thematic topics: early forms of distance education, the advent of the Internet and its influence on the development of distance education, a definition of online learning, changes wrought by online instruction, educator perceptions of the advantages of online courses for students, studies of learning in online versus traditional classroom learning environments, student satisfaction with online courses, relationships between the constructs of satisfaction, demographic and performance variables on student experiences and satisfaction, theoretical framework, and a summary and conclusion. Additional relationships of satisfaction, such as computer efficacy, effort, and demographic information such as age, gender, and ethnicity are reviewed across six psychosocial constructs of satisfaction. Furthermore, this chapter presents the theoretical framework for the study. The literature review, then, serves to provide critical points of researched knowledge related to the subject of student satisfaction with online learning.

#### Early Forms of Distance Education

Education from a distance is not a new concept, given that it has been in place since the advent of printed text material (Charp, 1998; Phillips, 2000). The original goal of this type of education delivery method was to broaden the customary and long accepted traditional method of on-campus, classroom instruction by solving the problems of scarceness and selectiveness often found in those more traditional on-campus educational environments. The historical

perception of distance learning was that it offered an educational opportunity to students who had geographical and time limitations as well as other limiting constraints (Barone, Luker, & Mark, 1999; Dunn, 2000). The delivery of education had customarily been provided through a process where the teacher and student were in a traditional classroom environment and where information and instruction was given directly by the teacher to the student through an in-class lecture or group structure (Driscoll, 2002; Sloman, 2002). This traditional method of instruction offered a learning environment of engagement whereby the teacher and student directly participated in the exchange of knowledge. The learning environment was believed to be sufficient for those students who were privileged enough to receive an education on campus (Pantazis, 2002). However, many educators began to consider the importance of offering learning opportunities to any student, not just the privileged, who may want to receive or further their education, including those students who did not have the flexibility realized by students taking traditional courses (Pantazis). In this respect, distance learning environments offered accommodating opportunities to students without the historical limitations and constraints of distance and time. From a historical perspective, originally the main emphasis of distance learning was the delivery of educational service to students who are geographically dispersed (Seehusen, 2000).

Several efforts to explain the origins and development of distance education have been attempted (Ehrman, 2000; Lau, 2000; Matthews, 1999). Some authors view the development as a move from device to device starting with the development of instructional radio, through televised instruction, and into film. These authors ultimately call the moves repeating cycles of failure, cycles which should be examined to inform current thinking about online learning. Ehrman, for example, suggested this “cycle of failure” has been repeated many times with

computers, e-mail, the Web, and videodiscs. Ehrman stated that, “every five or ten years new technology is developed, the trumpet is sounded, the revolution is about to happen, but doesn’t happen” (p. 1). Others view it as a progression of correspondence, multimedia, tele-learning, and flexible learning models through four generations (Nipper, 1989; Taylor, 1992). The first generation of distance learning included the correspondence model, which used printed material such as letters, notes, and some books. The second generation of distance learning was represented by the multimedia model and included print, audiotape, videotape, and computer-assisted learning. This generation used improved teaching resources such as study guides. The third generation of distance learning was referred to as the tele-learning model and was based on advanced technologies such as audio-teleconferencing as well as broadcast television and radio. Finally, the fourth generation of distance learning was called the flexible model and included interactive multimedia and computer mediated communication (Nipper, 1989; Taylor, 1992).

#### The Advent of the Internet and the Development of Distance Education

Alongside of the development of distance education was the development of the Internet. The Internet is an example of a collaborative effort between “government, industry and academia” (Leiner et al., 1997, p. 1) and its evolution is complex involving not only technology but social networks as well. The production of innovative and open-source Internet technology has advanced communication and connectivity more than all other former technological innovations, including the telegraph, telephone, radio, and television (Levin, 2001; Sprainer, 2000). The Internet’s status as a World Wide Web icon has become the global phenomenon that created a new economy where competition demanded the development of new skills in order to compete (Levin, 2001; Sprainer, 2000).

As of December 2008, the number of personal computers used worldwide totaled approximately 1.2 billion. Computer users in the United States lead all countries with 22% or 264 million users. Personal computers per capita in the United States exceeded 86% in 2008 and is estimated to total 100% by the year 2013 (Computer Industry Almanac, Inc., 2009). The Internet has been a tremendous force of change in the world of higher education. Over 50% of university students reported using the Internet on a regular basis (Rubicon, 2007). The report from Rubicon (2007) showed that the most significant difference in Internet users was that they were “more than twice as likely to be enrolled in college or graduate school” (p. 7).

Roach (2004) posited that the last few decades of the growth in technology from stand-alone computers to the expansive use of the Internet has had a transformational affect on distance learning and has changed the landscape of higher education. Thus, over the last 10 to 15 years, the design and system of distance learning has evolved from mainly instruction delivered in paper format to a full array of integrated multimedia systems including courses delivered through television programs, computers networked through Web-based applications, and the Internet (Bennett & Lockyer, 2004). The exponential growth of distance learning in the last decade due to high-speed Internet combined with the development of electronic delivered courses have come to be called online learning.

### Defining Online Learning

Technological innovation leading to the development of the Internet has changed the model of education by removing the physical classroom boundaries. Among the delivery modes that the Internet enables is online learning, in which most of the instruction (80% or more) is delivered over the Internet, most frequently in the absence of face-to-face meetings (Allen &

Seaman, 2005). Online learning has been defined in many different ways in the literature, but one common thread suggests that it should be described as learning that occurs while there is a geographical separation between the learner and instructor that is enabled by the Internet. Distance learning, as defined by Mehlinger and Powers (2002), offers two universal constants that include time and place distance between the learner and instructor where communication occurs through some type of technological medium (as cited by Caywood & Duckett, 2003). In essence, online learning is the instance where actual teaching occurs through the Internet (Caywood & Duckett, 2003; Ko & Rossen, 2001). Education can now be delivered anytime and almost anywhere through the advent of online learning.

### Changes Wrought by Online Instruction

According to Holsapple and Lee-Post (2006), online learning “has brought dramatic changes to education in general and distance learning in particular” (p. 68). The learning environment in an online virtual classroom is unlike the traditional in-class environment for a number of reasons. In particular, there is no personal or face-to-face contact with the instructor, the content delivery is in a different format, and students have to be more self-initiated with their education (Milheim, 2004). The changes and advantages brought about by online education delivery systems also include the ability to use the technology in most educational environments without relying on the availability of classroom space or the limitations of time (Hagel & Shaw, 2006; Jones, Packham, Miller, & Jones, 2004).

An investigation by Zhang, Zhao, Zhou, and Nunamaker (2004), in two separate studies involving 17 and 34 participants, respectively, found that the Internet and advanced technologies are changing the landscape and providing a new paradigm for the way learning is delivered and

that online learning is becoming an alternative to classroom learning. The authors of the subsequent article posited that in this era of transition from onsite to online courses, “educational institutions must understand the e-learning phenomenon and make strategic decisions on how to adopt e-learning techniques in their unique environments” (p. 1). Among the primary changes are changes for institutions, faculty, and students.

### *Anticipated Changes for Institutions*

Online learning may be changing the institutional landscape because it opens up a new market for adult learners, thereby increasing competition among educational providers. Dunn (2000) posited that the number of institutions only offering on-campus courses is likely to decline due to the influence of online education. According to Bray, Harris, and Major (2007), changes for institutions include a greater emphasis in the areas of planning, management, and finances relative to the effect distance education has on institutional missions. The authors posited that institutions seldom include the impacts of distance education in their strategic plans and operational goals. These impacts include a significant increase in enrollment, cost issues related to enhanced technology and additional course materials, staff training needs, faculty training and learning necessary to teach in the distance learning environment, intellectual property rights relative to ownership of course development and materials, and faculty motivation and compensations issues (p. 898). Bray et al. concluded that from an organizational perspective, institutions are not adequately prepared for distance education, they do not have the ability to benchmark for comparative purposes, and that empirical research is severely lacking.

### *Anticipated Changes for Faculty*

The changes wrought by online instruction also influence faculty. Travis and Price (2005) suggested that faculty must employ resourceful attitudes for online distance learning. Conventional faculty responsibilities, motivation, and training programs are changing while “the Internet and other information technology devices are becoming ubiquitous and technological fluency is becoming a common expectation” (Howell, Williams, & Lindsay, 2003, p. 9). The adoption of Internet technologies, the implementation of Web-based applications, and the delivery of online courses may require online instructors, according to Bennett and Lockyer (2004), to change their methods of teaching to include more options for student electronic resources, to develop course guidelines centered on milestones and not classes, to facilitate online assignments and provide feedback, and to acquire sufficient computer skills for using multimedia tools as the main form of communication (Bennett & Lockyer, 2004; Dunn, 2000). And yet, if online courses are not considered in tenure and promotion, faculty members may not embrace these new methods of instruction (Oravec, 2003). Some researchers have suggested that other forms of faculty resistance will arise out of complaints from the intensive effort required to develop and maintain current online modules (Brogden & Couros, 2002).

In a study designed to investigate faculty online teaching experiences, Major (2010) used “meta-ethnography, an interpretive approach, to synthesize findings from nine original studies conducted by 23 researchers involving interviews with 117 faculty members with online teaching experience” (p. 2). The researcher posited that in general, faculty have not embraced the online learning environment and cited several impediments to changes anticipated by faculty with regard to online teaching responsibilities including didactic practices, career concerns, and workload issues. Major’s findings offered in-depth insight to the changes that faculty could

encounter when teaching responsibilities extend to the world of online instruction. Some of the changes the researcher offered included faculty needs for new skill sets in order to overcome the complexities of teaching through technology, faculty needs to become more responsive at an accelerated pace, and faculty needs relative to time management concerns due to more frequent and direct contact from students.

### *Anticipated Changes for Students*

Online learning made possible by the Internet offers many changes to and advantages over traditional on-campus learning environments (Cheung & Huang, 2005; Sahin & Shelley, 2008). The scholars suggested that changes for students brought on by online learning include advances in educational delivery by offering opportunities to receive instruction in a real-time environment and by enhancing the communication between students and instructors (Khosrow-Pour, 2002; Kumar, Kumar, & Basu, 2001). Two kinds of changes for students seem prevalent in the literature: changes to roles and responsibilities and changes in convenience and flexibility.

*Roles and responsibilities.* Students' roles will likely change from a passive one of receiving knowledge to an active role of generating learning in collaboration with other student learners. Students' skill-sets will have to change because in an online learning environment, technology associated with online classes will require navigation and course management skills (Easton, 2003). Bray et al. (2007) articulated issues related to the types of students who will be drawn to distance education such as "more and experienced students who may face time constraints, family demands, and lower motivation as barriers to distance education" (p. 899). The researchers suggested that students will need to adapt to a learning environment that may be

void of timely and informative feedback, which may create a sense of isolation in the distance learning environment (Bray et al., 2007).

*Convenience and flexibility.* The perception of learning for credit in an “anywhere and anytime” environment as an advantage is perhaps the most persuasive of all of the associated advantages online learning offers to everyone who wants to pursue an education (Beard, Harper, & Riley, 2004). Students have time and place independence relative to asynchronous learning (Newlin & Wang, 2002). Among the benefits of flexibility of participation in learning “anytime or anywhere” are convenience; fewer constraints; and the ability to balance personal development, family obligations, and career commitments (Beard et al., 2004; Bourne, Harris, & Mayadas, 2005). In online courses, students spend little time in the classroom and traveling, thus possibly achieving a cost savings. This aspect is especially attractive to students who do not live in the vicinity of an institution, but who live in remote areas and who have limited mobility or special needs (Belanger & Jordan, 2000; Hara & Kling, 2000). The flexibility of time or convenience and space is an integral facet of online instruction (Maor, 2003, Sahin & Shelley, 2008). Courses also typically offer convenience and flexibility when it comes to course and time management (Arbaugh, 2000; Braun, 2008; Beard & Harper, 2002; Curtis & Lawson, 2001; Holsapple & Lee-Post, 2006; Newlin & Wang, 2002). The accessibility notion is especially relevant for disabled students who will not have to take extraordinary measures to navigate to class and deal with outdated facilities not in compliance with the American Disabilities Act (Cooper, 2006).

### *Shared and Interactive Learning*

Online learning has been perceived as creating a unique community of learners in which students see themselves sharing the common thread of a specialized group who learn in an array of different ways, such as from each other, on their own, and from the instructor. Some educators view this as an advantage to the learning environment because it improves student problem solving and offers a distinctive medium for less gregarious students to become more engaged with the class (Braun 2008; Harris, 2000; Meyer, 2004). Studies of communication and instruction through online technology as an alternative to traditional classroom instruction suggest that the effect is not only a matter of where and when but that the online medium is changing the manner by which dialogue occurs (Mason & Kaye, 1990). Chamberlin (2001) suggested that the separation caused by online communication, “diminishes student inhibitions regarding communication by removing psychological and social barriers to student-teacher and student-student interactions” (p. 1). Shy students and students who may be reluctant to participate have new opportunities to participate or contribute to the learning exercise without fear of interruption (Chamberlin, 2001). Students can also review all comments from other students and reflect on those opinions before contributing (Curtis & Lawson, 2001; Thomas, 2002). Although some students prefer to remain anonymous they also desire to participate in the online learning environment; and it is possible to have both anonymity and participate in online courses (Woods & Baker, 2004). Students have the avenue to openly communicate without interruption or bias due to seat assignment or even ethnicity (Woods & Baker). Arbaugh (2000b) offered, “there will be several changes in the way online student learners perceive characteristics and outcomes associated with online learning as they proceed beyond their initial experiences” (p. 171).

## Studies of Learning in Online versus Traditional Classroom Learning Environments

Whether online instruction is effective and facilitates student learning continues to be debated among educators. There are a number of faculty members who support online learning as educational opportunities to students who may otherwise never attend college. They believe online courses are comparable to on-campus courses (Dutton et al., 2002). Contrary to those beliefs are faculty who have substantial reservations about a delivery platform that does not include student-instructor contact (Abrahamson, 1998). A perfunctory review of the literature gives the sense of significance and relevance of comparing online learning with traditional, face-to-face instruction (Fortune et al., 2006; Sauers & Walker, 2004). The review of literature also encourages more in-depth research as to whether student performance in online courses by comparison is equal to the quality and performance achieved in traditional classroom learning environments (Abrahamson, 1998; Dellana et al., 2000). Acquiring a better understanding of methods, measures, and outcomes of online learning as compared to traditional on-campus learning environments can enable educators to make better decisions about future online course development and implementation (Conlon, 1997; Johnson, Aragon, Shaik, & Palma-Rivas, 2000). This section, then, presents information from studies documenting differences in learning in online and face-to-face courses.

### *Documented Learning Outcomes*

Many research-based studies have examined the question of whether online learning is as effective as face-to-face learning, which has resulted not only in individual studies but also in several meta-analyses that document the effectiveness of online courses at producing outcomes. Hundreds of studies document that outcomes of online learning compare favorably with face-to-

face instruction (e.g., Cheung et al., 2008; Dinov, Sanchez, & Christou, 2008; Doran, 2001; Dunlap, Furtak, & Tucker, 2009; Jung, Lim, & Leem, 2002; Meyer, 2003; Newman & Scurry, 2001). Further, there are many critical summaries and meta analyses that synthesize the information from the hundreds of studies.

In one of the most extensive summaries of studies conducted to date, Russell (1999) collected over 300 research studies from 1928 that included distance education delivery methods, such as correspondence, radio, television, video, and online. The researcher found that a significant number of the studies showed there were no significant differences between student outcomes in distance education when compared to face-to-face courses. This well known effort is known as the “No Significant Difference Phenomenon” (see <http://www.nosignificantdifference.org/>). As an example of the kind of study included in Russell’s synopsis, an article by Caywood and Duckett (2003) showed that the researchers wanted to evaluate performance of on-campus students and online students enrolled in a teacher training theory and methods course. The course was required in order for the students to complete a Special Education credential. The student participants consisted of 76 taking the class online and 75 taking the class on-campus. The course materials for both the online and on-campus experiences were designed by the same instructor. The measurable outcomes included completion of three quizzes and, as a follow-up step they compared student teaching experiences in the area of behavior management. The result of the study indicated there were no significant differences between the online learning environments and the on-campus learning environments. The results of “no significant differences between quantitative measures of online versus on-campus learning suggest that there is no actual difference that can be measured in regards to learning” (Caywood & Duckett, 2003, p. 103).

In another example, Nuehauser (2002) conducted a study to compare two sections of the same course, taught by the same instructor with one being delivered online and the other on-campus. The researcher examined gender, age, learning preferences and styles, media familiarity, effectiveness of tasks, course effectiveness, test grades, and final grades (Nuehauser). The purpose of the study was to evaluate the differences in outcomes between the two sections over the 15-week term. The participants in the study included 62 students, with 25 enrolled in the on-campus course and 37 enrolled in the online class. The age variable in the two sections showed no significant differences. The male to female ratio for the on-campus course was 60% male and 40% female, while the ratio for the online class was 20% male and 80% female (Nuehauser). The results of Nuehauser's study are as follows:

The study showed no significant difference between test scores, assignments, participation grades, and final grades; however, actual scores for the online group were slightly higher. In addition, there was no significant difference between the two groups in their assessment of the learning effectiveness of the course. (p. 111)

Nuehauser (2002) cautioned that the results of the study must not be over-generalized. While the study revealed that no significant differences existed between the online learning and the on-campus learning environment for similar activities, the on-campus students were allowed to use e-mail activities to compensate for the robust activities of the online students (Nuehauser).

Reviewing these types of studies led Russell (1999) to conclude that the mode of education delivery is not necessarily the overarching reason that causes learning to take place. Russell contended that on-campus students perform equal to distance learning students and that there is no significant difference in the outcomes relative to traditional and alternative study modes (Bernard et al., 2004; Hagle & Shaw, 2006; Newlin & Wang, 2002; Roavai, 2002; Russell, 1999).

A meta-analysis of distance learning literature, conducted by Bernard et al. (2004) for the period 1985 to 2002, addressed the differences between education delivered in the traditional classroom environment and education delivered from a distance, including online learning. The meta-analysis included 232 studies with 688 findings addressing the following questions: “(a) overall, is interactive distance education as effective, in terms of student achievement, student attitudes, and retention, as its classroom-based counterparts and (b) what conditions contribute to more effective distance education as compared to classroom instruction” (p. 32)? The results of the meta-analysis indicated effect sizes of zero on all measures with wide variability, suggesting that distance education outperformed classroom education with many students in the study performing inadequately (Bernard et al., 2004). The researchers interpreted the results similarly by noting a positive effect size in interactive distance education over classroom education relative to achievement as well as a negative effect on attitude outcomes (p. 32).

A U.S. Department of Education meta-analysis and review of online learning studies prepared by Means, Toyama, Murphy, Bakia, and Jones (2009) reviewed literature from 1996 through 2008. The study identified in excess of a thousand empirical studies of online learning. The types of students included in the study were split between college or earlier and students in graduate programs or professional training. The main research question compared the effectiveness of online learning with face-to-face learning. Twenty-eight studies that compared only face-to-face with online conditions found that on average students in online learning environments outperformed students receiving face-to-face instruction. Online students were not only found to be more independent and self-regulated learners but were also more interactive. The researchers also noted that the students were also able to practice skills and test their

knowledge. However, feedback opportunities were less common than with face-to-face learners (U.S. Department of Education, 2009, p. 17).

### Student Perceptions of Instruction and Learning

A range of individual studies have examined various aspects of online courses, including student perceptions of their learning and perceptions of whether online learning is as effective as face-to-face instruction. Fortune et al. (2006) conducted a study designed to compare students' perceptions of the value of face-to-face interaction and perceived learning between online courses and on-campus courses, referred to as "high tech and high touch teaching modalities." The study included 90 online students and 98 on-campus students. Both the online and on-campus student groups were enrolled in one of four sections of a business communications course, representing a 98% response rate. The online course required students to use Internet tools, video streaming, instant messaging, and e-mail. The results showed that perceived learning was similar for each modality.

Jefferson and Arnold (2009) conducted a study to determine the differences in students' perception of advantages and disadvantages of online versus traditional classroom learning environments. The study included 49 students taking an undergraduate accounting course within the School of Business or a graduate data collection and analysis course within the School of Education. Both courses were taught in an online and traditional classroom environment on campus. Their hypothesis was based on the premise that there would be significant differences in the perceived advantages and disadvantages between the learning mediums. The results showed the perceived advantages of 56% was greater than the total perceived disadvantages of 44% (Jefferson & Arnold). Therefore, the findings "suggest that there are differences between the

perception of advantages and disadvantages for online and face-to-face learning environments” (p. 66).

Beard and Harper (2002) compared student attitudes and opinions about traditional classroom instruction and online course instruction using Blackboard as the online navigation application with 42 graduate students taking a special education course. The study was conducted using traditional classroom methods for the first half of the class and instruction using Blackboard through the Internet for the second half of the class. Students reported lower scores for interaction and curriculum content and higher scores for individualized pace of study. Overall, most concerns were related to the inability to interact with other students and Internet connection problems.

Arbaugh (2000), likewise, conducted a study of learning differences between a traditional classroom and online classroom for an MBA course. The text and class readings were the same for both class sections and the students were assigned work from the same instructor. The results of his study showed that there were no significant differences between the online method of delivery and the traditional classroom delivery relative to learning. The quality of collaboration between both classes also showed no significant differences.

In a study comparing the differences in online student perceptions of learning with face-to-face learning experiences, Johnson et al. (2000) included instructor ratings, the quality of the course, interaction, class structure, grades, and student self-assessment as testing variables. The researcher’s objective in the study was to determine the differences in satisfaction between online students and traditional students regarding their overall learning experience, their perceptions of interactivity, support, and actual learning outcomes determined by class performance. The setting for the study was a graduate course in instructional design for Human

Resource Development students at a Midwestern university. Both the online course and on-campus course were taught by the same instructor (Johnson et al., 2000). The on-campus course was comprised of 19 graduate students in Human Resource Development; the online course also included 19 graduate students pursuing the same degree offered entirely online. The study produced results showing that students taking the on-campus course reported a slightly more positive learning experience than online students with no significant difference in the quality of instruction. According to Johnson et al.;

The argument is that online instruction can be designed to be as effective as traditional face-to-face instruction. Students from both groups provided positive ratings of the quality of the instruction and the course. Although the face-to-face group provided a slightly more positive rating of the quality of the instructor than the online group, the reasons for this difference are not evident. (p. 44)

The researchers also found no significant difference in the learning outcomes regarding course format relative to projects, grades, and the majority of student self-assessments. These results support sustaining the need to continue the development of online learning opportunities (Johnson et al., 2000).

Siebert, Siebert, and Spaulding-Givens (2006) conducted a study that focused on courses related to social work education, by conducting a study of an online clinical social work graduate course in the Social Work program at Florida State University (FSU). The online version of the course was offered during a 12-week term and the on-campus course consisted of a 14-week term. Both the online and on-campus courses were taught by the same instructor. The researchers used pre- and post-assessments for outcome measures, which included improvement in practice skills as well as scores on an assessment and treatment plan. The participants in the evaluation included 11 online students and 18 on-campus students. An FSU evaluation questionnaire, which contained materials, assignments, communication of ideas, evaluation of the instructor, interest

in the subject, and expectations of performance, was used in the study (Siebert et al., 2006). The results of the study reported no significant differences for six of the eight areas assessed, but higher scores were reported by the on-campus students for facilitation of learning and instructor availability. Therefore, the researchers concluded that, based on the results of their study, the online course was beneficial to the students and favorably compared to the on-campus course (Siebert et al., 2006).

The study of a graduate program in Social Work at Florida State University (FSU) was also conducted by Wilke and Vinton (2006). The researchers looked at an online course with an enrollment of ( $n = 41$ ) students and an on-campus course with an enrollment of ( $n = 96$ ). As in the FSU study by Siebert et al. (2006), the courses were taught by the same instructor. The study included an assessment of student performance pertaining to their knowledge, skills, and satisfaction relative to course and instructor evaluations using an exit survey instrument and an instructor evaluation form (Wilke & Vinton). The results of the study showed that students taking the class online submitted higher scores for training for a career in social work than the on-campus students, but the results showed there was no significant difference between the two, according to the exit survey. Also, the results of the course/instructor evaluations between the online and on-campus students showed that the perceptions of instruction were similar and there were no significant differences (Wilke & Vinton).

The researchers noted that the use of two different surveys was a limitation of the study. The survey items were categorized by content and delivery and matched, in order to compare the content items. Students rated satisfaction with course content and delivery inclusive of objectives, goals, workload, effectiveness, and instructor support. The study showed significant differences in levels of satisfaction for the delivery method and course content. The on-campus

mean content and delivery scores were higher than online scores. The researchers reported, “the significant differences related to the students’ sense that the course objectives were met, clear grading criteria were provided, workload was reasonable and instructor effectiveness was noted” (Roach & Lemasters, 2006, p. 327).

### Student Satisfaction with Online Courses

Several studies have taken “satisfaction” as their specific focus and have sought to determine whether online students are satisfied with their environments or are as satisfied as their counterparts who are taking face-to-face courses. This is an important focus, according to the Noel-Levitz (2009) report, the *2009 National Online Learners Priorities Report*, because online learners “are a growing population in higher education and more institutions are adding distance learning as an alternative to classroom programs” (p. 1). The report also suggested that as the number of online students increases, they will become a priority and their satisfaction will become a “core element” (p. 1) for colleges and universities to assess in terms of satisfaction. This is because “satisfied students are more likely to be successful students” (Noel-Levitz, p. 1). Institutions need to measure the degree of satisfaction online students have with respect to the distance learning environment in order to understand how best to serve them. Understanding satisfaction analysis enables better planning and development and the opportunity to add efficiencies in order to create a more effective online learning environment (Zarghami & Hausafus, 2002). This section provides overviews of studies that focus on online student satisfaction.

In a recent and important assessment of online student satisfaction, the Noel-Levitz (2009) report documented responses from 68,760 students representing 78 institutions. The

results of the study covered a period of time from the fall of 2006 through the spring of 2009. The data showed that 68% of the respondents were female and 32% were male, 44% were older than 35 and 56% were younger than 35, with 81% of all students reporting that they were primarily online students. In addition, more than half of the students reported being employed full-time, being married, and owning their own home. Finally, 44% of the students had a goal of earning either a graduate or doctorate degree (Noel-Levitz, p. 5). Online students found the following aspects to be satisfactory: assignments, registration, instructional materials, and the convenience of payment procedures (p. 6).

Roach and Lemasters (2006) looked at the difference in satisfaction levels and the quality of a program between online courses and traditional classroom courses offered in a Master's in educational administration and leadership program comprised of 11 required courses. The researchers studied the degree of satisfaction with the program content and delivery method. Participants in the study included a range of 9 to 41 students taking seven courses online and two courses offered on-campus in the same program with total students ranging from 13 to 15 in the class. Student satisfaction with online courses was evaluated. A document analysis of end-of-course surveys, used as a secondary source of analysis, supported the results. In addition, a third-party distance learning provider developed one survey and the other was developed by the institution. The results showed that online courses received strong ratings, but the on-campus courses received higher ratings on the end-of-course evaluations than the online courses. The overall comparison of online to on-campus courses suggested that students are equally satisfied with both delivery methods.

In a study measuring the satisfaction of 150 graduate students at both on-campus and remote sites, Zarghami and Hausafus (2002) examined the characteristics that attributed to

student satisfaction with distance learning courses, including instructor communication skills, teaching skills, accessibility, course content, course management, and quality of technology. The researchers used a 72-item survey instrument to measure the six characteristics of student satisfaction. The results of the study showed that instructors needed to develop interactive assignments and instructors needed special training in the use of technology, but concluded that students were satisfied with the technology delivering courses to remote sites and that effective learning was achieved.

Frederickson, Reed, and Clifford (2005) evaluated a graduate professional training course in educational psychology consisting of 16 first-term students. The researchers concluded that similar results were achieved from an electronic presentation of the course compared to the traditional lecture. They outlined the significance of assessing innovations in distance learning, including both learner outcomes and learner satisfaction, suggesting there is a need to design and control such evaluations.

### Student Satisfaction with Online Courses

While the studies in the previous section simply sought to determine whether students were satisfied, many studies have sought to determine influences on student satisfaction. This section begins by presenting studies that have sought to identify criteria related to satisfaction with online courses. It then describes a study that has found six constructs to be essential elements of satisfaction, as well as a study that has used these constructs. Because this study uses six constructs of experience with online learning, research that has begun to examine these areas is critical in order to set the stage for the current study. This section further examines these specific constructs. The constructs include instructor support, student interaction and

collaboration, personal relevance, authentic learning, active learning, and student autonomy. The literature suggests, in an overarching sense, that there is a need to better understand characteristics that influence and affect student satisfaction in distance learning courses (Maor, 2003; Mitchell, Chen, & Macredie, 2005; Sahin & Shelley, 2008).

Some scholars have argued that course characteristics influence satisfaction in online courses. Swan (2002), for example, offered three criteria that are significant in determining student perceptions of satisfaction of an online course. Those criteria included clarity and consistency in the development of the structure of the course, interaction with the instructor, and active and meaningful discussions. The literature stipulated that distance learning needs a student-centered approach where the instructor assumes the role of the facilitator and students become engaged in group activities and student-to-student learning (Driscoll, 2002; Picciano, 2002; Woods & Baker, 2004). Roblyer (1999) reported that online students believe convenience and flexibility are more beneficial than interaction with the instructors and other students. However, Diaz and Cartnal (1999) suggested that online students prefer a learning environment that has greater independence and less collaboration than an environment in a traditional class where actual student interaction occurs. Postema and Markham (2001) believed that the perceptions students have of their learning environment, for example, instructor course content, student-to-student interaction, and self-regulation are essential dynamics in assessing their level of satisfaction.

Several studies describe challenges to satisfaction. Appana (2008) described limitations of students unprepared for the online environment, as a disparity in the abilities of students in the form of language skills and autonomous learning, and student frustration from inconsistent instructor support. Curtis and Lawson (2001), in a study of 24 students (18 female and 6 male)

enrolled in an Internet and education course, concluded that the notion of students' scrolling through voluminous online text regresses the quality of instruction and learning and could have an adverse affect on the level of student satisfaction (p. 21). A study by McGorry (2002) investigated the attitudes of students' taking online classes in a part-time MBA program located on three campuses. The study included 270 MBA students who were asked to respond to a questionnaire about their perceptions with the Internet and online course offerings. Students were requested to identify disadvantages with the online course, and 65% stated their concern was an absence of physical interaction with other students. Student interactivity is affected by the environment of transactional distance or physical separation where students must handle the complexities of collaboration with one another as well as teacher-student interaction (Atack & Rankin, 2002; Beard & Harper, 2002; Thurmond & Wambach, 2004). A survey by Song, Singleton, Hill, and Koh (2004) examined components that online learners see as challenging. The participants in the survey reported that difficulties with instructional goals and technical problems were the most challenging aspects of online learning.

Walker (2005) sought to develop constructs that can improve (or hinder) student satisfaction in online courses. In the development of the six constructs (instructor support, student collaboration and interaction, personal relevance, authentic learning, active learning, and student autonomy) used to examine student perceptions of satisfaction in an online learning environment, Walker (2005) combined an attitudinal scale with a psychosocial learning environment instrument to measure attitudes and perceptions. The researcher defined the six constructs as psychosocial scales based on Lewin's theory that the learning environment refers to psychosocial classroom environment and suggests that student perceptions define educational environments. Walker discovered that positive changes in distance education environments could

be possible by better understanding instructional strategies and changes in student attitudes. The researcher stated, “Student satisfaction is used to measure how effectively a program delivers what students expect, need, and want” (p. 294). The researcher’s study resulted in the development of “the first instrument for utilization as a tool for distance education researchers to conduct action research or evaluation of their own distance education programs” (Biggs, 2006, p. 1).

The constructs that Walker (2005) developed have been used in a few studies, to date. Sahin (2007), for example, conducted a study at Anatolian University in Turkey, testing 917 students pursuing degrees in law, justice, and history teacher education using student satisfaction as the dependent variable and six psychosocial satisfaction predictor variables including, “instructor support, student interaction, personal relevance, authentic learning, active learning, and student autonomy” (p. 2). The researcher found that all correlations were significant, showing that a high level of student satisfaction was achieved from distance education. In addition, Sahin’s (2007) findings suggested that personal relevance, instructor support, active learning, and authentic learning were significant in order to better support student learning experiences and increase their satisfaction. Personal relevance was the strongest predictor of student satisfaction. These findings suggest that student learners who can link course content with their personal experiences are more satisfied with their distance learning environment. This result suggests that online learning environments should be learner-centered and involve students’ external knowledge and skills (Ellis & Cohen, 2005; Sahin, 2007).

## Constructs of Satisfaction

The six constructs of satisfaction which include, instructor support, student interaction and collaboration, personal relevance, authentic learning, active learning, and student autonomy, are worthy of additional attention and are described in more detail in this section. Each construct is initially described and then research literature is used to provide illustrations and examples of their use and relevance.

### *Instructor Support*

Instructor support was defined by Walker (2001) as “the extent to which the instructor is approachable and responds quickly with feedback” (p. 2). According to McGee and Wickersham (2005), instructor support refers to behavior that is responsive to the needs of students and consists of timely feedback. The flow of discussion from the instructor to the student should be delivered in a responsive manner that is productive in the achievement of student course objectives (Chyung, 2001; McGee & Wickersham, 2005).

Instructional activities that encourage the instructor and the students to eliminate the perceived distance between them can be referred to as immediacy (Arbaugh, 2001; Carrell & Menzel, 2001). Carrell and Menzel (2001) investigated traditional classroom behavior such as, “motivation, cognitive style, gender, and teacher immediacy to further understand how those variables may affect learning in a distance learning environment” (p. 230). In his study of an online Master’s in Business Administration program, Arbaugh acknowledged the significance of instructor immediacy and classroom behavior and recognized its affect on student satisfaction. Ascourgh (2002) suggested that in an online learning environment instructors do not have as much control of the virtual class environment; therefore, in order to offer support the instructor

should act more as a course facilitator. The traditional academic role must be shifted from the “intellect-on-stage” to one of being a medium of delivery offering instructional and emotional support to students (Volery & Lord, 2000; Yang & Cornelious, 2005). Muirhead (2000) offered that instructor support in an online environment has been extended from the traditional environment where instructors have to plan interactive strategies with their course delivery as well as ongoing technological support.

The literature frequently cites Moore’s theory of transactional distance with transaction in terms of distance education meaning the interchange between instructors and students who are separated from each other. Moore and Kearsley (1996) suggested that the separation in the learning environment or distance education causes miscommunication between the teachers and students. Moore and Kearsley posited that the notion of transactional distance is not a physical distance but a didactic distance which affects behavior and therefore requires teaching methods that are different from the traditional classroom environment. In essence, this transactional phenomenon offers insight to the effect distance learning has on students and instructors relative to course management and communication.

For example, according to Moore (2007), students taking courses where there is marginal transactional distance are given course materials and guidance from the instructor in the form of continuous communication where the student can alter the materials to accommodate their unique learning needs. Students who are not autonomous and insecure relative to their own organizational skills are attracted to a lower measure of transactional distance. Moore posited that students who have a higher degree of autonomy and are more secure need less communication and direction. Those students are more satisfied with their learning environment.

Moore concludes that the students have to become more autonomous when the transactional distance increases.

Carnevale (2000) suggested that students taking online courses expect a classroom environment similar to what they have experienced in traditional educational environments such as instructors who provide support and who are knowledgeable. Woods (2002) conducted a study to determine whether more frequent online contact with students outside of required class discussions would result in higher levels of student participation in group assignments which, in turn, would result in a higher degree of satisfaction with the learning experience. The participants included 40 students enrolled in a doctoral level organizational communication course. The researcher concluded that more frequent contact did not increase the amount of student participation. However, the study suggested that the degree of student-to-instructor and student-to-student interaction, as well as group activity, was more essential to student satisfaction in taking online courses than to satisfaction in traditional courses (Woods).

### *Student Collaboration and Interaction*

Student collaboration and interaction is defined by Walker (2001) as “the opportunity to interact with each other and exchange information” (p. 2) and can also be described as the manner in which students exchange information and explore a topic as an aid to instruction and learning. The relationships and associations they form and the frequency of their engagement in group activities could affect their academic environment (Barkley, Cross, & Major, 2004). Student-student and student-instructor interactions that are common in the traditional classroom should be encouraged in the online learning environment.

Student interaction in a distance learning environment is affected by the instructional methods used in online courses and is significantly different than interaction in traditional classrooms where students are face-to-face with each other (Berge, 2002; Thurmond & Wambach, 2004). Educators recognize the significance of teacher-learner interaction, but interaction and collaboration among students is complex and not easily supported, which inhibits the formation of student learning communities when compared to the traditional classroom learning environment (Fung, 2004). The dissimilarities between online courses and traditional classroom courses exist because there is no physical interaction, and this separation can influence learning (Beard & Harper, 2002; Thurmond & Wambach, 2004). Research on student interactions and collaboration in online courses demonstrates the importance to address students' need to have contact and student-to-student connections (Atack & Rankin, 2002; Billings, Connors, & Skiba, 2001; Thurmond & Wambach, 2004). Technology facilitating online discussions enables all student learners to equally participate either synchronously or asynchronously and this means all students can help advance the construction of learning or knowledge through effective discourse (Gilbert & Dabbagh, 2005; Vonderwell, Liang & Alderman, 2007). According to Wu and Hiltz (2004),

Over half of the students from three online courses reported that they learned a great deal from their peers through online discussions with 78% of the students valuing online discussion as a chance to share opinions among peers and instructors. (p. 144)

### *Personal Relevance*

Personal relevance is defined as the “connection between students’ out-of-school experiences” (Walker, 2001, p. 2). In a study conducted to analyze the characteristics of online learning environments with respect to student satisfaction and personal relevance, in addition to

other predictor variables, Sahin (2007) included 917 undergraduate students and found that personal relevance was significantly and positively related to student satisfaction. In a study of 26 students enrolled in Social Work Practice: Interviewing and Counseling, Biggs (2006) defined personal relevance as, “the connection between students’ out-of-school experiences” (p. 2) and found that personal relevance was higher in both the traditional classroom environment and a blended, on-campus and online environment than the distance learning environment. Biggs stated the results indicated that students “did not receive as much opportunity to interact with one another, exchange information, and engage in collaboration as they would have preferred” (p. 4). Sahin (2007) correlates personal relevance with Moo’s (1974) psychosocial dimension of personal development described as “a link between students” out of school experiences relative to the application of experience.

### *Authentic Learning*

Authentic learning is defined as the “extent to which students have the opportunity to solve real-world problems that are authentic” (Walker, 2001, p. 2). Authentic learning enables students to engage in discussions and develop relationships that have real-life implications and are relevant to real-world circumstances. This is achieved by linking learning experiences in the classroom to the application of their work related surroundings (Donovan, Bransford, & Pellegrino, 1999; Rule, 2006). Education has typically been delivered in a classroom environment where instructors communicate facts and theory that students were expected to absorb and recite on tests (Herrington & Herrington, 2006). Educators are challenged to more closely correlate instruction in a more significant way with situations encountered by students in real-life settings (Cobb & Bowers, 1999). The literature identifies several works of authentic

learning, including Maina (2004) who offered that the essence of authentic learning includes exercises that replicate real world scenarios, that learning is achieved in environments that have meaning, and that learning is student-centered.

Educators have identified the merits of authentic learning situations by observing apprenticeship relationships, which, at one time, was a major form of education. The skills training learned by students came as a result of learning in the workplace. A form of apprenticeship continues to be used in higher education today through internship programs where students work in professional practice and must perform in the workplace as a student. The virtues of this type of student workforce engagement and situated learning has been well researched (Barb, Squire, & Dueber, 2000; Bennett, Harper, & Hedberg, 2002; Rule, 2006). Instructional activities for students include the opportunity for students to learn, practice, and relate and are centered around several overarching characteristics including (a) in the real world sense, learning beyond the immediate educational environment has value; (b) student centeredness permits a variety of learning styles; (c) with regard to their actual education, students have ownership; (d) students work in groups and learn from each other to solve a problem; and (e) the data used by students is real-time (Griswold, 2006; Herrington & Oliver, 2000).

Some studies on the theory of student learning suggest that when students are involved in the learning process, they actually learn more when their learning environment includes actual lived experiences and real-life situations (Bransford, Brown, & Cocking, 2000; Driscoll 2002). Real-life scenarios stimulate learning and have a positive effect on students' motivation to think and learn because authenticating the learning activities fosters a greater chance that actual learning is accomplished (Driscoll & Carliner, 2005). Simulated real-life situations, as suggested

by Scriven and Paul (2004), support students' deeper degree of learning through developing the ability to think critically and use analysis and synthesis of information applicable to different exceptional circumstances.

Students are more motivated in an environment of doing rather than just listening and report that they prefer solving authentic problems. The Internet has facilitated a more robust environment for authentic learning due in part to the advantages technology offers such as enhanced communication, simulations, remote instrumentation, and the ability to participate in group learning around the world (Lombardi, 2007). Authentic activities used in online learning environments, as proposed by Herrington, Oliver and Reese (2002), have "been shown to have many benefits for students in online courses by providing academic exercises that can be used to practice a skill" (p. 1). For example, the authors cited a physical activity fitness and health course using an online virtual lab to conduct condition tests on several areas of virtual human body including lung strength and flexibility of fitness just as would have been performed with a live subject (Rice et al., 1999).

### *Active Learning*

Active learning is defined as the "extent to which students have the opportunity to take an active role in their learning" (Walker, 2001, p. 2). Active learning involves various classroom activities designed to encourage students to engage with instructors, other students, and their learning environment. Students have a need for interactive learning that involves doing things in an active learning environment by making them active members in developing knowledge and refining their understanding of the knowledge process (Picciano, 2002; Smart & Cappel, 2006; Watkins, 2005). In the traditional classroom setting, active learning students become engaged

with instructional methods inherent in the process of learning. Active learning takes the form of effective participation through note-taking, asking questions, and participating in discussions (Morphew, 2000). In other words, students actually do something with the subject they are studying. Active learning beyond the traditional classroom suggests that students use technology to actively participate in the learning environment. More specifically, the online learning environment becomes the virtual classroom where the active part of the learning process requires students to develop and use technology skills in order to participate (Powers & Guan, 2000). Depending on the online learning environment, this can include a range of uses from basic computer skills to Internet usage to specialized course software that is the educational delivery platform such as WebCT and the nuances within that software.

Active learning strategies look at the teaching and learning process and improve that process using an array of learning styles. Support and effective communication from other students, instructors, and technology significantly affect student satisfaction and need to be embraced in order to give the students sufficient and effective learning experiences (Barab, Hay, & Duffy, 1998). By using a course evaluation process, active learning outcomes can be evaluated online and successfully put into service from the inception of the learning experience to the end. Empirical and opinion research suggests that online education will continue its growth pattern for years to come. The use of active learning strategies should support that growth by ensuring that learning quality will be maintained, satisfying a diversity of learning needs (Morphew, 2000).

### *Student Autonomy*

Student autonomy is defined as “students have opportunities to initiate ideas, make their own learning decisions, and the locus of control is student oriented” (Walker, 2001, p. 2).

Students as autonomous learners can be described as the extent to which students perceive their control over events affecting them such as decision making and self-direction, with autonomy being an essential component of transactional distance (Vandergrift, 2002). Approaches to self-directed and independent learning strategies serve to promote the best possible learning opportunity, whether the learning is delivered in a traditional classroom or online (Barab, Kenneth, & Squire, 2001).

Autonomous student learners take responsibility for the learning they receive as reported in a study by Vonderwell, Liang, and Alderman (2007), who observed students from five master’s level online courses over three semesters at the Colleges of Education located at two institutions. Vonderwell et al. used qualitative methods and thematic data analysis to assess student participation and learning. Their findings showed that, “student self-determination and responsibility influenced the degree that students took advantage of online discussions” (p. 12). In that study, student-learner autonomy was evident when students reported that online interaction should offer choices for students from course material and structure.

Autonomy suggests students in a distance learning environment taking online courses will need to take more initiative in finding the information they need as well as take a proactive approach by independently developing course management processes, thereby enabling their successful completion of the course. This approach optimizes a self-regulatory conduct applied to course requirements. According to Zimmerman (2002), in a self-regulatory learning environment, “learning is viewed as an activity that students do for themselves in a proactive

way rather than as an event that just happens to them in reaction teaching” (p. 65). Students know their strengths and weaknesses and can guide themselves toward academic goals and this increases their effectiveness. Their self-regulation and autonomy in an online environment improves their level of satisfaction and motivates them to continue to excel academically (Eschell & Kohavi, 2003; Zimmerman, 2002). This self-regulation system actually regulates the control students maintain with their scholastic potential, and as their accomplishments increase, so will their motivation, confidence, and satisfaction within their online learning environment (Eschell & Kohavi, 2003; Pajares, 2002).

#### Demographic and Performance Variables on Student Experiences and Satisfaction

As online learning markets grow in response to changing demographics and greater expectations for online courses, higher education institutions will find themselves competing with a vast marketplace that has effectively eliminated barriers such as geographic locations and limited technology (Roach & Lemasters, 2006). Quality is consistently a top concern for critics who dismiss the effectiveness of online learning, but student satisfaction must also be considered by these institutions. A review of the literature on student satisfaction suggests that students must be ready for flexible and independent learning (Samarawickema, 2005); however, to be successful it is important to know how they are satisfied within the online environment. Relevant studies of online learning offer that students’ perceptions of satisfaction are affected by peer interaction, faculty-student interaction, and program structure (Diekelmann & Mendias, 2005; Roach & Lemasters, 2006).

### *Computer Efficacy*

Computer experience has been linked to the amount of time students spend on a course's website, the number of times they log-on to the course, and the probability of taking additional online courses (Hill & Rave, 2000; Rosenkrans, 2001). Researchers have used computer efficacy as an indicator of students' perceptions of their success in using computer-mediated technology relative to their satisfaction with the online learning environment (Fletcher, 2005; Topuc & Ubuz, 2008). McDonald (2002) suggested that students will not engage in essential written communication, interact, or perform in online courses if they are not familiar with the required technology.

Successfully participating in an online environment dictates the need for a certain level of familiarity with computers and online technology, if students are expected to engage in peer and instructor activities. Without these technical abilities students will develop a sense of anxiety and barrier to learning (Cheurprakobkit, Hale, & Olson, 2002; Richardson & Swan, 2003).

The attitudes students have toward courses taken online show that previous computer experience is a significant gauge in determining their participation level and satisfaction (Arbaugh, 2000; Huang, 2002). Richardson and Swan (2003) asserted that higher levels of computer experience fosters such an increase in familiarity with computers that it leads to higher satisfaction levels with the online experience and develops initiative, responsibility, and improved learning. This assertion is supported by the notion that computer-mediated communication technologies using electronic communication applications, such as posting threads, e-mail, chat rooms, and other technology for delivery, are a good indicator that students' previous experience with computers is necessary for achieving a learning environment where

students will be satisfied and be successful (Chen, 2002; Joo, Bong, & Choi, 2000; Osika & Sharp, 2002).

The relationship between the degree of student satisfaction of students taking courses online with their comfort level of computer and Internet usage has also been somewhat controversial. Marks, Sibley, and Arbaugh (2005) suggested that students' previous computer familiarity when taking classes online was an insignificant variable in predicting students' perceived learning in an online master of business administration course at a Midwestern university. However, Fletcher (2005) evaluated computer self-efficacy as a predictor of satisfaction and student intent to engage in online courses. He discovered that a connection exists between computer experience and student satisfaction and that the more experience a student has with computers the more likely the student will be satisfied in the online learning environment. Hirschbuhl, Zachariah, and Bishop (2002) posited that a gap exists between technological effects on students and the rate of change with technology and that the gap is growing. This gap between online learning and technology is responsible for student anxiety due in part by the inability to deal with the problems technology creates.

Brinkerhof, Klein, and Koroghlanian (2001) studied students taking online courses and tested for computer skills related to navigating various online course applications, attitudes about the online environment, and previous online experiences. Their findings revealed that students with few computer skills were favorable toward taking online courses in the future. Rodriguez, Ooms, and Montanez (2008) conducted a study to determine whether technical skills had an effect on student satisfaction levels when taking online courses. The researchers' evaluation consisted of variables that tested several skill characteristics including their confidence levels with computer technology, whether they desired to learn new technology, and their satisfaction

with previous online experiences. Rodriguez et al. developed a survey that included three groups of students having taken online courses, hybrid courses, and no online course experience. The results of their study revealed that the majority of students reported being content with basic computer technology, fewer students were content when using a higher level of technology and their overall level of comfort with technology was not related to their behavior when taking an online course. Students having previously taken online courses and hybrid courses as well as students with no computer experience were equally content with the online learning environment and were motivated to learn new technology. Rodriguez et al. cited Stokes (2003), who suggested that student satisfaction was not influenced by previous online experiences but noted a significant difference between more and less experienced students. In their study of 698 students, the researchers concluded that experience with technology was not related to online course-taking behavior, and students with no previous computer experience reported the same level of comfort as those with previous experience.

### *Effort*

In a study to identify the variables that impact the degree of students' satisfaction with online learning experiences, Rodriguez, Ooms, Montanez, and Yan (2005) used the level of comfort with technology, including online-related computer operations as one of those variables. The researchers suggested that in order for students to master the requirements for online course content, extra effort in learning technical skills would be essential. The question of whether effort influences satisfaction continues to be debated in the literature. Roach and Lemasters (2006) cited a study by Vonderwell and Turner (2005) where the researchers evaluated 24 undergraduate pre-service teachers' efforts in terms of discipline and time management. The

requirements consisted of exercises to assist students in becoming self-learners. The study concluded with the participants reporting that online learning cultivated their responsibility and initiative toward learning. Students also reported that the online course required greater effort because they could not rely on personal contact with the instructor. Therefore, it was necessary to use compensating resources in order to receive comparable levels of support and content.

According to a study by Arbaugh and Duray (2002), comparing courses in two online MBA programs on student perceptions of learning and satisfaction, satisfaction with online courses has been closely associated with the actual time spent with online learning. The study included 134 students taught by four different instructors. The researchers' concluded that the more frequently students' experience online learning, the more satisfied they are with the delivery method.

### *Demographic Characteristics*

Several researchers have attempted to identify demographic differences or similarities between online learners and face-to-face learners. In a study to determine the differences between students taking online courses and students preferring traditional lecture style classroom teaching, Dutton et al. (2002) compared two sections of Introduction to Programming in C++ at North Carolina State University. One section of the course was comprised of only online students and the other section contained on-campus students. Surveys were administered to the groups at the beginning of the term, with 104 of the surveys completed by students taking the on-campus class and 89 surveys completed by the students taking the online class. The survey collected information on work experience, childcare, commuting, computer efficacy, and attitudes about characteristics of the course. The results of the study showed that online students

were older, inclined to be lifelong learners, most students worked, most had childcare obligations, had longer travel distances to campus, and had more previous computer experience (Dutton et al.). Doyle (2009) found that students taking online classes were similar to students taking on-campus courses relative to income, race, and ethnicity. The researcher also found that online students were older, on average, than on-campus students with the average age of online students being 29 years old; that students take online classes concomitant with on-campus classes, and that most students taking online classes live within close proximity to their homes. The researcher noted that 75% of online students lived within 40 miles from the campus (p. 3). The question has arisen as to whether there is a relationship between demographic characteristics and student satisfaction, and a few studies have begun to consider that question.

*Age.* The highest growth in higher education is made up of student learners age 25 and older (Howell et al., 2003). According to Knowles (1990), distance learners are typically older than students who take on-campus courses. The literature suggests older students typically have higher motivations supporting their desire to learn and are not as dependent on the institution for encouragement. The literature also documents that distance learners are older than the students taking classes on-campus (Gibbons & Wentworth, 2001; Huang, 2002; Merriam, 2001).

*Ethnicity.* African American students are enrolling in distance education courses at an accelerating pace (Waits & Lewis, 2003). Noel-Levitz (2009) reported lower satisfaction among African American students at four-year institutions, “African American students expressed 14% less satisfaction at private institutions and 19% less at public institutions, as compared to Caucasian students” (p. 7). There is limited research on the impact of distance learning and the

satisfaction of African American student learners when you consider that the goals and objectives of many institutions is to recruit African American students, thereby increasing graduation rates for that ethnic group (Flowers, Moore, & Flowers, 2008; Waits & Lewis, 2003). While researchers such as Rovai and Barnum (2003) and Wang and Newlin (2000) have shown that distance education students report higher learning outcomes than on-campus students taking classes in a traditional classroom, the body of knowledge is limited with respect to relevant literature because there has been very little research that focused on African American student experiences.

*Gender.* A limited review of the literature suggests that gender difference is the reason for variances occurring in students' perceptions of their social presence and learning within their online environment (Richardson & Swan, 2003). Although there is limited research addressing gender differences relative to satisfaction in online courses, Noel-Levitz (2009) showed that female students reported higher levels of satisfaction than males with online learning at community colleges and four-year institutions. The report showed, "females at four-year public and private schools reported 57% and 58% respective satisfaction levels" (p. 10).

A study of 68,760 students attending 87 institutions examining student satisfaction over a 3-year period showed that the majority of online learners were female (68%), were over age 24 (80%), and lived off campus (81%) (Noel-Levitz, 2009, p. 5). Most of the survey participants were at the undergraduate level and employed on a full-time basis. The result of the study showed that online learners reported high satisfaction scores in all categories, suggesting that online programs at most institutions are meeting student expectations.

## Theoretical Framework

Students' satisfaction with the online environment is related in many ways to customer satisfaction resulting from the purchase of a product or incurring a service. There are several dynamics involved with the influencers of satisfaction, including various preconceptions about specific online courses within the distance learning environment. Expectation is one of those influencers (Appleton-Knapp & Krentler, 2006). According to Gremler and McCollough (2002), students are often compared to customers, and research on those factors influencing student satisfaction has been extended to include literature related to the educational environment.

The expectation disconfirmation theory provides a theoretical framework for understanding how students' expectations of distance learning and their satisfaction with the distance learning environment are related (Appleton-Knapp & Krentler, 2006). The expectations disconfirmation theory posits that a customer's expectations concomitant with perceived performance of a product or service will lead to post-purchase satisfaction. This suggests that expectations can exhibit probable behavior (Churchill & Suprenant, 1982) and become an established standard in the expectation disconfirmation theory model which would then be used to evaluate performance to determine whether a disconfirmation judgment exists (Dwivedi, Lal, Williams, Schneberger, & Wade, 2009). There are four central concepts in the expectation disconfirmation theory model: expectations, performance, (dis)confirmation, and satisfaction.

The differences between prior expectations and performance leads to either confirmation or disconfirmation and, according to Appleton-Knapp and Krentler (2006), there are three outcomes: (a) when actual performance is achieved as was expected, confirmation results; (b) if performance exceeds expectations, positive disconfirmation occurs; and (c) if the performance level is less than expected results, negative disconfirmation occurs. Summarily, positive

disconfirmation equates to satisfaction and negative disconfirmation results in dissatisfaction. According to Oliver (1993), “positive disconfirmation enhances satisfaction and negative disconfirmation decreases it, while simple confirmation has little impact on satisfaction” (p. 73).

Although the expectation disconfirmation theory has been used extensively in studies related to consumer satisfaction, this study used the theory to determine whether student satisfaction with their online distance learning experience is viewed positively when their actual online experience is compared to their perceived or expected experience. In addition, this study seeks to determine how confirmation or disconfirmation of expectations relates to student satisfaction as well as their plans for future enrollment in online courses.

### Summary and Conclusion

This literature review presented information from scholars and researchers alike who have delved into an investigation of online learning. What we can collect from this body of work is that online learning is a growing force in higher education, that it has much to offer to institutions as well as to students, and that it has proven to be an effective instructional mode (even when compared to face-to-face instruction). However, there are factors beyond the desire to implement and the effectiveness of implementation that may influence whether online learning becomes an enduring part of higher education. Among other factors, student satisfaction with online learning is vital to its success. Because of this, rigorous investigation into the perceptions of student satisfaction and the relationship between the satisfaction constructs with online learning is critical.

## CHAPTER 3

### METHODS

#### Introduction

This chapter describes the study's research methodology and contains the following sections: research design, research questions, research site, participants, instrument, data collection, data analysis, and quality assurance. The chapter ends with a brief summary of the methods used to collect and analyze the data.

#### Research Design

The research design of this study is quantitative. According to Creswell (2005), quantitative methods are most effective when pursuing facts rather than the researcher's viewpoint and are used when the researcher wants to pursue the statistical truth rather than observing details. Quantitative research emphasizes the discovery of existing facts based on a subject-object relationship which restricts subjectivity, promotes objectivity, and allows for generalizability of the study.

This study used a survey research approach to collect data. Surveys are a research method used to collect information about phenomena when a researcher is unable to observe the phenomena (Fanning, 2005). According to Fowler (2002), the survey's main purpose is to provide statistical results that represent a description about a study that is quantitative and applies to the population being studied. DeVaus (2002) offered that research surveys examine analytically related data drawn from a sample that is representative of the uniqueness of the

population. Surveys are a preferred data collection method when there is a potential for a large number of responses to the survey. Questionnaires can be used to collect data on the overall performance of the test environment or certain components within the environment (Bradburn, Sudman, & Wansink, 2004). Surveys have distinct advantages over other methods of data collection because respondents can complete the survey at their leisure, and the information received from the survey responses is controlled and immediately available for analysis.

### Research Questions and Hypotheses

The research questions that framed this study follow:

*Research Question 1:* What are students' expectations of online courses?

*Hypothesis:* There is no significant difference in the expectations of students taking online courses based on demographics, computer efficacy, and effort.

*Research Question 2:* What are students' experiences with online courses?

*Hypothesis:* There is no significant difference in the experiences of students taking online courses based on demographics, computer efficacy, and effort.

*Research Question 3:* To what degree are the expectations of the online learning environment that exist under the constructs of instructor support, student interaction and collaboration, personal relevance, authentic learning, active learning, student autonomy, and satisfaction different from actual experiences with the online learning environment?

*Hypothesis:* There is no significant difference in the expectations of and experiences with the online courses that should exist under the constructs of instructor support, student interaction and collaboration, personal relevance, authentic learning, active learning, student autonomy, and satisfaction.

*Research Question 4:* To what degree do demographics, computer efficacy, and effort, affect the difference between expectations and experiences related to student satisfaction of online courses under the constructs of instructor support, student interaction and collaboration, personal relevance, authentic learning, active learning, and student autonomy?

*Hypothesis:* There is no significant difference in student satisfaction among demographic, computer efficacy, and effort variables across the constructs of instructor support, student interaction and collaboration, personal relevance, authentic learning, active learning, and student autonomy in their distance learning courses based on expectations versus actual experience.

*Research Question 5:* To what degree are students satisfied with online courses?

*Hypothesis:* There is no significant difference in the satisfaction levels of students taking online courses based on demographics, computer efficacy, and effort.

#### Research Site

The site selection is Troy University, a large Master's College and University I (Carnegie Classification) in the Southeast where online programs are an important and growing part of the university's mission. Included in the University's strategic plan is the initiative to offer and deliver all existing traditional classroom courses online. The university Chancellor identified several principles that contribute to the uniqueness of Troy University. Those principles contained several goals that will become part of the 2010-2015 "Troy Rising" strategic plan. One of those goals states, "Bring every academic program online. With 19/70 current programs online this will be a challenge for the university but one that needs to be met to grow enrollment" (Troy University, 2009, p. 1). Masters granting universities are under-studied and because

distance education is such a critical component of the institution's mission, this site is ideal for the current study.

Troy University is a public university comprised of four campuses in the State of Alabama and a network of campuses worldwide. The University is international in scope and offers an array of educational programs at the undergraduate and graduate levels. Academic programs provided by the University are supported by the office of student affairs, which promotes the welfare of the individual student. Troy University has a faculty and staff who advance the discovery and exploration of knowledge and its application to life-long success through effective teaching, service, creative partnerships, scholarship, and research (Troy University, 2009). The University began functioning in 1887 as the Troy State Normal School, by an Act of the Alabama Legislature. Due to the institution's rapid growth, in 1929 the State Board of Education changed the name to State Teachers College. Soon thereafter, the university offered its first baccalaureate degree. The current structure evolved from many changes, including the following: In 1961 the university established a center at Fort Rucker, in 1965 the university established a branch at Maxwell-Gunter Air Force Base, in 1966 the Phenix City branch was established, in 1967 the name changed to Troy State University, in 1983 and 1985 the Dothan and Montgomery branches became accredited (Troy University, 2009, p. 1).

The University's name changed from Troy State University to Troy University, which was approved by the Board of Trustees, on April 16, 2004. The name change was completed in August after a 5-year process of consolidating the university system, comprised of three independently accredited institutions, into one university, Troy University. Today, Troy is no longer a system of institutions but one University consisting of four campuses in Alabama and a Global Campus (GC) with 60 sites in national and international locations. As a result of the

consolidation and merging the institutions into one, Troy, the student body worldwide consists of approximately 30,000 students. Another milestone was accomplished in December 2007, when the Alabama Commission on Higher Education approved the University to begin its first doctoral program in Nursing Practice (Troy University, 2009).

The University has grown rapidly during its relatively short history. In the 2009 spring term, Troy University reported a headcount of 29,505 students with a credit hour productivity totaling 260,338 hours. In 2009, the university reported 18,167 full-time equivalent students, 754 of whom were international students. The classification of students was well-diversified with 35% freshmen, 50% sophomores, 46% juniors, 47% seniors, and 33% graduate students. The average age of undergraduate students was 29 years, and the average age for graduate students was 35 years. For the academic year 2007-2008, degrees were conferred to 2,150 male students, including 573 African Americans and 1,240 Caucasians; and 3,639 females, including 1,510 African Americans and 1,721 Caucasian students. The degrees conferred by college classification included 1,696 in Arts and Sciences, 1,952 in Business, 94 in Communication and Fine Arts, 1,736 in Education, and 311 in Health and Human Services (Troy University, 2008).

### *Global Campus/e-Campus*

The university has a history of serving diverse populations in many distant places. Troy University also has a history of commitment to advancing technology and innovation in developing distance learning education systems. Global Campus (GC) is a component unit of Troy University with historical significance. The University began its world-wide presence in the Florida panhandle where the first sites under the name of Extension Services originated. In 1974, Extension Services established programs in Europe and Phenix City, Alabama, and in 1983 the

name of Extension Services was changed to the College of Special Programs where it continued to expand. In the 1990s, the College of Special Programs was renamed and University College was born (Troy University, 2009). Over 28 sites were established over the next several years in Europe with the addition of several military locations in the western and eastern regions of the United States. Troy University began moving away from its military focus and once again began leveraging its distance learning experience by developing international sites serving students in Asia. In 2005, Troy University refined its distance learning concept into a more focused Internet-based delivery platform and formed eCampus (Troy University, 2009).

In 2007, eCampus began serving all students enrolled in online courses and in 2008 eCampus became a component unit as the University's "fifth" campus, Global Campus. Under this new structure, eCampus serves over 12,000 students each term offering innovative learning systems in 5 countries and 12 states outside of Alabama (Troy University, 2009, p.1). The University's Global Campus online programs offered through eCampus are made available to students seeking undergraduate and graduate degrees. The University recognizes that students returning to school in an online environment have education expectations that are different from those courses provided by traditional delivery platforms (Troy University, 2009). The online degree programs serve over 14,000 students and offer an excellent distance learning environment for working adults who often have family commitments as well as a professional career. The flexibility of "anytime, anywhere" classes serves its students who live or work in areas that are distant from campus.

The University's online programs are comprised of students from all branches of the military services and in businesses and industry world-wide (Troy University, 2009). In the 2008 fall semester, the most current information available, Troy University's eCampus reported a

headcount of 14,572 students with a credit hour productivity totaling 102,261 hours. The full-time equivalent student body totaled 7,102, with 37 being international students. The classification of students was well-diversified with 14% freshmen, 27% sophomores, 30% juniors, 36% seniors, and 30% graduate students. The average age of undergraduate students was 33 years, and the average age for graduate students was 35 years. For the academic year 2007-2008, degrees were conferred to 631 male students, including 145 African Americans and 363 Caucasians; and 484 females, including 202 African Americans and 215 Caucasian students. The degrees conferred by college classification included 674 in Arts and Sciences, 303 in Business, 135 in Education, and 3 in Health and Human Services (Troy University, 2009).

### Participants

Participants of the study included all students age 19 and older currently enrolled in at least one eCampus online course within the University's Global Campus umbrella. This study included online students taking classes who were also enrolled in many of the institutions on-campus colleges and schools. The Office of Institutional Research and Program Effectiveness identified all of the online undergraduate and graduate courses that were offered in Term 3, beginning January 4, 2010, and ending March 7, 2010 (see Appendix B). The University's Information Technology Department identified every student enrolled in an online course by using the students' unique e-mail address. Approximately 11,800 students enrolled in online courses were invited to participate in the study.

## Instrument

The survey instrument used for this study is the Distance Education Learning Environments Survey (DELES; see Appendices C and D) developed by Walker (2005) as a framework used to assess and evaluate the characteristics of online distance learning environments culminating in six DELES scales (Walker, 2005). The literature describes the DELES as “a validated instrument for postsecondary distance education” (Biggs, 2006, p. 46). The instrument is based on the following seven scales: (six psychosocial scales and one affective-trait scale) instructor support, student interaction and collaboration, personal relevance, authentic learning, active learning, student autonomy, and the affective-trait scale, satisfaction. Walker and Fraser (2005), in their development of the DELES instrument, made an assessment for each scale in order to evaluate internal consistency (see Table 1). The table shows the alpha reliability measurement for the satisfaction scale as well as each DELES scale for a sample of 680 students. The coefficient alpha, which is actually internal consistency reliability, for the six DELES scales reported ranges from .75 to .94. According to George and Mallery (2001), the reported measurement is generally determined to vary from acceptable to excellent. For example, student interaction and collaboration reported .94 on the alpha reliability scale with personal relevance reporting .92 and both are considered excellent. However, authentic learning reported .89 and instructor support reported .87 and both of those measurements are considered good ranges. The last two DELES scales, student autonomy and active learning, reported coefficient alphas of .79 and .75, respectively, which equated to a reliability determination of “acceptable.” Finally, the attitude scale of “satisfaction” reported an alpha of .95, which is considered excellent.

Table 1

*Scale Reliability Using Cronbach's Alpha Coefficient for DELES and Satisfaction Scale*

Scale	Number of items	$\alpha$ Reliability
DELES		
Instructor support	8	0.87
Student interaction and collaboration	6	0.94
Personal relevance	7	0.92
Authentic learning	5	0.89
Active learning	3	0.75
Student autonomy	5	0.79
Satisfaction	8	0.95

*Note.*  $N = 680$ . From “Development and Validation of an Instrument for Assessing Distance Education Learning Environments in Higher Education: The Distance Education Learning Environments Survey (DELES),” by S. L Walker and B. J. Fraser (2005) *Learning Environments Research*, 8, 300. Copyright by Springer.

The DELES instrument contains Likert-type scaled items to collect supportive evidence for the constructs. Likert-type items are ordinal item responses that are summed in order to generate a score for a group of items that can be analyzed as interval scale data (Dawes, 2008; Trochim, 2006).

The research instrument for the current study included all of the DELES scales and was modified to include student learner demographics (age, gender, and ethnicity), computer efficacy, and effort items. The DELES scales consisted of a total of 42 items. Higher scores indicate higher levels of instructor support, student interaction and collaboration, personal relevance, authentic learning, active learning, student autonomy, and student satisfaction (Walker, 2005). The demographic independent variables included age, gender, and ethnicity. The computer efficacy independent variable gauges student comfort with using technology necessary to succeed online, while the effort independent variable collects data relative to the amount of

time students spent preparing for their online courses. These variables have a relationship with student satisfaction and were selected for descriptive and comparative purposes (Richardson & Swan, 2003; Stewart, Shields, Monolescu, & Taylor, 1999; Tucker, 2001).

### Survey Administration

The survey was administered online beginning January 9, 2010. Internet surveys have several benefits, which include being less expensive than paper surveys, offering efficiencies by reducing the amount of delivery time when compared to surveys administered by mail, and reducing the data entry errors when compiling statistical results (DeVaus, 2002; Dillman, 2000). In addition, survey administration provided through the Internet allows a significant degree of security, accuracy, and privacy for student respondents by providing password protection which restricts access to the questionnaires (Dillman, Tortora, & Bowker, 1998; Harasim, 1997; Hill, 2001).

Internet surveys also have limitations, such as sample restrictions, because they tend to generate relatively few responses and the motivation of the respondent can be an issue. If a significant number of students do not respond to the Internet survey, this could present a constraint suggesting that students who volunteer to respond the survey have different characteristics than students who do not respond (Dillman & Bowker, 2001; Fowler, 2002). Additionally, Internet surveys may require a greater level of skill to complete, which suggests that students with a higher level of computer skills may complete the survey whereas students without sufficient computer skills will not complete the survey. The risk of using a survey instrument suggests that it is possible to have a high level of non-respondents as well as errors caused by respondents submitting incomplete surveys or respondents leaving some questions or

items blank (De Vaus, 2002; Osika & Sharp, 2002). For this study, the advantages of delivering the survey online outweighed the disadvantages.

Data collection procedures and rationale followed the survey process execution as outlined in Salant and Dillman (1994). The authors described the importance of confidentiality of responses to the survey and described confidentiality as “an ethical commitment not to release results in a way that any individual’s responses can be identified as their own” (Dillman, 2000, p. 163). Therefore, the only way survey responses are anonymous is when the researcher cannot identify each person’s response. This study assured students that all responses would remain anonymous which would be accomplished by using encrypted identifier codes for all participants. Dillman (2000) used the rationale that responding to survey questions should be voluntary and respondents should not be required to provide an answer to each and every question. In addition, Dillman (2000) posited that respondents sometimes have sound reasons for avoiding a question and not providing an answer. The researcher’s rationale coincides with the Institutional Research Board’s insistence that for human subject protection participants need to be informed that their response to the survey is voluntary.

The data collection method for this study was accomplished by administering a survey questionnaire to all students age 19 and older who were enrolled in an online course for the spring term beginning January 4, 2010, and ending March 7, 2010. The survey service used by Troy University is named Vovici. Vovici offers Internet survey design and analysis capability as well as increased control over the Internet survey process by allowing the University to control the way data are captured and the process by which results are analyzed. Vovici allows complete integration with the University’s e-mail system making the invitation to participate in the survey as well as reminders to participate a simple step for student participants.

The survey instrument was deployed during the first week of the term (pre-course) and the last week of the term (post-course). The aforementioned students enrolled in at least one online course were sent an invitation to participate by e-mail during weeks 1 and 8 of the 9-week term. The e-mail contained an embedded link to the survey and survey response data were received using a secure, encrypted process through which student identity was kept confidential. Students were informed that all survey results would only be reported in the aggregate.

Because a pre-course and post-course survey method was used in this study, it was necessary to track the students' responses across both surveys. Vovici service has the capability to track students who have and who have not completed the survey. To accomplish this, the Troy University e-mail address to which the invitation to participate was sent was used as the unique identifier to associate the pre-course and post-course survey responses from the individual student. The e-mail field was removed from the data set prior to analysis to ensure anonymity. One week after the initial survey invitation, non-responders were sent a reminder email, and 4 days after the reminder e-mail a second reminder e-mail was sent to all students who had not previously responded. This study included three data sets, including data from the pre-course survey, data from the post-course survey, and data collected from students who responded to both the pre-course and post-course survey.

Both the pre-course and the post-course survey were administered using an e-mail invitation to participate, followed 1 week later by a reminder e-mail to non-respondents and a final second reminder sent to non-responders 4 days after the first reminder. This pre- and post-survey method of data collection and analysis was used to determine whether the expectations of students taking online courses were different from their actual experiences using both demographic variables and psychosocial satisfaction variables.

## Data Analysis

Data collected from the survey instrument were input into a Statistical Package for the Social Sciences (SPSS) database, version 17.0. This study used the SPSS database to calculate descriptive as well as inferential statistical measures. Descriptive or summary statistics are used to summarize a set of observations in order to communicate large amounts of data as simply as possible, often using a dependent or independent *t* test. The methods used to collect and analyze the data are presented in this study and include the measure of central tendency such as the mean, a measure of statistical dispersion such as the standard deviation, and a measure of the shape of the distribution (Lomax, 2007). Descriptive statistics were used to report demographics (age, gender, and ethnicity), computer efficacy, and effort categories. Additionally, statistical analysis was used to examine participant scores and to determine the means for expectations, experiences, and then satisfaction among both the independent variables that included age, gender, ethnicity, computer efficacy, and effort and the dependent variables that included the six psychosocial DELES scales of satisfaction, which provide a response to Research Questions 1, 2, 3, and 4.

Analysis was performed to determine the level of difference of student satisfaction with online courses with respect to age, gender, ethnicity, computer efficacy, and effort across the six psychosocial satisfaction constructs, which will provide a response to Research Question 5. A two-way analysis of variance (ANOVA) was used to calculate the mean ratings in order to determine whether different levels existed. ANOVAs were chosen because they support the comparison of mean scores from two or more groups of scores (Huck, 2000; Keselman, Huberty, Lix, & Olejnik, 1998). According to Maxwell and Delaney (2000), ANOVA is robust to violations of the normality assumption and to moderate violations of homogeneity of variance. If significant differences were found, follow-up tests would be conducted to evaluate pair-wise

differences among the means. The effect size was calculated using partial eta-squared ( $\eta^2$ ) because it reflects the proportion of variance in satisfaction scores that may be attributable to the grouping variables, age, gender, ethnicity, computer efficacy, and effort. In other words eta-squared determined whether a relationship or difference was practically significant.

In order to analyze the factors related to satisfaction between the independent variables related to demographics across the constructs of satisfaction, a general linear model with repeated measures was used. Repeated measures analysis tests the equality of means and was used when the sample were measured under different conditions. Also when each participant in the sample was measured under all conditions and the sample size was not divided between conditions or groups, the inferential testing used in repeated measures was more powerful. This analysis provides a response to Research Question 4.

#### Protection of Human Participants

Approval was obtained from the Troy University and The University of Alabama Institutional Review Board (IRB), which oversees the protection of the rights and welfare of human subjects involved in research projects (see Appendix C). Steps to prepare for a review by the review boards were based on the survey procedure and assurance that the information obtained from the survey would be recorded in such a manner that subjects could not be identified directly or through identifiers linked to the subjects. The subjects were identified as including all students age 19 years and older enrolled in online courses through the University's eCampus during the 2010 spring term. Students were informed that participation in the research-based study was voluntary. The respective Institutional Review Boards determined the adequacy of the provisions of the study to protect the privacy of research participants and to maintain the

confidentiality of the data. Where the participants were likely to be members of a vulnerable population, the IRBs determined that appropriate additional safeguards were in place to protect the rights and welfare of these research participants (see Appendix D). An electronic consent form was used to provide information to the survey participants about the nature and purpose of the study as well as affirming that the data were confidential and encrypted to protect their identity. Each participant was informed about the methods and pertinent issues of the research.

### Quality Assurance

The DELES instrument was developed using Hase and Goldbergs' (1967) intuitive-rational and internal strategy where items with high internal consistency and items with high factor loadings relative to their own scales were retained. Factor analysis is used to select variables that have the highest correlation with main component factors. In other words, it is used to ensure that items within a certain scale are measuring only that scale (Garson, 2004). For the satisfaction scales within the DELES instrument, items with factor loadings of "less than or equal to 0.5 within their own scales were retained" (Walker & Fraser, 2005, p. 300). The DELES instrument has been field tested and validated using 680 responses from 13 countries. Cronbach's alpha analysis for consistency and reliability was conducted for each of the satisfaction constructs with the alpha coefficient ranging from 0.75 to 0.95. The association between six satisfaction constructs and the dependent variable satisfaction was also evaluated, resulting in a simple correlation between satisfaction and the DELES constructs ranging from 0.12 to 0.31. All correlations were positive and statistically significant (Walker & Fraser, 2005, p. 301). According to Walker and Fraiser (2005),

The DELES field test resulted in 680 responses from the U.S., Australia, New Zealand and Canada. Fifty-six field tested items were reduced to 42 items in 7 scales after

component factor analysis and internal consistency reliability (Chronbach's alpha) analysis were conducted. (p. 1)

In a study by Biggs (2006), the DELES instrument was used to determine the way students perceive the dynamics of three types of instruction: online learning, hybrid, and a traditional classroom environment. The study involved 26 students taking a social work class in Interviewing and Counseling at Texas State University-San Marcos. The DELES survey was administered as, "DELES-Preferred and DELES-Actual so that comparisons could be made based on what the students perceive should be in place for instruction and actual perceptions after instruction occurred" (p. 2).

### Summary

This chapter reported the overall design of the research and the methods used in the data collection and analysis process (see Table 2). In order to test the five hypotheses using the psychosocial satisfaction constructs of instructor support, student interaction and collaboration, personal relevance, authentic learning, active learning, and student autonomy, the DELES survey was administered to 11,814 students at a single site: a comprehensive university. A pre-course and post-course survey was administered to collect data in order to determine students' expectations and actual experiences relative to their relationship to student satisfaction. Computer efficacy, effort, and demographics including age, gender, and ethnicity were also included in the analysis as independent variables.

Table 2

*Data Analysis and Instrumentation*

Section and research question	Variable type	Survey questions	Analysis performed
Section 1: Demographic characteristics : <i>Age</i> <i>Gender</i> <i>Ethnicity</i>		Section 1: 1.1-1.4	Descriptive/Mean
Section 2: Computer efficacy		Section 2: 2.1-2.10	Descriptive/Mean
Section 3: Performance variables: <i>Effort</i>		Section 3: 3.1-3.2	Descriptive/Mean
Section 4: Research questions		Section 4: PreTest	ANOVA
1. What are student pre-course expectations of online courses?	Independent: Age, gender, ethnicity, computer efficacy, effort	Sections 1,2,3, and 4 (pretest)	
a. Instructor support	Dependent	4.1 – 4.8	
b. Student interaction	Dependent	4.9 – 4.14	
c. Perception of personal relevance	Dependent	4.15 – 4.21	
d. Level of authentic learning	Dependent	4.22 – 4.26	
e. Level of active learning	Dependent	4.27 – 4.29	
f. Perception of student autonomy	Dependent	4.30 – 4.34	
2. What are student post-course experiences with online courses?	Independent: Age, gender, ethnicity, computer efficacy, effort	Section 4: posttest  Sections 1,2,3,and 4 (post)	ANOVA

*(table continues)*

Section and research question	Variable type	Survey questions	Analysis performed
a. Instructor support	Dependent	4.1 – 4.8	
b. Student interaction	Dependent	4.9 – 4.14	
c. Perception of personal relevance	Dependent	4.15 – 4.21	
d. Level of authentic learning	Dependent	4.22 – 4.26	
e. Level of active learning	Dependent	4.27 – 4.29	
f. Perception of student autonomy	Dependent	4.30 – 4.34	
3. Do expectations match experience for the constructs ?	Dependent: Satisfaction Independent: Age, gender, ethnicity, computer efficacy, effort	Section 5 Sections 1,2,3,4(post), and 5.1 – 5.8	Repeated Measures
4. What factors are relationships to satisfaction??	Dependent: Expectations Experience	Sections 1,2,3 Section 4 (pre and post)	ANOVA
a. Instructor support	Independent		
b. Student interaction	Independent		
c. Perception of personal relevance	Independent		
d. Level of authentic learning	Independent		
e. Level of active learning	Independent		
f. Perception of student autonomy	Independent		
5. How satisfied are student with online courses?	Dependent: Satisfaction	Sections 1, 2, and 3, 4 (pre, post, and difference between pre and post) and 5	ANOVA
a. Demographics	Independent		
b. Efficacy	Independent		
c. Effort	Independent		
d. Expectation	Independent		
e. Experience	Independent		
f. Match between expectation and experience	Independent		

## CHAPTER 4

### PRESENTATION AND ANALYSIS OF DATA

The purpose of this study was to examine the relationships between psychosocial satisfaction scales in an online student learning environment using six constructs developed for use in the Distance Education Learning Environment Survey (DELES), which includes instructor support, student interactivity and collaboration, personal relevance, authentic learning, active learning, and student autonomy. The online learning environment for this study included all undergraduate and graduate students, age 19 years and older, enrolled in an online course during the 2010 spring term at Troy University. To facilitate this study, a literature review was conducted, a theoretical framework was developed, a valid data collection instrument was obtained, and pre-course and post-course satisfaction surveys were administered. This chapter is structured to present an analysis of the data collected in order to answer five research questions pertaining to students' expectations of the online learning environment, their actual experiences obtained from the online learning environment, and their satisfaction.

Research Question 1 sought to determine students' expectations of their online course(s) and whether there was a difference in those expectations based on the independent demographic variables of age, gender, and ethnicity, and other variables including computer efficacy, defined as prior computer experience, and effort, defined as the amount of time students expect to devote to course preparation. Research Question 2 provided data about the students' actual experiences from their online course(s) and if those experiences differed with respect to the same demographic and other variables used in the first research question.

Research Question 3 was structured to compare the expectations of students' online courses during the first week of the 2010 spring term with their actual online course experience at the end of the term. This comparison was made by collecting data based on characteristics that were related to student satisfaction as well as the dependent attitude variable, satisfaction. The characteristics or independent variables include instructor support, student interaction and collaboration, personal relevance, authentic learning, active learning, and student autonomy. Research Question 4 enabled the data to be collected to determine (a) whether student demographic variables and other variables are related to student satisfaction based on the characteristics of satisfaction (constructs of satisfaction) and (b) whether there is any difference in students' expectations versus actual experience based on those same variables and satisfaction characteristics. Research Question 5 sought to determine whether students were satisfied with their online course(s) and if there was a difference in the satisfaction levels based on the same demographic and other variables used in Research Questions 1 and 2.

#### Pre-course Participant Demographics and Characteristics

Demographic data applicable to satisfaction characteristics were collected in order to develop a profile of students enrolled in online courses. The demographic data included in this study consisted of age, gender, and ethnicity as well as two additional variables, computer efficacy and effort. The target population for this study consisted of 11,814 students, enrolled in at least one online course at Troy University, who completed a pre-course survey within the first week of the 2010 spring term. The students comprising the population were provided instructions to complete the survey; an informed consent statement relative to their rights and protection; and a direct-access, embedded link to the survey instrument. The study sample consisted of 3,296

students representing a 28% survey response rate of students who volunteered to participate in the survey by submitting a response. The demographic variables and other variable data analysis consisted of the use of descriptive statistics and a determination of the correlations between all study variables and the constructs of satisfaction. The organization of this analysis section was supported by several research objectives that identified the factors that contribute to students' expected satisfaction with online courses.

### Pre-course Data Analysis

The method of data analysis chosen for the pre-course section of this study included descriptive and inferential statistics. Descriptive or summary statistics are used to summarize a set of observations in order to communicate large amounts of data as simply as possible. Inferential statistics, such as an analysis of variance (ANOVA), multivariate analysis of variance (MANOVA), repeated measures, independent *t* test, and correlation analysis, are used to reach conclusions that extend beyond the immediate data. This method of analysis can be used to infer from sample data what the population might suggest. In other words, inferential statistics can be used to make judgments of the probability that an observed difference between groups is either a dependable one or a difference occurring by chance (Lomax, 2007). The confidence level used in this study was 95%, meaning there is some assurance that 95% of the sample estimates represented the population of all online learners at Troy University, with a 5% chance that the estimates were in error when making estimates and generalizations about the population. All of the data in this study were analyzed using SPSS (Statistical Product and Service Solutions, formerly Statistical Package for the Social Sciences) version 17.0 (SPSS, 2009).

The data analysis method used for the demographic variables, age, gender, and ethnicity, as well as the variables of computer efficacy and effort, was descriptive frequency analysis. For the demographic variable, age, the data showed that 16% ( $n = 510$ ) of the participants were between the ages of 19 and 25, 43% ( $n = 1,393$ ) of the participants were between the ages of 26 and 35, 29% ( $n = 957$ ) of the participants were between the ages of 36 and 45, 11% ( $n = 370$ ) of the participants were between the ages of 45 and 55, and 2% ( $n = 49$ ) of the participants were over the age of 55. The inferential statistical analysis for the age demographic variable dichotomized the data into two sets: participants between the ages of 19 and 25 and participants age 26 and older. For the demographic variable gender, the descriptive frequency analysis illustrated that 65% ( $n = 2,125$ ) of the participants were female and 35% ( $n = 1,145$ ) of the participants were male. The demographic variable, ethnicity, was categorized into several classifications (see Table 3); however, this study only included the categories of Caucasian and other ethnic minority participants relative to the use in inferential statistics.

Table 3

*Frequencies and Percentages of Ethnicity Demographic Variable*

Ethnicity variable	<i>f</i>	%
Unknown	46	1.3
Asian	49	1.5
American Indian or Alaska Native	16	0.5
Hispanic	127	3.9
African American	1,251	38.2
Caucasian	1,789	54.6

For informational purposes, an additional data element was collected relative to education level. The data showed that the majority of the participants, 43% ( $n = 1,406$ ), did not have a

postsecondary degree. The frequency analysis showed that 30% ( $n = 967$ ) of the participants held the associate degree; 21% ( $n = 697$ ) of the participants held a bachelors degree; 5% ( $n = 151$ ) of the participants held a master's degree; and the smallest number of participants, .3% ( $n = 10$ ), held a doctorate degree.

Two other independent variables in addition to the demographic variables included in the survey were computer efficacy (see Table 4), which refers to the participants' experience with computers and the online environment, and effort, which refers to both the amount of time the participants spent preparing for the online course and the amount of time the participants spent logged-on to the course website.

The descriptive frequency statistics for computer efficacy included categories that provided information relative to the ability and knowledge of the participant to effectively use the technology inherent in courses that are delivered online. This ranges from basic applications such as word-processing to more advanced applications such as complex Internet navigation. The computer efficacy data were dichotomized into two categories, beginner and competent-expert. In addition to the descriptive data related to computer efficacy in Table 4, data relative to the number of online courses previously taken by the participant were also collected. The purpose of collecting this data was to obtain information that supported computer efficacy through students' experience obtained in an environment where the use of computers would be expected. The online learning experience was indicated by the self-reported number of courses previously taken by the participants. The frequency and percentage analysis shows that 19% ( $n = 629$ ) of the participants had previously taken between 0 and 2 online courses, 18% ( $n = 595$ ) of the participants had previously taken between 3 and 5 online courses, 16% ( $n = 527$ ) of the participants had previously taken between 6 and 8 online courses, and 47% ( $n = 1,520$ ) of the

participants had previously taken between 8 and 10 online courses. These data show that 63% ( $n = 2,047$ ) of the participants had previously taken at least three online courses prior to their current course(s) suggesting that the majority of the participants had significant experience with online courses and therefore probable existing experience with computers.

Table 4

*Percentages of Computer Efficacy Variable (N = 3,291)*

Computer experience description	No experience	Beginner	Competent	Expert
Word-processing (create, edit, save)	0.3%	2.1%	43.3%	54.3%
E-mail (compose, edit, send)	0.0%	0.4%	34.1%	65.5%
Browsing the Internet	0.0%	0.7%	36.9%	62.4%
Accessing library resources	0.8%	11.5%	53.3%	34.5%
Using menus/navigation	0.2%	2.9%	45.9%	51.0%
Entering a URL for Web	0.5%	3.4%	37.3%	58.8%
Conducting a search	0.2%	2.1%	39.9%	57.8%
Printing	1.9%	5.9%	41.3%	50.9%
Downloading information	0.9%	5.4%	41.4%	52.3%

The amount of effort participants spent preparing for the online course constitutes an additional variable that was determined from two items included in the survey. The first item was the average amount of time the participant spent each week preparing for the online class and the second item was the average amount of time the participant spent each week actually logged-on to the online course website. Fifteen participants did not report the amount of time they spent preparing for class; therefore, the sample included 3,281 participants. Also, 34 participants did not report the average number of hours spent logged-on to the course and, as a result, the sample for the effort variable was further reduced to 3,262 participants. The frequency and percentage analysis for the average time spent each week preparing for the online course(s) reported by the participants show that a significant number of participants, 38% ( $n = 1,237$ ), spent an average of

6 to 10 hours. The remaining categories showed that 6% ( $n = 194$ ) spent less than 3 hours preparing for class, 34% ( $n = 1,099$ ) spent between 3 to 5 hours, 14% ( $n = 474$ ) spent between 11 to 15 hours, and 8% ( $n = 277$ ) spent more than 15 hours preparing for class. The average amount of time spent each week by students who actually logged-on to the online course shows that most of the participants, 43% ( $n = 1,418$ ), spent between 3 to 5 hours logged-on. The remaining participants varied from less than 3 hours to more than 15 hours as follows: 14% ( $n = 458$ ) spent less than 3 hours, 27% ( $n = 895$ ) spent between 6 to 10 hours, 9% ( $n = 295$ ) spent between 11 to 15 hours, and 6% ( $n = 196$ ) spent more than 15 hours on average, each week logged-on to the online course.

#### Pre-course Instrument Validation and Reliability

This study employed factor analysis and multiple regressions to determine the relationship between the six DELES satisfaction constructs of instructor support, student interaction and collaboration, personal relevance, authentic learning, active learning, and student autonomy as predictor, dependent variables and also student satisfaction as a dependent variable.

Kaiser normalization and varimax rotation with principal component factor analysis, based on eigenvalue greater than 1, excluding cases listwise, and suppressing small coefficients below .50, was used to examine construct validity. The purpose of this analysis was to determine the structure of a large set of variables (Garson, 2004). According to Dorman (2003), this type of analysis is used to determine whether the construct items load on *a priori* scales. In other words, a factor analysis provides analytical data that can be used to determine whether items within a certain scale are measuring only that scale and no other scale. The factor loadings show that four of the six factors loaded separately and the last two factors (see Table 5), active learning and

student autonomy, loaded together rather than separately and failed to indicate discriminate validity. In order to determine whether Walker's (2005) original configuration of factors would be generalizable, rather than a confirmatory factor analysis, a replication of Walker's exploratory factor analysis was used. This exploratory factor analysis, if replicated with the sample in this study, would indicate generalizable validity for this scale with various populations. Given that this study more than tripled the participants in Walker's study, it is important to determine whether a different configuration of items into factors is likely, indicating that Walker's configuration could be contingent on the sample. Walker and Fraiser's (2005) original factor analysis indicated discriminate validity for the constructs of active learning and student autonomy. This indicates a variance in the responses of the sample from Walker's study and this study; therefore, further validation studies investigating population demographics contribution to the factor loadings would be beneficial.

For each factor, the percentage of variance was calculated and listed in the bottom row of Table 5. The highest proportion of variance among the items is the scale of instructor support (15.26%), followed by the personal relevance variance (14.28%). Other variances included student interaction and collaboration (13.18%), authentic learning, which explained 10.41%, and the combined loading of active learning and student autonomy, which explained a variance of 13.93%. The cumulative variance explained by the six DELES scales totaled 67.06%, which means the unaccounted for variance totaled 33%. This indicates that 33% of the variance in answers on the scales is caused by error variance or some other unmeasured factor.

Table 5

*Factor Loadings for the DELES Scale*

Item	Instructor support	Student interaction	Personal relevance	Authentic learning	*Active learning/Student autonomy
4.1 – INSTSUP1	.748				
4.2 – INSTSUP2	.696				
4.3 – INSTSUP3	.811				
4.4 – INSTSUP4	.783				
4.5 – INSTSUP5	.833				
4.6 – INSTSUP6	.647				
4.7 – INSTSUP7	.725				
4.8 – INSTSUP8	.731				
4.9 – INTER9		.788			
4.10 – INTER10		.750			
4.11 – INTER11		.819			
4.12 – INTER12		.821			
4.13 – INTER13		.838			
4.14 – INTER14		.751			
4.15 – RELEV15			.753		
4.16 – RELEV16			.656		
4.17 – RELEV17			.810		
4.18 – RELEV18			.739		
4.19 – RELEV19			.799		
4.20 – RELEV20			.610		
4.21 – RELEV21			.692		
4.22 – AUTH22				.611	
4.23 – AUTH23				.710	
4.24 – AUTH24				.751	
4.25 – AUTH25				.780	
4.26 – AUTH26				.711	
4.27 – ACT27					.548
4.28 – ACT28					.716
4.29 – ACT29					.717
4.30 – AUTON30					.769
4.31 – AUTON31					.665

*(table continues)*

Item	Instructor support	Student interaction	Personal relevance	Authentic learning	*Active learning/Student autonomy
4.32 – AUTON32					.746
4.33 – AUTON33					.758
4.34 – AUTON34					.771
% of Variance	15.26%	13.18%	14.28%	10.41%	13.93%

*Note.* INSTSUP: Instructor support, INTER: Student interaction and collaboration, RELEV: Personal relevance, AUTH: Authentic learning, ACT: Active learning, and AUTON: Student autonomy.

This study also employed correlation analysis, specifically multiple regression analysis, to determine the relationships among the six factors that relate to satisfaction. The results of the regression analysis suggested that all correlations between the dependent variable, satisfaction, and the predictor dependent construct variables, as well as the correlation between each of the predictor dependent variables, were positive and statistically significant (see Table 6). For each of the six constructs included in the DELES scale, a higher level suggests there is a higher degree of expected or perceived student satisfaction from the online courses. The Walker (2005) study previously mentioned in Chapter 3, Methods, reported a multiple correlation value of  $R = 0.46$ , with significant correlation between all of the variables. The multiple correlation value for this study is  $R = 0.26$ ,  $p < .05$ , which confirms the validity of the scores from this study's survey.

Table 6

*Correlations among DELES Variables*

Variable	1	2	3	4	5	6	7
1. Instructor support	1						
2. Student interaction	.394**	1					
3. Personal relevance	.462**	.488**	1				
4. Authentic learning	.407**	.443**	.732**	1			
5. Active learning	.317**	.257**	.506**	.536**	1		
6. Student autonomy	.375**	.196**	.436**	.420**	.667**	1	
7. Pre satisfaction	.181**	.106**	.212**	.196**	.174**	.207**	1

For the six constructs comprising the DELES scale, as well as the pre-course satisfaction scale, the alpha reliability was determined for the 3,216 participants (see Table 7). The coefficient alpha, which is the internal consistency reliability, shows a range from .81 to .95 for the six scales and the pre-course satisfaction scale. According to George and Mallery (2001), the range is determined to be good to excellent. The alpha reliabilities for the DELES scales of the constructs of personal relevance (.93), instructor support (.91), student interaction and collaboration (.91), and authentic learning (.91) are considered excellent and the alpha reliabilities for the constructs of student autonomy (.86) and active learning (.81) are considered good. Also, the attitude construct of pre-course satisfaction shows a reliability of .95, which is also considered excellent.

Table 7

*Scale Reliability Using Cronbach's Alpha Coefficient for DELES and Satisfaction Scales*

Scale	Number of items	$\alpha$ Reliability
DELES		
Instructor support	8	0.91
Student interaction and collaboration	6	0.91
Personal relevance	7	0.93
Authentic learning	5	0.91
Active learning	3	0.81
Student autonomy	5	0.86
Pre-course Satisfaction	8	0.95

Note.  $N = 3,216$ .

This section of the study uses simple correlation and multiple regressions in order to report the association between the participants' pre-course satisfaction using the attitude scale of pre-course satisfaction and the six constructs influencing satisfaction of the DELES online learning environment scales. In this analysis, the individual participant represented the unit of analysis (see Table 8). The bivariate relationship between pre-course satisfaction and the six DELES construct scales is represented by the simple correlation ( $r$ ). The unique contribution of the six constructs comprising the online learning environment is represented by the standardized regression coefficient ( $\beta$ ). The proportion of variance in the pre-course satisfaction scale accounted for by the six constructs is denoted by  $R^2$ , which is the coefficient of multiple determinations. The simple correlation between the pre-course satisfaction scale and the six DELES construct scales ranges from .107 to .213, which indicates that all simple correlations are positive and statistically significant ( $p < 0.05$ ) for the six scales. The proportion of variance ( $R^2$ ) is reported as .066, and the multiple correlations between pre-course satisfaction scale and the six DELES construct scales is .26 and is statistically significant. The standardized regression

coefficients were also examined in order to determine which of the unique contributions of the six constructs in the DELES scales are independently related to pre-course satisfaction. Table 8 shows for  $\beta$  that the constructs of instructor support, personal relevance, authentic learning, and student autonomy are independently, positively, and significantly related to pre-course satisfaction, with student autonomy ( $\beta = .119$ ) having the strongest association with pre-course satisfaction in the online learning environment. The significant simple correlations and regression weights reported as positive indicates that a higher level of each of the six constructs comprising the DELES scale is associated with higher levels of perceived or expected pre-course satisfaction in the online learning environment.

Table 8

*Associations between Six DELES Scales and Expected Satisfaction Using Simple Correlations ( $r$ ) and Standardized Regression Coefficients ( $\beta$ )*

Factors	$r$	$\beta$
Instructor Support	.182	.079*
Student Interaction	.107	-.017
Personal Relevance	.213	.095*
Authentic Learning	.196	.053*
Active Learning	.175	-.002
Student Autonomy	.208	.119*
Multiple correlation (R) =	.26	.260
R <sup>2</sup> coefficient		.066

*Note.*  $N = 3289$  students, \* $p < .05$

### *Hypothesis 1*

H<sub>0</sub>: There is no significant difference in the expectations of students taking online courses based on demographics, computer efficacy, and effort.

The null hypothesis was tested using a 2 (Ethnicity: Caucasian or other ethnic minority) X 2 (Gender: male or female) X 2 factorial ANOVA with an alpha level of .05 for all statistical tests. Assumptions for conducting this test included (a) independent random sampling, (b) normal distributions, and (c) homogeneity of variance. The factorial ANOVA tests for significant differences among means and was chosen to accommodate the independent variables that have multiple categories and to assess interactions among those independent variables. The factorial ANOVA is ideal when multiple comparisons are being made among means based on the increased chance of a Type I error when doing multiple *t* tests. For the reasons stated, this study used a factorial ANOVA to compare mean ratings for each construct based on categorical demographic characteristics (main effect) and determines whether there is an interaction among the independent variables.

### *Results*

The results of Hypothesis 1 are presented in Tables 9-14. The null hypothesis, which stated that there is no statistically significant differences in the expectation levels of students taking online courses based on (a) demographics, (b) computer efficacy, and (c) effort, was supported for the two variables where testing for mean differences was viable: gender and ethnicity. Age, computer efficacy, and effort were underrepresented in one category and therefore no analysis was available. In order to conduct an analysis to compare the means of two groups, a minimum of a 20/80% split in the population must be present (Tabachnick & Fidell,

2007). For this study, the age variable of under 25 years of age represented 510 participants, while 2,769 participants were over 25 years of age and considered adult learners (16/84% split). For the computer efficacy variable, students who considered themselves as being a beginner represented 370 participants, while 2,926 participants considered themselves at the level between competent and expert (13/87% split). For the effort variable, students reporting less than 8 hours spent preparing for class and being logged-on to the class website were represented by 443 participants, while students reporting more than 8 hours of time spent preparing for class and being logged-on to the class website were represented by 2,850 participants (16/84% split). Further, in some instances, the category or “*n*” size for interaction effects were as small as two participants for these three excluded factors; for example, only 2 participants were in the beginner and the less than 8 hours preparing for class and logged on to class categories.

For the factorial ANOVAs that were viable, results indicated many significant statistical differences for main effects related to gender (male/female) and ethnicity (Caucasian/other ethnic minorities) on the constructs that are related to student satisfaction with online courses. However, the effect size is small, according to effect size interpretation by McLean (1995, p. 40), and as measured by  $\eta^2$  failed to achieve any practical significance (.001 to .004). Because of the restricted range for (a) age, (b) computer efficacy, and (c) effort and the lack of practical significant differences for ethnicity and gender, the null hypothesis is supported and all indications suggest that the sample is homogenous in relation to these characteristics.

Table 9 illustrates the significant differences for the construct of instructor support on main effects of gender,  $F(1, 3265) = 8.71, p = .003, \eta^2 = .003$ , and ethnicity,  $F(1, 3265) = 13.80, p = .001, \eta^2 = .004$ . The mean difference between males and females ( $M = 4.13, SD = .65$  and  $M = 4.23, SD = .69$ , respectively) is statistically but not practically significant. Similarly,

the mean differences between Caucasians and other ethnic minorities ( $M = 4.15$ ,  $SD = .66$  and  $M = 4.26$ ,  $SD = .69$ , respectively) are statistically but not practically significant.

Table 9

*ANOVAs Comparing Ethnicity and Gender Rating of the Construct Instructor Support for Online Students*

Group	<i>df</i>	<i>Mean square</i>	<i>F</i>	<i>Sig.</i>	<i>Partial Eta squared</i>	<i>Observed power</i>
Gender	1	3.9967	8.712	.003	.003	.839
Ethnicity	1	6.2840	13.800	.001	.004	.960
Gender X Ethnicity	1	.034	.074	.786	.000	.058

Table 10 illustrates the significant differences on a main effects for the construct of student interaction only for ethnicity,  $F(1, 3264) = 10.83$ ,  $p = .001$ ,  $\eta^2 = .003$ . The mean difference between Caucasians and other ethnic minorities ( $M = 3.20$ ,  $SD = .94$  and  $M = 3.32$ ,  $SD = 1.03$ , respectively) is statistically but not practically significant.

Table 10

*ANOVAs Comparing Ethnicity and Gender Rating of the Construct Student Interaction for Online Students*

Group	<i>df</i>	<i>Mean square</i>	<i>F</i>	<i>Sig.</i>	<i>Partial Eta squared</i>	<i>Observed power</i>
Gender	1	.812	.842	.359	.000	.151
Ethnicity	1	10.447	10.833	.001	.003	.908
Gender X Ethnicity	1	1.540	1.597	.206	.000	.244

Table 11 illustrates the significant differences for the construct of personal relevance on ethnicity only,  $F(1, 3263) = 4.11$ ,  $p = .04$ ,  $\eta^2 = .001$ . The mean difference between Caucasians

and other ethnic minorities ( $M = 3.91$ ,  $SD = .69$  and  $M = 3.97$ ,  $SD = .77$ , respectively) is statistically but not practically significant.

Table 11

*ANOVAs Comparing Ethnicity and Gender Rating of the Construct Personal Relevance for Online Students*

Group	<i>df</i>	<i>Mean square</i>	<i>F</i>	<i>Sig.</i>	<i>Partial Eta squared</i>	<i>Observed power</i>
Gender	1	1.908	3.596	.058	.001	.474
Ethnicity	1	2.18	4.108	.043	.001	.526
Gender X Ethnicity	1	.161	.304	.582	.000	.085

Table 12 illustrates that no significant differences for the construct of authentic learning were found for main or interaction effects on the variables of gender or ethnicity.

Table 12

*ANOVAs Comparing Ethnicity and Gender Rating of the Construct Authentic Learning for Online Students*

Group	<i>df</i>	<i>Mean square</i>	<i>F</i>	<i>Sig.</i>	<i>Partial Eta squared</i>	<i>Observed power</i>
Gender	1	.052	.095	.758	.000	.061
Ethnicity	1	1.385	2.537	.111	.001	.357
Gender X Ethnicity	1	.017	.030	.861	.000	.053

Table 13 illustrates the significant differences for the construct of active learning on ethnicity only,  $F(1, 3261) = 4.45$ ,  $p = .04$ ,  $\eta^2 = .001$ . The mean difference between Caucasians and other ethnic minorities ( $M = 4.26$ ,  $SD = .58$  and  $M = 4.21$ ,  $SD = .67$ , respectively) is statistically but not practically significant.

Table 13

*ANOVAs Comparing Ethnicity and Gender Rating of the Construct Active Learning for Online Students*

Group	<i>df</i>	<i>Mean square</i>	<i>F</i>	<i>Sig.</i>	<i>Partial Eta squared</i>	<i>Observed power</i>
Gender	1	.107	.276	.599	.000	.082
Ethnicity	1	1.725	4.446	.035	.001	.559
Gender X Ethnicity	1	.000	.001	.972	.001	.050

Table 14 illustrates the significant differences for the construct of student autonomy on main effects of gender,  $F(1, 3261) = 11.65, p = .001, \eta^2 = .004$ , and ethnicity,  $F(1, 3261) = 4.89, p = .03, \eta^2 = .001$ . The mean difference between males and females ( $M = 4.46, SD = .52$  and  $M = 4.52, SD = .54$ , respectively) is statistically but not practically significant. Similarly, the mean differences between Caucasians and other ethnic minorities ( $M = 4.51, SD = .51$  and  $M = 4.48, SD = .56$ , respectively) are statistically but not practically significant.

Table 14

*ANOVAs Comparing Ethnicity and Gender Rating of the Construct Student Autonomy for Online Students*

Group	<i>df</i>	<i>Mean square</i>	<i>F</i>	<i>Sig.</i>	<i>Partial Eta squared</i>	<i>Observed power</i>
Gender	1	3.277	11.650	.001	.004	.927
Ethnicity	1	1.367	4.858	.028	.001	.596
Gender X Ethnicity	1	.003	.011	.916	.000	.051

#### Post-course Participant Demographics and Characteristics

Demographic data applicable to satisfaction characteristics were collected in order to develop a profile of students enrolled in online courses. The demographic data included in the study is the same data reported in the pre-course section and consists of age, gender, and

ethnicity as well as descriptive statistics for the variables of computer efficacy and effort. The target population for this study consisted of 11,814 students enrolled in at least one online course at Troy University who completed a post-course survey at the conclusion of the 2010 spring term. The students comprising the population were provided instructions to complete the survey, and informed consent statement relative to their rights and protection. The students were also provided a direct-access, embedded link to the survey instrument. The study sample consisted of 3,278 students representing a 28% survey response rate to the survey. Demographic and other data variable analysis consisted of the use of descriptive statistics and a determination of the correlations between all study variables and constructs of satisfaction. The organization of this analysis section is supported by several research objectives that will identify the factors that relate to the psychosocial satisfaction scales with online courses.

#### Post-course Data Analysis

The method of data analysis chosen for the post-course section of this study includes descriptive and inferential statistics and is identical to the method employed for the pre-course section.

The data analysis method used for the demographic variables, age, gender, and ethnicity, as well as the computer efficacy and effort variables, is descriptive frequency analysis. For the demographic variable age, the data showed that 13% ( $n = 433$ ) of the participants were between the ages of 19 and 25, 42% ( $n = 1,353$ ) of the participants were between the ages of 26 and 35, 30% ( $n = 979$ ) of the participants were between the ages of 36 and 45, 13% ( $n = 427$ ) of the participants were between the ages of 46 and 55, and 2% ( $n = 55$ ) of the participants were over the age of 55. The inferential statistical analysis for the age demographic variable dichotomized

the data into two sets, participants between the ages of 19 and 25 and participants age 26 and older. For the demographic variable gender, the descriptive frequency analysis illustrated that 65% ( $n = 2,088$ ) of the participants were female and 35% ( $n = 1,142$ ) of the participants were male. The demographic variable ethnicity was categorized into several categories (see Table 15); however, this study only included the categories of Caucasian and other ethnic minorities relative to the use inferential statistics.

Table 15

*Frequencies and Percentages of Ethnicity Demographic Variable*

Ethnicity Variable	<i>f</i>	%
Unknown	59	1.8
Non-resident Alien	3	.1
Asian	40	1.2
American Indian or Alaska Native	16	0.5
Hispanic	118	3.7
African American	1,310	40.6
Caucasian	1,684	52.1

For informational purposes, an additional data element was collected relative to education level. The data showed that the majority of the participants, 41.5% ( $n = 1,311$ ), did not have a postsecondary degree. The frequency analysis shows that 31.0% ( $n = 995$ ) of the participants held the associate degree, 22.7% ( $n = 727$ ) of the participants held a bachelors degree, 4.7% ( $n = 151$ ) of the participants held a master's degree, and the smallest number of participants, .1% ( $n = 4$ ), held a doctorate degree.

Two additional variables included in the survey were computer efficacy (see Table 16), which refers to the participants' experience with computers and the online environment, and

effort, which refers to the amount of time the participants spent preparing for the online course and the amount of time the participants spent logged-on to the course.

The descriptive frequency statistics for computer efficacy included categories that provided information relative to the ability and knowledge of the participant to effectively use the technology inherent in courses that are delivered online. This ranges from basic applications such as word-processing to more advanced applications such as complex Internet navigation. The computer efficacy data were dichotomized into either beginner or competent-expert. In addition to the descriptive data related to computer efficacy in Table 16, data relative to the number of online courses previously taken by the participant were also collected. The purpose of collecting this data was to obtain information that supported computer efficacy through students' experience obtained in an environment where the use of computers would be expected. The online learning experience is indicated by the self-reported number of courses previously taken by the participants. The frequency and percentage analysis shows that 16% ( $n = 533$ ) of the participants had previously taken between 0 and 2 online courses, 18% ( $n = 578$ ) of the participants had previously taken between 3 and 5 online courses, 18% ( $n = 576$ ) of the participants had previously taken between 6 and 8 online courses, and 48% ( $n = 1,564$ ) of the participants had previously taken between 8 and 10 online courses. This data shows that 66% ( $n = 2,140$ ) of the participants had previously taken at least three online courses prior to the current course, suggesting that the majority of the participants had significant experience with online courses and therefore probable existing experience with computers.

Table 16

*Percentages of Computer Efficacy Variable (n = 3,278)*

Computer experience description	No experience	Beginner	Competent	Expert
Word-processing (create, edit, save)	0.6%	2.7%	45.7%	50.9%
E-mail (compose, edit, send)	0.2%	1.1%	36.6%	62.0%
Browsing the Internet	0.2%	1.4%	40.1%	58.3%
Accessing library resources	1.8%	11.8%	54.3%	32.0%
Using menus/navigation	0.5%	3.2%	46.5%	49.8%
Entering a URL for Web	0.8%	3.6%	38.8%	56.8%
Conducting a search	0.5%	2.9%	42.0%	54.6%
Printing	2.1%	5.3%	45.1%	50.6%
Downloading information	1.4%	4.4%	43.3%	50.9%

The amount of effort participants spent preparing for the online course was determined from two items in the survey. The first item was the average amount of time the participant spent each week preparing for the online class, and the second item was the average amount of time the participant spent each week actually logged-on to the online course website. Twenty-one participants did not report the amount of time they spent preparing for class; therefore, the sample included 3,257 participants. Also, 35 participants did not report the average number of hours spent logged-on to the course and, as a result, the sample for the effort variable was reduced to 3,243 participants. The frequency and percentage analysis for the average time spent each week preparing for the online course(s) reported by the participants shows that a significant number of participants, 34% ( $n = 1,112$ ), spent an average of 6 to 10 hours and 34% ( $n = 1,117$ ) spent 3 to 5 hours. The remaining categories showed that 8% ( $n = 262$ ) spent less than 3 hours preparing for class, 14% ( $n = 445$ ) spent between 11 to 15 hours, and 10% ( $n = 321$ ) spent more than 15 hours preparing for class. The average amount of time spent each week by students who actually logged-on to the online course shows that most of the participants 42% ( $n = 1,356$ ) spent

between 3 to 5 hours logged-on. The remaining participants varied from less than 3 hours to more than 15 hours as follows: 14% ( $n = 440$ ) spent less than 3 hours, 27% ( $n = 896$ ) spent between 6 to 10 hours, 10% ( $n = 326$ ) spent between 11 to 15 hours, and 7% ( $n = 225$ ) spent more than 15 hours, on average, each week logged on to the online course.

### Post-course Instrument Validation and Reliability

This study employed factor analysis and multiple regressions to determine the relationship between the six DELES constructs of instructor support, student interaction and collaboration, personal relevance, authentic learning, active learning, and student autonomy as predictor, dependent variables and student satisfaction as a dependent variable.

Kaiser normalization and varimax rotation with principal component factor analysis based on eigenvalue greater than 1, excluding cases listwise and suppressing small coefficient below .50, was used to examine construct validity. The purpose of this analysis was to determine the structure of a large set of variables (Garson, 2004). According to Dorman (2003), this type of analysis is used to determine whether the construct items load on *a priori* scales. In other words, a factor analysis provides analytical data that can be used to determine whether items within a certain scale are measuring only that scale and no other. Unfortunately the last two factors (see Table 17), active learning and student autonomy, loaded together rather than separately and failed to indicate discriminate validity. As with the pre-course survey, the factor loadings for this study vary from Walker and Fraiser's (2005) original factor analysis, which indicated discriminate validity for the constructs of active learning and student autonomy.

Table 17

*Factor Loadings for the DELES Scales*

Item	Instructor support	Student interaction	Personal relevance	Authentic learning	*Active learning/student autonomy
4.1 – INSTSUP1	.826				
4.2 – INSTSUP2	.745				
4.3 – INSTSUP3	.853				
4.4 – INSTSUP4	.806				
4.5 – INSTSUP5	.865				
4.6 – INSTSUP6	.748				
4.7 – INSTSUP7	.809				
4.8 – INSTSUP8	.758				
4.9 – INTER9		.783			
4.10 – INTER10		.762			
4.11 – INTER11		.822			
4.12 – INTER12		.798			
4.13 – INTER13		.846			
4.14 – INTER14		.772			
4.15 – RELEV15			.750		
4.16 – RELEV16			.698		
4.17 – RELEV17			.811		
4.18 – RELEV18			.765		
4.19 – RELEV19			.800		
4.20 – RELEV20			.625		
4.21 – RELEV21			.698		
4.22 – AUTH22				.585	
4.23 – AUTH23				.718	
4.24 – AUTH24				.761	
4.25 – AUTH25				.787	
4.26 – AUTH26				.710	
4.27 – ACT27					.549
4.28 – ACT28					.740
4.29 – ACT29					.748
4.30 – AUTON30					.795

*(table continues)*

Item	Instructor support	Student interaction	Personal relevance	Authentic learning	*Active learning/student autonomy
4.31 – AUTON31					.681
4.32 – AUTON32					.775
4.33 – AUTON33					.787
4.34 – AUTON34					.808
% of Variance	17.03%	13.38%	15.19%	10.27%	15.0%

INSTSUP: Instructor support, INTER: Student interaction and collaboration, RELEV: Personal relevance, AUTH: Authentic learning, ACT: Active learning, and AUTON: Student autonomy.

For each factor, the percentage of variance was calculated and listed in the bottom row of the table. The highest proportion of variance among the items is the scale of instructor support (17.03%) followed by the personal relevance variance (15.19%). Other variances included student interaction and collaboration (13.38%); authentic learning, which explained 10.27%; and the combined loading of active learning and student autonomy, explaining a variance of 15.0%. The cumulative variance explained by the six DELES scales totaled 70.87%, which means the unaccounted for variance totaled 29.13%. This indicates that 29.13% of the variance in answers on the scales is caused by error variance or some other unmeasured factor.

The study also employed correlation analysis, specifically multiple regression analysis, to determine the relationships among the six psychosocial satisfaction scales. The results of the regression analysis suggested that all correlations between the dependent variable, satisfaction and the predictor independent construct variables, as well as the correlation between each predictor variable, were positive and statistically significant (see Table 18). For each of the six constructs included in the DELES scale, a higher level suggests there is a higher degree of expected or perceived student satisfaction from the online courses. The Walker (2005) study previously mentioned in Chapter 3, Methods, reported a multiple correlation value of  $R = .46$ ,

with significant correlation between all of the variables. The multiple correlation value for this study is  $R = .30, p < .01$ , which confirms the validity of the survey and findings from this study.

Table 18

*Correlations among DELES Variables*

Variable	1	2	3	4	5	6	7
1. Instructor support	1						
2. Student interaction	.67**	1					
3. Personal relevance	.47**	.52**	1				
4. Authentic learning	.42**	.48**	.76**	1			
5. Active learning	.31**	.27**	.51**	.55**	1		
6. Student autonomy	.352**	.21**	.43**	.44**	.71**	1	
7. Post-satisfaction	.25**	.16**	.24**	.21**	.17**	.20**	1

For the six satisfaction constructs comprising the DELES scale, as well as the post-course satisfaction scale, the alpha reliability was determined for the 3,278 participants (see Table 19). The coefficient alpha, which is the internal consistency reliability, shows a range from .84 to .96 for the six scales. According to George and Mallery (2001), the range is determined to be good to excellent. The alpha reliabilities for scores of the constructs of personal relevance (.94), instructor support (.94), student interaction and collaboration (.92), and authentic learning (.93) are considered excellent and the alpha reliabilities for the constructs of student autonomy (.89) and active learning (.84) are considered good. Also, the attitude construct of post-course satisfaction shows a reliability of (.96), which is also considered excellent.

Table 19

*Scale Reliability Using Cronbach's Alpha Coefficient for DELES and Satisfaction Scales*

Scale	Number of items	$\alpha$ Reliability
DELES		
Instructor support	8	.94
Student interaction and collaboration	6	.92
Personal relevance	7	.94
Authentic learning	5	.93
Active learning	3	.84
Student autonomy	5	.89
Post-course Satisfaction	8	.96

Note.  $N = 3,278$

This section of the study uses simple correlation and multiple regressions in order to report the association between the participants' post-course satisfaction using the attitude scale of satisfaction and the six constructs of the DELES online learning environment scales. In this analysis, the individual participant represented the unit of analysis (see Table 20). The bivariate relationship between post-course satisfaction and the six constructs is represented by the simple correlation ( $r$ ). The unique contribution of the six constructs comprising the online learning environment is represented by the standardized regression coefficient ( $\beta$ ). The proportion of variance in the post-course satisfaction scale accounted for by the six constructs is denoted by  $R^2$ , which is the coefficient of multiple determinations. The simple correlation between post-course satisfaction and the six constructs of the DELES scales ranges from .16 to .25, which indicates all simple correlations are positive and statistically significant ( $p < 0.05$ ) for the six scales. The proportion of variance ( $R^2$ ) is reported as .085 and the multiple correlation between post-course satisfaction and the six DELES construct scales is .30 and is statistically significant. The standardized regression coefficients were also examined in order to determine the unique contribution of the six constructs in the DELES scales to post-course satisfaction. The table

shows for  $\beta$  that the constructs of instructor support, personal relevance, and student autonomy are uniquely, positively, and significantly related to post-course satisfaction, with instructor support ( $\beta = .15$ ) having the strongest association with post-course satisfaction in the online learning environment. The significant simple correlations and regression weights reported in Table 20 as positive indicate a higher level for each of five of the six constructs comprising the DELES scale. These results are associated with higher levels of actual experience post-course satisfaction in the online learning environment. Student interaction, authentic learning, and active learning, while significantly correlated with post-course satisfaction, do not uniquely or significantly contribute to post-course satisfaction. This finding for authentic learning differs from pre-course satisfaction expectations, in that authentic learning was a significant independent contributing factor to the explained variance of pre-course satisfaction expectations.

Table 20

*Associations between Six DELES Scales and Expected Satisfaction Using Simple Correlations ( $r$ ) and Standardized Regression Coefficients ( $\beta$ )*

Factors	$r$	$\beta$
Instructor support	.25	.15*
Student interaction	.16	.03
Personal relevance	.24	.12*
Authentic learning	.21	.01
Active learning	.17	-.02
Student autonomy	.19	.09*
Multiple correlation ( $R$ ) = $R^2$ coefficient		.30* .09*

*Note.*  $N = 3268$  students,  $*p < .01$

## *Hypothesis 2*

H<sub>0</sub>: There is no significant difference in the experiences of students taking online courses based on demographics, computer efficacy, and effort.

The null hypothesis was tested using a 2 (Ethnicity: Caucasian or other ethnic minority) X 2 (Gender: male or female) X 2 factorial ANOVA with an alpha level of .05 for all statistical tests. Assumptions for conducting this test include (a) independent random sampling, (b) normal distributions, and (c) homogeneity of variance. The factorial ANOVA tests for significant differences among means and was chosen to accommodate the independent variables with more than two categories and to assess interactions among those independent variables. The factorial ANOVA is ideal when multiple comparisons are being made among means based on the increased chance of a Type I error when doing multiple *t* tests. For reasons stated, this study used a factorial ANOVA to compare mean ratings for each construct based on categorical demographic characteristics (main effect) and assess if there is an interaction among the independent variables.

## *Results*

The results of Hypothesis 2 are presented in Tables 21-26. The null hypothesis, which stated that there is no statistically significant differences in the actual experience levels of students taking online courses based on (a) demographics, (b) computer efficacy, and (c) effort, was supported for the two variables where testing for mean differences was viable: gender and ethnicity. Age, computer efficacy, and effort were underrepresented in one category and therefore no analysis was available. In order to conduct an analysis to compare means of two groups, a minimum of a 20/80% split in population must be present (Tabachnick & Fidell, 2007).

For this study, the age variable of under 25 years of age represented 433 participants, while 2,814 participants were over 25 years of age and considered adult learners (13/87% split). For the computer efficacy variable, students who considered themselves as being a beginner represented 389 participants, while 2,881 participants considered themselves at the level between competent and expert (12/88% split). For the effort variable, students reporting less than 8 hours spent preparing for class and being logged-on the class site website were represented by 134 participants, while those who reported more than 8 hours of time spent preparing for class and being logged-on to the class website were represented by 3,138 participants (4/96% split). For the factorial ANOVAs that were viable, the results indicated significant statistical differences for the main effects related to ethnicity (Caucasian/other ethnic minorities) and one main effect related to gender (male/female) on the constructs that comprise student satisfaction with online courses. However, the effect sizes were small, according to effect size interpretation by McLean (1995, p. 40), and, as measured by  $\eta^2$  failed to achieve any practical significance (.002 to .010). Because of the restricted range for (a) age, (b) computer efficacy, and (c) effort and the lack of practical significant differences for ethnicity and gender, the null hypothesis is supported and all indications suggest that the sample is homogenous in relation to these characteristics.

Table 21 illustrates the significant difference for the construct of instructor support on the main effect of ethnicity,  $F(1, 3199) = 31.83, p = .00, \eta^2 = .01$ . The mean difference between Caucasian and other ethnic minorities ( $M = 4.02, SD = .82$  and  $M = 4.20, SD = .82$ , respectively) is statistically but not practically significant.

Table 21

*ANOVAs Comparing Ethnicity and Gender Rating of the Construct Instructor Support for Online Students*

Group	<i>df</i>	<i>Mean square</i>	<i>F</i>	<i>Sig.</i>	<i>Partial Eta squared</i>	<i>Observed power</i>
Gender	1	.619	.928	.338	.000	.920
Ethnicity	1	21.42	31.83	<.001	.010	1.00
Gender X Ethnicity	1	.030	.045	.833	.000	.055

Table 22 illustrates the significant difference for the construct of student interaction on the main effect of ethnicity,  $F(1, 3199) = 27.23, p < .001, \eta^2 = .008$ . The mean difference between Caucasian and other ethnic minorities ( $M = 3.12, SD = 1.02$  and  $M = 3.31, SD = 1.06$ , respectively) is statistically but not practically significant.

Table 22

*ANOVAs Comparing Ethnicity and Gender Rating of the Construct Student Interaction for Online Students*

Group	<i>df</i>	<i>Mean square</i>	<i>F</i>	<i>Sig.</i>	<i>Partial Eta squared</i>	<i>Observed power</i>
Gender	1	1.461	1.350	.245	.001	.213
Ethnicity	1	29.455	27.229	<.001	.008	.999
Gender X Ethnicity	1	1.168	1.08	.299	.000	.180

Table 23 illustrates the significant difference for the construct of personal relevance on the main effect of ethnicity,  $F(1, 3199) = 19.67, p < .001, \eta^2 = .006$ . The mean difference between Caucasian and other ethnic minorities ( $M = 3.86, SD = .76$  and  $M = 3.98, SD = .80$ , respectively) is statistically but not practically significant.

Table 23

*ANOVAs Comparing Ethnicity and Gender Rating of the Construct Personal Relevance for Online Students*

Group	<i>df</i>	<i>Mean square</i>	<i>F</i>	<i>Sig.</i>	<i>Partial Eta squared</i>	<i>Observed power</i>
Gender	1	.103	.169	.681	.000	.070
Ethnicity	1	11.983	19.672	<.001	.006	.993
Gender X Ethnicity	1	.569	.934	.334	.000	.162

Table 24 illustrates the significant difference for the construct of authentic learning on the main effect of ethnicity,  $F(1, 3196) = 5.88, p = .015, \eta^2 = .02$ . The mean difference between Caucasian and other ethnic minorities ( $M = 3.93, SD = .77$  and  $M = 4.00, SD = .82$ , respectively) is statistically but not practically significant.

Table 24

*ANOVAs Comparing Ethnicity and Gender Rating of the Construct Authentic Learning for Online Students*

Group	<i>df</i>	<i>Mean square</i>	<i>F</i>	<i>Sig.</i>	<i>Partial Eta squared</i>	<i>Observed power</i>
Gender	1	.145	.228	.633	.000	.076
Ethnicity	1	3.734	5.877	.015	.002	.679
Gender X Ethnicity	1	.001	.001	.976	.000	.050

Table 25 illustrates that no significant differences for the construct of active learning were found for main or interaction effects on the variables of gender or ethnicity.

Table 25

*ANOVAs Comparing Ethnicity and Gender Rating of the Construct Active Learning for Online Students*

Group	<i>df</i>	<i>Mean square</i>	<i>F</i>	<i>Sig.</i>	<i>Partial Eta squared</i>	<i>Observed power</i>
Gender	1	.251	.607	.436	.000	.122
Ethnicity	1	.117	.283	.595	.000	.083
Gender X Ethnicity	1	.252	.608	.436	.000	.122

Table 26 illustrates the significant difference for the construct of student autonomy on the main effect of gender,  $F(1, 3196) = 15.50, p < .001, \eta^2 = .005$ . The mean difference between males and females ( $M = 4.42, SD = .57$  and  $M = 4.51, SD = .57$ , respectively) is statistically but not practically significant.

Table 26

*ANOVAs Comparing Ethnicity and Gender Rating of the Construct Student Autonomy for Online Students*

Group	<i>df</i>	<i>Mean square</i>	<i>F</i>	<i>Sig.</i>	<i>Partial Eta squared</i>	<i>Observed power</i>
Gender	1	5.090	15.496	<.001	.005	.976
Ethnicity	1	.224	.683	.409	.001	.131
Gender X Ethnicity	1	.319	.972	.324	.001	.167

### *Hypothesis 3*

H<sub>0</sub>: There is no significant difference in the expectations of and experience with the online courses that should exist under the constructs of instructor support, student interaction and collaboration, personal relevance, authentic learning, active learning, student autonomy, and satisfaction.

The null hypothesis was tested using a 2 (Time: pre/post) X 7 (Constructs: instructor support, student interaction, personal relevance, authentic learning, active learning, student autonomy, and satisfaction) Repeated Measures Multivariate Analysis of Variance (MANOVA) employing an alpha level of .05 for all statistical tests. Assumptions for conducting this test included (a) independent random sampling, (b) normal distributions, and (c) homogeneity of variance. The factorial MANOVA tests for significant differences among means and was chosen to accommodate repeated measure and the multiple independent variables.

### *Results*

The results of Hypothesis 3 are presented in Table 27 and Figure 1. The null hypothesis, which stated that there is no significant difference in expectations and actual course experience of students taking online courses, was supported. Although the multivariate test was significant ( $F = 6.715, p = .01, \eta^2 = .004$ ), the explained variance of the differences based on expectations versus experience (over time) is .004, as represented by the partial eta squared indicating no practical significance. The Wilks' Lambda is most commonly used in multivariate analysis of variance (MANOVA) to compare means of groups on several variables, in this case the various DELES scale constructs and satisfaction (Everitt & Dunn, 1991). The Wilks' Lambda provides the same statistical data as an  $F$  test in a one-way analysis of variance, indicating the proportion of variance accounted for in the dependent variables by the independent variable: Time = pre-course and post-course test ratings; however, in this case, the most commonly used statistic provides identical estimation of  $F$  as the secondary choices.

Table 27

*Repeated Measures Factorial ANOVA--Pre- and Post-survey Rating on DELES Constructs and Satisfaction*

Factor	Effect	Value	<i>F</i>	<i>df</i>	Sig.	<i>Partial Eta squared</i>
Pre v. Post	Wilks' Lambda	.996	6.715	1	.010	.004

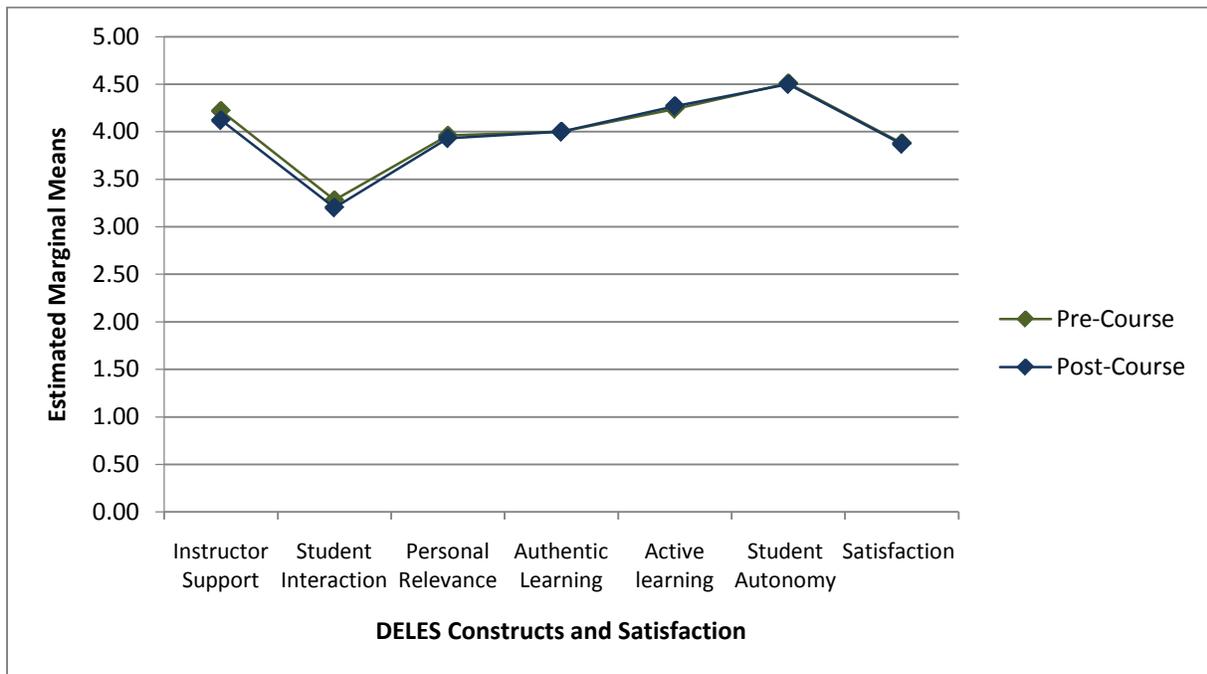


Figure 1. Pre- and post-survey rating comparison on DELES constructs and satisfaction.

*Hypothesis 4*

H<sub>0</sub>: There is no significant difference in student satisfaction among demographic, computer efficacy, and effort variables across the constructs of instructor support, student interaction and collaboration, personal relevance, authentic learning, active learning, and student autonomy in their distance learning courses based on expectations versus actual experience.

The null hypothesis was tested using a series of five multivariate analyses of variance (MANOVA) with an alpha level of .05 for all statistical tests. Assumptions for conducting this test include (a) independent random sampling, (b) normal distributions, and (c) homogeneity of variance. The MANOVA includes all the independent variables, in this case demographic variables of computer efficacy and effort, to determine whether there is any affect on the difference between expectation and experience in relation to the DELES scale constructs and satisfaction. The MANOVA is an omnibus test that tests for overall significance, indicating if there is any significant difference in the model. If a significant omnibus test is indicated, post-hoc analysis is used to determine which factor(s) vary significantly. Further, MANOVA is useful with multiple comparisons among means to control for the increased chance of Type I error if using multiple *t* tests.

### *Results*

The null hypothesis, that there is no statistically significant differences in student satisfaction among the demographic variables computer efficacy and effort across the constructs of (a) instructor support, (b) student interaction and collaboration, (c) personal relevance, (d) authentic learning, (e) active learning, (f) student autonomy, and (g) satisfaction in their distance learning courses based on expectations versus actual experience, was supported for the variables where testing for mean differences was viable: gender and ethnicity. Age, computer efficacy, and effort were underrepresented in one category and therefore no analysis was available. In order to conduct an analysis to compare means, a minimum of a 20/80% split in population must be present (Tabachnick & Fidell, 2007). For this study, the age variable of under 25 years of age represented 234 participants, while 1,544 participants were over 25 years of age and considered

adult learners (13/87% split). For the computer efficacy variable, students who considered themselves as being a beginner represented 210 participants, while 1,572 considered themselves at the level between competent and expert (12/88% split). For the effort variable, students reporting less than 8 hours spent preparing for class and being logged-on to the class website were represented by 39 participants, while students who reported more than 8 hours of time spent preparing for class and being logged-on the class website were represented by 1,744 participants (2/98% split). For the MANOVAs that were viable, results indicated no significant statistical differences. Because of the restricted range for (a) age, (b) computer efficacy, and (c) effort, and the lack of significant differences for ethnicity and gender, the null hypothesis is supported and all indications suggest that these characteristics did not explain any variance in the difference of expectations and experiences on the DELES scale and satisfaction.

The results of Hypothesis 4 are presented in Tables 28 and 29. As previously stated, the Wilks' Lambda is most commonly used in multivariate analysis of variance (MANOVA) to compare means of groups on several variables (Everitt & Dunn, 1991). The Wilks' Lambda provides the same statistical data as an *F* test; however, in this case, the most commonly used statistic provides identical estimation of *F* as the secondary choices.

Table 28

*MANOVA--Gender Affect on Expectation (Pre) and Experience (Post) Ratings on DELES Constructs and Satisfaction*

Factor	Effect	Value	<i>F</i>	<i>df</i>	Sig.	<i>Partial Eta squared</i>
Gender	Wilks' Lambda	.995	5.53	7	.26	.005

Table 29

*M ANOVA--Ethnicity Affect on Expectation (Pre) and Experience (Post) Ratings on DELES Constructs and Satisfaction*

Factor	Effect	Value	<i>F</i>	<i>df</i>	Sig.	<i>Partial Eta squared</i>
Ethnicity	Wilks' Lambda	.997	.749	7	.63	.003

*Hypothesis 5*

H<sub>0</sub>: There is no significant difference in the satisfaction levels of students taking online courses based on demographics, computer efficacy, and effort.

The null hypothesis was tested using the same analysis as Hypothesis 2, 2 (Ethnicity: Caucasian or other ethnic minorities) X 2 (Gender: male or female) factorial ANOVA, with an alpha level of .05 for all statistical tests. The same small representation for age, computer efficacy, and effort excluded those variables from the analysis.

*Results*

For the viable analysis, results (see Table 30) indicated a significant statistical difference for a main effect of ethnicity (Caucasian/other ethnic minorities) only. However, the effect size is small, according to effect size interpretation by McLean (1995, p. 40), and as measured by  $\eta^2$  failed to achieve any practical significance (.002). Because of the restricted range for (a) age, (b) computer efficacy and (c) effort, (d) the lack of statistical difference for gender, and (e) the lack of practical significant difference for ethnicity, the null hypothesis is supported and all indications suggest that the sample is homogenous in relation to these characteristics and in relation to satisfaction with the online course with a mean satisfaction rating of 3.80 on a 5.0 point scale.

Table 30

*ANOVAs Comparing Ethnicity and Gender Rating of Student Satisfaction with Online Courses*

Group	<i>df</i>	<i>Mean square</i>	<i>F</i>	<i>Sig.</i>	<i>Partial Eta squared</i>	<i>Observed power</i>
Gender	1	.037	.037	.847	.000	.054
Ethnicity	1	6.560	6.657	.010	.002	.732
Gender X Ethnicity	1	.134	.136	.712	.000	.066

## Summary

This chapter provided the demographic, computer efficacy, and effort variables of the sample used for this study as well as the constructs of relationships on student satisfaction. The population of 11,814 students was the target group that included all students taking at least one online course. Because the study incorporated both pre- and post-test analysis, the sample size of 3,296 students responding to the pre-course survey test was determined to be valid, and the sample size of 3,298 students responding to the post-course survey test was also determined to be a valid sample size. The validity and reliability of the survey instrument used to collect student data was also provided. The five hypotheses used a combination of factorial ANOVAs, MANOVAs, and a Repeated Measures MANOVAs as the method of data analysis, which included Wilks' Lambda, and *F* tests. Several ANOVA and MANOVA tables were provided showing Etas squared, degrees of freedom, *F* values, effect size and significance measures of the satisfaction constructs tested across the demographic and other variables. Chapter 5 will discuss the findings, implications, and recommendations for practice and further research.

## CHAPTER 5

### DISCUSSION

This study was conducted to provide insight into the relationships between psychosocial scales in an online student learning environment by examining six satisfaction constructs: instructor support, student interaction and collaboration, personal relevance, authentic learning, active learning, and student autonomy. Conducted at Troy University, a regional Alabama higher education institution, this study used two survey instruments, a pre-course survey administered during the first week of the 2010 spring term and a post-course survey administered during the last week of the 2010 spring term. The target population to measure the relationships between the psychosocial satisfaction scales included 11,814 students age 19 or older taking at least one online course.

The following sections, which comprise the discussion related to the findings, report conclusively that there are no significant differences in student satisfaction with online courses when both the relationship between the satisfaction scales and age, gender, ethnicity, computer experience, and effort are considered. This means that traditional and non-traditional students and males and females of any ethnicity are satisfied with online courses and there is no difference in degrees of satisfaction relative to the relationships of instructor support, student interaction, personal relevance, authentic learning, active learning, and student autonomy. Student satisfaction with online courses suggests that online learning is equal in many respects to traditional in-class learning. This study supports much of the existing research that compares traditional instruction with online instruction. For Troy University the results mean that it is

advisable for the institution to further invest in technology to support online learning and that offering additional courses online will in turn support the institutions mission. In other words, enhancing technology to deliver online courses could increase student enrollment which, in turn, will enable the institution to achieve its long-term goal of enrolling more than 50,000 students.

The organization of this final chapter of the study serves as a review of the overall study and includes several sections that will provide an interpretation of the results of the findings. This chapter will be structured as follows: an overview of the purpose of the study, including research questions and hypotheses; the research methods and measures employed to address the hypotheses; results, discussions, and implications of the research; interpretation of the findings; recommendations for practice; recommendations for future research; and a conclusion.

### Purpose of the Study

The purpose of this study was to better understand whether certain relationships between student satisfaction constructs make a difference with respect to online course expectations versus actual course experiences based on demographic variables including age, gender, and ethnicity; and other variables, including computer efficacy, relating to previous computer experience and effort relating to the amount of time students' spend preparing for their online courses. According to Appleton-Knapp and Krentler (2006), expectations influence satisfaction, which can mean not only customer expectations but also student expectations. Examining student expectations and experiences in an online learning environment, as they relate to student satisfaction as consumers of education as a commodity, was the goal of this study.

## Research Questions

This study included the following five research questions:

*Research Question 1:* What are students' expectations of online courses?

*Research Question 2:* What are students' experiences with online courses?

*Research Question 3:* To what degree are the expectations of the online learning environment that exist under the constructs of instructor support, student interaction and collaboration, personal relevance, authentic learning, active learning, student autonomy, and satisfaction different from actual experiences with the online learning environment?

*Research Question 4:* To what degree do demographics, computer efficacy, and effort, affect the difference between expectations and experiences related to student satisfaction of online courses under the constructs of instructor support, student interaction and collaboration, personal relevance, authentic learning, active learning, and student autonomy?

*Research Question 5:* To what degree are students satisfied with online courses?

## *Research Hypotheses*

The research hypotheses included the following:

*Hypothesis 1:* There is no significant difference in the expectations of students taking online courses based on demographics, computer efficacy, and effort.

*Hypothesis 2:* There is no significant difference in the experiences of students taking online courses based on demographics, computer efficacy, and effort.

*Hypothesis 3:* There is no significant difference in the expectations of and experiences with the online courses that should exist under the constructs of instructor support, student

interaction and collaboration, personal relevance, authentic learning, active learning, student autonomy, and satisfaction.

*Hypothesis 4:* There is no significant difference in student satisfaction among demographic, computer efficacy, and effort variables across the constructs of instructor support, student interaction and collaboration, personal relevance, authentic learning, active learning, and student autonomy in their distance learning courses based on expectations versus actual experience.

*Hypothesis 5:* There is no significant difference in the satisfaction levels of students taking online courses based on demographics, computer efficacy, and effort.

## Review of the Methods and Measures

### *Methods*

The study was conducted using descriptive research methods employing a survey design described by Isaac and Michael (1995) as a “systematic means of collecting descriptive information about the characteristics, practices, or attitudes of a defined population of participants” (p. 219). Surveys are an effective and low-cost way of collecting data; however, limitations reside in the potential to standardize questions contained in the surveys, which increases the risk that complex problems can be portrayed as superficial and oversimplified (Isaac & Michael, 1995). Surveys are the most widely used methods in education and behavioral sciences to collect data, according to Isaac and Michael (1995). Therefore, to evade the generalization and simplification of the research problem, data were collected using a previously validated survey instrument for both the pre-course and post-course surveys. The Distance Education Learning Environment (DELES) survey instrument was designed within learning

environments and the research literature identifies the satisfaction constructs contained therein as being significant to distance education learning environments (Walker, 2005). The survey development process by Walker included the following:

Three social organization dimensions of learning environments include relationship, personal development, and system maintenance and change. It also included a non-learning environments measure of *student satisfaction*, which was analyzed for associations between student enjoyment in relation to learning environment factors after the instrument was validated. The items were face validated by an international panel of experts/practitioners. Instrument development involved a pilot and a field test of items, followed by item analyses for reliability and validity, resulting in a valid learning environments instrument and data. (Walker, 2005, p. 293)

### *Measures*

The DELES survey instrument comprising the satisfaction scales was not modified in this study; however, items pertaining to demographic information including age, gender, and ethnicity (first section), as well as nine items measuring computer efficacy (second section), and four items measuring effort (third section) were added (see Appendix E).

The first section of the survey collected demographic information to determine age, gender, and ethnicity. The second section of the survey contained two items measuring computer efficacy. The first item consisted of nine items using a 4-point Likert-type scale with level 1 indicating no computer experience to level 4 indicating an expert level of competence. The second item consisted of four items to determine the number of online courses the student had previously taken ranging from 0 to 2, 3 to 5, 6 to 8, and 8 to 10. The third section of the survey sought to determine the level of effort students spent preparing for the online course. This section contained two items with the first designed to determine the amount of time students spent each week preparing for class, ranging from less than 3 hours, 3 to 5 hours, 6 to 10 hours, 11 to 15 hours, and more than 15 hours; and the second item designed to determine the amount of time

students spent logged-on to the online course using the same ranges as item one. For computer efficacy, scores were dichotomized into two levels: beginner and expert, and for effort, scores were also dichotomized into two levels: less than 8 hours and more than 8 hours.

The items within the DELES instrument located in the fourth section were comprised of six psychosocial satisfaction scales including eight items pertaining to the scale of instructor support, six items pertaining to the scale of student interaction and collaboration, seven items pertaining to the scale of personal relevance, five items pertaining to the scale of authentic learning, three items pertaining to the scale of active learning, and five items pertaining to the scale of student autonomy. All 34 items comprising the six scales were measured using a 5-point Likert-type scale consisting of indicators ranging from 1 to 5 with 1 indicating *never* and 5 indicating *always*.

The fifth and final section of the survey included a student satisfaction scale, although it is not directly related to the learning environment affective scale of the DELES. This section measured for the dependent variable satisfaction and consisted of eight items such as “distance education is exciting” and “I prefer distance education.” The students indicated their level of satisfaction with the online course(s) by selecting from a scale ranging from 1 (*strongly disagree*), 2 (*disagree*), 3 (*neither disagree nor agree*), 4, (*agree*), to 5 (*strongly agree*).

### *Sample Description*

This study consisted of three convenience samples: a pre-course sample used to collect data resulting from students’ expectations of their online course environment, a post-course sample used to collect data from students’ actual experience with their online course environment, and a sample that consisted of students who were participants in both the

pre-course and post-course sample. The samples were used to collect data at one institution and consisted of students who were age 19 or older, who were enrolled in at least one online course, and who volunteered to participate. Participation was sufficient for using an analysis of variance for the degree of power, effect size, and significance with the total size of the pre-course sample ( $N = 3,296$ ), the post-course sample ( $N = 3,298$ ), and the pre-course and post-course match ( $N = 1,785$ ).

The majority of the students participating in the pre-course sample were 26 to 55+ years old (84%), with 16% in the 19 to 25 year age range. The gender make-up of the sample showed that 65% of the students were female and 35% were male. Fifty-five percent of the student participants were Caucasian, and 45% of the sample participants represented other ethnic minority students. The majority of the students held some type of degree, with 30% holding an associate's degree, 27% holding a bachelor's degree, 5% holding a master's degree, and 10 students holding a doctorate degree. The largest category was represented by student participants who did not have a degree (44%). This resulted in 74% of the students being considered as undergraduates. Previous experience with online courses was also measured, and varied, with 37% of the students who have taken from 0 to 2 online courses, 18% who have taken from 3 to 5 courses, and 63% who have previously taken at least 6 online courses.

Of the students participating in the post-course sample, 87% were 26 to 55+ years old and 13% were in the 19 to 25 year age range. The gender make-up of the sample showed the same results as the pre-course participants, 65% of the students were female and 35% were male. Fifty-two percent of the student participants were Caucasian and 48% of the sample participants represented other ethnic minority students. The majority of the students held some type of degree, with 31% holding an associate's degree, 23% holding a bachelor's degree, 5% holding a

master's degree, and 4 students (<1%) holding a doctorate degree. The largest category was represented by student participants who did not have a degree (42%). This resulted in 72% of the students being considered as undergraduates. Previous experience with online courses varied, with 16% of the students who have taken from 0 to 2 online courses, 18% have taken from 3 to 5 courses, and 66% have previously taken at least 6 online courses. Overall, the sample statistics for the post-course participants were very similar to the pre-course sample participants.

### Results, Discussions, and Implications

In a study by Bray et al. (2007), the researchers portrayed the ideological assertions of distance learning as expectations for improved instructional delivery and new revenue sources that have really never materialized or been documented by empirical research. Although the researchers recognized the many innovative enhancements to distance education delivery methods, such as the Internet and that students' use of technology is omnipresent, they question whether these changes will make a difference or whether expected outcomes can be measured, much less achieved. There is no doubt that the shortcoming of the past efforts of higher education institutions to deliver education through a distance can cause one to question the effectiveness of future efforts, but despite such shortcomings, online education continues to grow and higher education continues to change (Phipps & Merisotis, 2000).

Several studies have been conducted to investigate the effect these new technologies, specifically the Internet, have had on student outcomes and attitudes (Carrell & Menzel, 2001; Hargis, 2000; Johnson, 2001; Swan & Jackman, 2000). However, given these innovative changes in technology and the aggressive online education delivery opportunities in higher education by ever increasing numbers of institutions, the question remains--what are the relationships between

the constructs of student satisfaction in online learning environments and given those relationships, what affect do demographics have? This study answered that question by examining the online learning environment; the expectations of online students; and the relationship between the dependent variable, satisfaction; the variables comprising the six psychosocial satisfaction scales; and the independent demographic variables. Chapter 4 presented five hypotheses and the results of the analysis of the data collected for both dependent variables and independent variables. This chapter presents five research questions and objectives and interprets the findings from Chapter 4 analyses.

### Interpretation of the Findings

#### *Research Question 1--Expectations*

The objective of the first research question was to determine student expectations with online course(s) and whether there is a difference in their expectations based on the independent variables age, gender, ethnicity, computer efficacy, and effort. The data used to examine this objective were collected from a pre-course survey administered to students during the first week of the online course(s) for the 2010 spring term.

#### *Research Question 2--Experiences*

The objective of the second research question was to determine student experiences with online course(s) and whether there is a difference in their actual experiences with respect to the independent variables age, gender, ethnicity, computer efficacy, and effort. The data used to examine this objective were collected from a post-course survey administered to students during the last week of the online course(s) for the 2010 spring term.

In order to comprehensively address the first two research objectives, the homogeneity of the sample must be established as analyzed in Hypotheses 1 (expectations) and 2 (experiences), which looked at variations in demographics, computer efficacy, and effort of students taking online courses. For clarity, the findings for Hypotheses 1 and 2 are discussed along with the six psychosocial satisfaction scale descriptors.

### *Pre-course Survey*

The descriptive statistics from the results of the pre-course survey showed that only two of the five variables for the first objective were viable for testing: gender and ethnicity. The remaining variables, (a) age, (b) computer efficacy, and (c) effort, could not be analyzed because the sample ( $N = 3,298$ ) did not contain a sufficient number of participants to test in each dichotomized category of the variable. The age variable was dichotomized into the categories of age 19 to 25 and 26 to 55+, and the statistics showed that the majority (82%) of students were 26 years old or older. The computer efficacy variable was dichotomized into beginner and expert, and the statistics showed that 87% of the students rated themselves as expert users of the Internet and technology essential to course success. The effort variable was dichotomized into spending less than 8 hours and over 8 hours preparing for and being logged-on to the course, and the statistics showed that 84% of the students spent more than 8 hours of effort toward course preparation. Those variables were considered to be underrepresented and were unable to be analyzed as part of this study.

*Variables used for analysis.* The gender variable was dichotomized into male and female student participants. The demographic statistics for the sample of 3,270 student participants in

this study reported that 2,125 (65%) were female and 1,145 (35%) were male. The literature supports the notion of social presence and learning gender differences in online learning environments. The literature reported that in one study, female students reported higher levels of satisfaction than males in both community colleges and four-year universities (Noel-Levitz, 2009). However, there is limited research to determine expectations based on gender differences in online learning environments. Unless the instructor posts student pictures comprising the online classroom, it would be difficult to determine whether the screen name of a student poses the same social effects. Improvements in technology and online delivery platforms may offer an expanded range of virtual class environments which, by showing gender composition, could simulate traditional classroom pedagogies.

The ethnicity variable was dichotomized into Caucasian participants and other ethnic minority participants. The demographic statistics for the sample of 3,278 student participants in this study showed that Caucasians totaled 1,789 students (55%), African American participants totaled 1,251 (38%), with the third largest category being “Hispanic” students totaling 127 (4%). Waits and Lewis (2003) reported that African American student enrollment in online courses is exponentially increasing. A national study reported that African American students were less satisfied with the online learning environment than Caucasian students at both private and public institutions. Although the amount of research on the topics of distance learning, distance education, and online learning environments continues to increase, there remains a limited inventory of studies that have examined African American student experiences (Flowers et al., 2008; Rovani & Ponton, 2005). In a study using the National Postsecondary Student Aid database, Flowers et al. (2008) reported that African American students who only took one distance education course were less satisfied than with those courses taken in a traditional

classroom setting. The researchers also reported that the more distance education courses taken by African American students the higher the satisfaction levels were with distance education courses (p. 4).

#### *Post-course Survey*

Similar to the pre-course survey, the descriptive statistics for the post-course survey results showed the same two of the five variables that were viable for testing: gender and ethnicity. The remaining variables, (a) age, (b) computer efficacy, and (c) effort, could not be analyzed because the sample did not contain a sufficient number of participants in each dichotomized category to test.

The age variable was dichotomized into the categories of age 19 to 25 and 26 to 55+, and the statistics showed that the majority (87%) of students were 26 years or older. The computer efficacy variable was dichotomized into beginner and expert, and the statistics showed that 92% of the students rated themselves as expert users of the Internet and technology essential to course success. The effort variable was dichotomized into spending less than 8 hours and over 8 hours preparing for the course and being logged-on to the course, and the statistics showed that 84% of the students spent more than 8 hours of effort toward course preparation. Those variables were considered to be underrepresented and were unable to be analyzed as part of this study.

*Variables used for analysis.* The gender variable was dichotomized into male and female student participants. The demographic statistics for the sample of 3,246 student participants in this study reported that 2,099 (65%) were female and 1,147 (35%) were male. As previously discussed in the pre-course variable analysis, the literature supports the concept of social presence and learning gender differences in online learning environments. For example, female

students reported higher levels of satisfaction than males in both community colleges and four-year universities (Noel-Levitz, 2009). However, there is limited research to determine expectations based on gender differences in online learning environments. Unless the instructor posts student pictures comprising the online classroom, it would be difficult to determine whether the screen name of a student poses the same social effects. Improvements in technology and online delivery platforms may offer an expanded range of virtual class environments which, by showing gender composition, could simulate traditional classroom pedagogies.

The ethnicity variable was dichotomized into Caucasian participants and other ethnic minority participants. The demographic statistics for the sample of 3,245 student participants in this study showed that Caucasians totaled 1,689 participants (52%), African American participants totaled 1,318 (41%), with the third largest category being “Hispanic” students totaling 119 (4%).

### Psychosocial Satisfaction Scales

#### *Instructor Support*

Instructor support is one of the primary predictor variables related to course satisfaction (Bollinger & Martindale, 2004; Williams & Ceci, 1997). The relevance of instructor feedback was supported by the literature because the interaction of the instructor is seen as a motivating factor for the student and facilitates learner involvement. According to Finaly-Newmann (1994), instructor reaction, response, and opinion are the most important factors related to satisfaction with instruction. This study collected information based on the expectations and actual experiences students have with instructor support for their online course(s). The survey contained eight items facilitating this collection method, including items such as “the instructor

provides me positive and negative feedback on my work,” “the instructor adequately answers my questions,” and “the instructor encourages my participation.”

*Pre-course analysis.* The analysis shows statistically significant differences between gender ( $p = .003$ ) and ethnicity ( $p = .001$ ), which are less than the .05 significance level ( $p < .05$ ). The practical significance for gender and ethnicity as measured by partial eta squared, ( $\eta^2 = .003$ ) and ( $\eta^2 = .004$ ), respectively, indicates there is less than 1% of the variances of responses that are explained between the gender variable, male and female, as well as between the ethnicity variable, Caucasian and other ethnic minority students. Finding statistical significance but not practical significance could be caused by the large sample size ( $N = 3,296$ ). The analysis of variance for gender and ethnicity showed there was no statistical interaction between those demographic variables and the psychosocial construct of instructor support.

Given that the sample is homogenous related to instructor support on all demographic variables, (a) age, (b) gender, and (c) ethnicity and on computer efficacy and effort, a discussion of the mean ratings of the overall sample is appropriate. The sample of online students rating items for instructor support in the pre-course survey ( $N = 3,296$ ) has a mean rating of 4.20 ( $SD = .68$ ) on a 5-point scale where 1 = *Never*, 2 = *Seldom*, 3 = *Sometimes*, 4 = *Often*, and 5 = *Always*. Overall, this mean rating indicates that students taking online courses, on average, often expect the professor to provide appropriate instructor support.

*Post-course analysis.* The analysis showed no statistically significant difference for gender ( $p = .338$ ), which is greater than the significance level ( $p < .05$ ), but shows statistical significance for ethnicity ( $p < .001$ ), which is less than the .05 significance level. The practical

significance for gender and ethnicity as measured by partial eta squared, ( $\eta^2 = .000$ ) and ( $\eta^2 = .010$ ), respectively, indicates there is less than 1% of the variances of responses that are explained between gender variables male and female as well as the ethnic variable Caucasian and other ethnic minority students. Finding statistical significance but no practical significance could be caused by the large sample size ( $N = 3,298$ ). The analysis of variance for gender and ethnicity showed there was no statistical interaction between those variables of gender and ethnicity and the psychosocial construct of instructor support.

As with the pre-course survey results, there is homogeneity of sample; therefore, the analysis of the overall group rating is proper. Instructor support in the post-course survey ( $N = 3,298$ ) has a mean rating of 4.11 ( $SD = .23$ ) on the 5-point scale previously described. This mean rating indicates that, overall, students taking online courses, on average, often view the professor as providing appropriate instructor support. This result indicates that students' actual online experience correlates or matches the expectations they had prior to taking the course.

### *Student Interaction and Collaboration*

The ability of students to interact with each other, exchange information, and engage in meaningful relationship defines the construct of student satisfaction (Walker, 2001). Technology has made it possible for students to use online discussion boards where ideas can be shared and social bonds with peers and educators can be developed (Wu & Hiltz, 2004). A study by Johnson, Bishop, Holt, Stirling, and Zane (2001) found that student communication about academic and administration content fosters virtual "talking" as opposed to students posting monologue type responses to an electronic bulletin board. This study collected information about the expectations and actual experiences students have with regard to online interaction with other

students. The survey contained six items measuring the level of student interaction including “group work is part of my activities,” “I share information with other students,” and “I discuss my ideas with other students.”

*Pre-course analysis.* The analysis showed no statistically significant difference for gender ( $p = .359$ ), which is greater than the significance level ( $p < .05$ ), but shows statistical significance for ethnicity ( $p = .001$ ), which is less than the .05 significance level. The practical significance for gender and ethnicity as measured by partial eta squared, ( $\eta^2 = .000$ ) and ( $\eta^2 = .003$ ), respectively, indicates there is less than 1% of the variances of responses that are explained between males and females and Caucasian and other ethnic minority students. Finding statistical significance but no practical significance could be caused by the large sample size ( $N = 3,296$ ). The analysis of variance for gender and ethnicity showed there was no statistical interaction between those variables and the psychosocial construct of student interaction and collaboration.

Given that the sample is homogenous related to student interaction on all demographic variables, (a) age, (b) gender, and (c) ethnicity, and on computer efficacy and effort, a discussion of the mean ratings of the overall sample is appropriate. The sample of online students rating items for student interaction in the pre-course survey ( $N = 3,296$ ) has a mean rating of 3.26 ( $SD = .98$ ) on a 5-point scale where 1 = *Never*, 2 = *Seldom*, 3 = *Sometimes*, 4 = *Often*, and 5 = *Always*. This mean rating indicates that, overall, students taking online courses, on average, sometimes expect to participate in interactive assignments or share information and ideas with other students enrolled in the online course.

*Post-course analysis.* The analysis showed no statistically significant difference for gender ( $p = .245$ ), which is greater than the significance level ( $p < .05$ ), but showed statistical significance for ethnicity ( $p < .001$ ), which is less than the .05 significance level. The practical significance for gender and ethnicity as measured by partial eta squared, ( $\eta^2 = .000$ ) and ( $\eta^2 = .008$ ), respectively, indicates there is less than 1% of the variances of responses that are explained between males and females and Caucasian and other ethnic minority students. Finding statistical significance but no practical significance could be caused by the large sample size ( $N = 3,298$ ). The analysis of variance for gender and ethnicity showed there was no statistical interaction between the variables of gender and ethnicity and the construct of student interaction and collaboration.

Homogeneity of the sample exists for post-course survey items related to student ; therefore, the analysis of the overall rating of the post-course group is also appropriate. Student interaction in the post-course survey ( $N = 3,298$ ) has a mean rating of 3.21 ( $SD = 1.04$ ) on the 5-point scale previously described. This mean rating indicates that, overall, students taking online courses, on average, sometimes have interactive assignments and opportunities to share ideas and information with other online students. This result indicates that students' actual online experience correlates or matches the expectations they had prior to taking the course.

### *Personal Relevance*

Education and learning is often viewed as a “mind-to-mind” experience where the objective is for the instructor to use a learning environment to provide new information to the student. Personal relevance suggests there is a link between learning experiences and students' out-of-school experiences (Walker, 2001). Researchers postulated that unless learning permeates

into a student's life holistically then learning has not been fully achieved and there is a disconnection. Petrina (1992) offered that personal relevance can also be achieved through the integration of curriculum designs, where education "plays an integral role in a student's life and has a major influence on a student's self-concept, psyche, outlook on life, and world view" (p. 38). This study collected information about the expectations and actual experiences students have with regard to students being able to link their online learning experience to other areas in their life. The survey contained five items about personal relevance including items such as "I link class work to my life outside of the university," "I am able to pursue topics that interest me," and "I can connect my studies to my activities outside of class."

*Pre-course analysis.* The analysis showed no statistically significant difference for gender ( $p = .058$ ), which is greater than the significance level ( $p < .05$ ), but shows statistical significance for ethnicity ( $p = .043$ ), which is less than the .05 significance level. The practical significance for gender and ethnicity, as measured by partial eta squared, ( $\eta^2 = .001$ ) and ( $\eta^2 = .001$ ), respectively, indicates there is less than 1% of the variances of responses that are explained between males and females and Caucasian and other ethnic minority students. Finding statistical significance but no practical significance could be caused by the large sample size ( $N = 3,296$ ). The analysis of variance for gender and ethnicity showed there was no statistical interaction between those variables and the psychosocial construct of personal relevance.

Discussion of the overall mean ratings of the sample for personal relevance is appropriate due to the homogenous sample based on all demographic variables, (a) age, (b) gender, and (c) ethnicity, and on computer efficacy and effort. The sample of online students rating items for personal relevance in the pre-course survey ( $N = 3,296$ ) has a mean rating of 3.94 ( $SD = .73$ ) on

a 5-point scale where 1 = *Never*, 2 = *Seldom*, 3 = *Sometimes*, 4 = *Often*, and 5 = *Always*. This mean rating indicates that, overall, students taking online courses, on average, often expect the course work and assignments to provide information and knowledge that is easily transferred to their personal and work life.

*Post-course analysis.* The analysis showed no statistically significant difference for gender ( $p = .681$ ), which is greater than the significance level ( $p < .05$ ), but shows statistical significance for ethnicity ( $p < .001$ ), which is less than the .05 significance level. The practical significance for gender and ethnicity, as measured by partial eta squared, ( $\eta^2 = .000$ ) and ( $\eta^2 = .006$ ), respectively, indicates there is less than 1% of the variances of responses that are explained between males and females and Caucasian and other ethnic minority students. Finding statistical significance but no practical significance could be attributed to the large sample size ( $N = 3,298$ ). The analysis of variance for gender and ethnicity showed there was no statistical interaction between those variables and the psychosocial construct of personal relevance.

As with the pre-course survey results, the sample is homogenous; therefore, an analysis of the overall sample rating for personal relevance is acceptable. Personal relevance in the post-course survey ( $N = 3,298$ ) has a mean rating of 3.91 ( $SD = .79$ ) on the 5-point scale previously described. This mean rating indicates that, overall, students taking online courses, on average, often receive course work and assignments that provide information and knowledge that is easily transferred to their personal and work life. This result indicates that students' actual online experience correlates or matches the expectations they had prior to taking the course.

## *Authentic Learning*

Authentic learning engages real world problems that are fundamental to the circumstances from which it evolves (Callison & Lamb, 2004; Maina, 2004; Renzulli, Gentry, & Reis, 2004). The literature reveals several common themes with respect to the components that are considered the fabric of authentic learning. These themes emanate from Marina's (2004) three elements of authentic learning, Renzulli et al.'s (2004) four criteria for authentic learning, and Callison and Lamb's (2004) seven signs of authentic learning and include (a) real world problems; (b) beyond the school, classroom, assignment, and extension of the learners world; and (c) original and unprescribed learning. These themes are supported by Avery et al.'s (2001) contention that authentic learning means to experience knowledge outside of the classroom and disseminate that knowledge to other learners rather than the instructor. These themes referred to here also correlate with the premise supporting a qualitative examination of 45 journal articles in Rule's (2006) study of the components of authentic learning as follows:

The four themes supporting authentic learning, identified through the content analysis of forty-five articles describing authentic learning in different disciplines are: 1) the activity involves real-world problems that mimic the work of professionals in the discipline with presentation of findings to audiences beyond the classroom; 2) open-ended inquiry, thinking skills, and metacognition are addressed; 3) students engage in discourse and social learning in a community of learners; and 4) students are empowered through choice to direct their own learning in relevant project work. (p. 2)

This study collected information about the expectations and actual experiences students have with regard to being able to relate their classroom education to real life experiences. The survey contained five items related to authentic learning including items such as "I work on assignments that deal with real-world information," "I work with real examples," and "I enter the real world of the topic of study."

*Pre-course analysis.* The analysis showed no statistically significant difference for gender ( $p = .758$ ), which is greater than the significance level ( $p < .05$ ), and showed no statistical significance for ethnicity ( $p = .111$ ), which is also greater than the .05 significance level. The practical significance for gender and ethnicity, as measured by partial eta squared, ( $\eta^2 = .000$ ) and ( $\eta^2 = .001$ ), respectively, indicates there is less than 1% of the variances of responses that are explained between males and females and Caucasian other ethnic minority students. The analysis of variance for gender and ethnicity showed there was no statistical interaction between those variables and the psychosocial construct of authentic learning.

Discussion of the overall mean ratings of the sample for authentic learning is appropriate due to the homogenous sample on all demographic variables, (a) age, (b) gender, and (c) ethnicity, and on computer efficacy and effort. The sample of online students rating items for authentic learning in the pre-course survey ( $N = 3,296$ ) has a mean rating of 3.99 ( $SD = .74$ ) on the 5-point scale. Overall, this mean rating indicates that students taking online courses, on average, often expect to be exposed to real world issues in the learning process and have opportunities to reason through realistic issues as part of the learning process.

*Post-course analysis.* The analysis showed no statistically significant difference for gender ( $p = .633$ ), which is greater than the significance level ( $p < .05$ ), but showed statistical significance for ethnicity ( $p = .015$ ), which is less than the .05 significance level. The practical significance for gender and ethnicity, as measured by partial eta squared, ( $\eta^2 = .000$ ) and ( $\eta^2 = .002$ ), respectively, indicates there is less than 1% of the variances of responses that are explained between males and females and Caucasian and other ethnic minority students. Finding statistical significance but no practical significance could be caused by the large sample size ( $N =$

3,298). The analysis of variance for gender and ethnicity showed there was no statistical interaction between those variables and the psychosocial construct of authentic learning.

In line with the pre-course survey, there is homogeneity of the sample for authentic learning in the post-course survey. Authentic learning in the post-course survey ( $N = 3,298$ ) has a mean rating of 3.97 ( $SD = .80$ ) on the 5-point scale. Overall, this mean rating indicates that students taking online courses, on average, often see the real world issues in the learning process and have opportunities to reason through realistic issues as part of the learning process. This result indicates that students' actual online experience correlates or matches the expectations they had prior to taking the course.

### *Active Learning*

Students have opportunities to initiate their own learning and to engage in learning activities that involve doing things. Active learning requires students to engage in the exploration of their own meaning and learning value (Barab, Cherkes-Julkowski, Swenson, Garrett, Shaw, & Young, 1999; Walker, 2001). The literature supports the construct of active learning as an effective instructional strategy in an online environment. Instructors facilitate active learning by designing learning activities and programs that organize students' academic needs around an online working environment requiring the development of students to reach out and engage the virtual classroom environment. Student engagement will foster shared learning activities and enhance participation (Honog, Ridzuan & Keuk, 2000; Land & Hannafin, 1996; Prensky, 2005).

*Pre-course analysis.* The analysis showed no statistically significant difference for gender ( $p = .599$ ), which is greater than the significance level ( $p < .05$ ), but showed statistical

significance for ethnicity ( $p = .035$ ), which is less than the .05 significance level. The practical significance for gender and ethnicity, as measured by partial eta squared, ( $\eta^2 = .000$ ) and ( $\eta^2 = .001$ ), respectively, indicates there is less than 1% of the variances of responses that are explained between males and females and Caucasian other ethnic minority students. Finding statistical significance but no practical significance could be caused by the large sample size ( $N = 3,296$ ). The analysis of variance for gender and ethnicity showed there was no statistical interaction between those variables and the psychosocial construct of active learning.

The sample is homogenous related to active learning; therefore, the discussion of the mean ratings of the overall sample is appropriate. The sample of online students rating items for active learning in the pre-course survey ( $N = 3,296$ ) has a mean rating of 4.24 ( $SD = .62$ ) on the 5-point scale. This mean rating indicates that, overall, students taking online courses, on average, often expect to take an active role in their learning process and to engage in activities with other students and the instructor on a regular basis during the course.

*Post-course analysis.* The analysis showed no statistically significant difference for gender ( $p = .436$ ), which is greater than the significance level ( $p < .05$ ), and showed no statistical significance for ethnicity ( $p = .595$ ), which is also greater than the .05 significance level. The practical significance for gender and ethnicity as measured by partial eta squared, ( $\eta^2 = .000$ ) and ( $\eta^2 = .000$ ), respectively, indicates there is less than 1% of the variances of responses that are explained between males and females and Caucasian and other ethnic minority students. The analysis of variance for gender and ethnicity showed there was no statistical interaction between those variables and the psychosocial construct of active learning.

As with the pre-course survey results, there is homogeneity of sample; therefore, the analysis of the overall group rating for post-course active learning is acceptable. Active learning in the post-course survey ( $N = 3,298$ ) has a mean rating of 4.25 ( $SD = .65$ ) on the 5-point scale previously described. This mean rating indicates that, overall, students taking online courses, on average, often take an active role in their learning process and engage in activities with other students and the instructor on a regular basis during the course. This result indicates that students' actual online experience correlates or matches the expectations they had prior to taking the course.

### *Student Autonomy*

Student autonomy can be defined as a course that is student-oriented and allows students to make their own learning decisions (Walker, 2001). Autonomous learning suggests there is a certain degree of student independence where the student as a learner is not guided or assisted in any manner (Confessore & Park, 2004). The researchers posited that there are four characteristics of learner autonomy including the aspiration to learn, having the wherewithal, possessing drive, and being determined. Jung (2001) reviewed the publications of student autonomy in online learning environments and concluded that such an environment enables students to incorporate autonomous learning due to the flexibility and independent decision-making it offers. This study collected information about the expectations and actual experiences students have with regard to students' making their own decisions as to how they learn and the determination to succeed in an unassisted educational environment. The survey contained five items about student autonomy including items such as "I make decision about my learning," "I am in control of my learning," and "I approach learning in my own way."

*Pre-course analysis.* The analysis showed a statistically significant difference for gender ( $p = .001$ ), which is less than the significance level ( $p < .05$ ), and also showed statistical significance for ethnicity ( $p = .028$ ), which is less than the .05 significance level. The practical significance for gender and ethnicity, as measured by partial eta squared, ( $\eta^2 = .004$ ) and ( $\eta^2 = .001$ ), respectively, indicates there is less than 1% of the variances of responses that are explained between males and females and Caucasian and other ethnic minority students. Finding statistical significance but no practical significance could be caused by the large sample size ( $N = 3,296$ ). The analysis of variance for gender and ethnicity showed there was no statistical interaction between those variables and the psychosocial construct of student autonomy.

Discussion of the overall mean ratings of the sample for student autonomy is appropriate due to the homogenous sample on all demographic variables, (a) age, (b) gender, and (c) ethnicity, and on computer efficacy and effort. The sample of online students rating items for student autonomy in the pre-course survey ( $N = 3,296$ ) has a mean rating of 4.50 ( $SD = .53$ ) on the 5-point scale. This mean rating indicates that, overall, students taking online courses, on average, rated between the points of *often* and *always* on the expectation that they would approach the online course in their own personal way and that they would be accountable for their own level of learning.

*Post-course analysis.* The analysis showed a statistically significant difference for gender ( $p < .001$ ), which is less than the significance level ( $p < .05$ ), but showed no statistical significance for ethnicity ( $p = .409$ ), which is greater than the .05 significance level. The practical significance for gender and ethnicity as measured by partial eta squared, ( $\eta^2 = .005$ ) and ( $\eta^2 = .000$ ), respectively, indicates there is less than 1% of the variances of responses that are

explained between males and females and Caucasian and other ethnic minority students. Finding statistical significance but no practical significance could be caused by the large sample size ( $N = 3,298$ ). The analysis of variance for gender and ethnicity showed there was no statistical interaction between those variables and the psychosocial construct of student autonomy.

As with the pre-course survey results, the post-course survey results indicated a homogenous sample. Therefore, the analysis of the overall group rating for post-course student autonomy is acceptable. Student autonomy in the post-course survey ( $N = 3,298$ ) has a mean rating of 4.48 ( $SD = .58$ ) on the 5-point scale. This mean rating indicates that, overall, students taking online courses, on average, rated between the points of *often* and *always* when asked if they approached the online course in their own personal way and if they took accountability for their own level of learning. This result indicates that students' actual online experience correlates or matches the expectations they had prior to taking the course.

### *Research Question 3--Expectations versus Experience*

The objective of the third research question was to determine whether the expectations of online courses under the six psychosocial DELES satisfaction scales of instructor support, student interaction and collaboration, personal relevance, authentic learning, active learning, and student autonomy were different from actual experiences with the online courses using those same variables. Research Question 3 also incorporated the variable of satisfaction to determine whether students' satisfaction expectations varied from their post-course satisfaction ratings. While Research Questions 1 and 2 addressed the overall sample taken in the pre-course survey and in the post-course survey, Research Question 3 extracts only those participants who submitted responses to both surveys ( $N = 1,785$ ) for a comparison of expectations versus

experience on the DELES scales and on satisfaction with the online course. A 2 (Time: pre-course expectations/post-course experience) X 7 (Constructs: instructor support, student interaction, personal relevance, authentic learning, active learning, student autonomy, and satisfaction) Repeated Measures Multivariate Analysis of Variance (MANOVA) was utilized to determine whether any significant differences were indicated between expectation and experience. The omnibus test was significant ( $F = 6.715, p = .01, \eta^2 = .004$ ); however, the explained variance of the differences based on expectations versus experience is .004, as represented by the partial eta squared, indicating no practical significance.

No differences are evidenced in the sample of participants for the pre-course and post-course surveys on the six DELES scales and the construct of satisfaction. This indicates that students are self-aware and have established reasonable expectations for online course experience. Satisfaction is newly introduced in Research Question 3 as a factor of interest to determine whether students' expectations of satisfaction with the course are the same as the level of satisfaction from their actual experience with the online course. Satisfaction with the course and the homogeneity of the sample related to satisfaction is further developed in Research Questions 4 and 5.

#### *Research Questions 4 and 5--Satisfaction*

The objective of the fourth research question was to determine whether student demographic variables, (a) age, (b) gender, and (c) ethnicity, and computer efficacy and effort, affect student ratings of satisfaction with online courses across the DELES scales: (a) instructor support, (b) student interaction, (c) personal relevance, (d) authentic learning, (e) active learning,

and (f) student autonomy. The students participating in both the pre-course and post-course surveys ( $N = 1,785$ ) were included in the analysis for the fourth research question.

The objective of the fifth research question was to determine the overall level of satisfaction of the sample of students taking online courses. The student data collected in the post-course survey were used for this analysis ( $N = 3,278$ ).

### *Satisfaction*

This study examined some of the relationships between the psychosocial satisfaction scales in an online student learning environment. The literature supports factors associated with online learning environments in addition to the six factors included in this study, such as course structure, class size, and self-efficacy (Arbaugh & Duray, 2002; Shirvani, 2002; Stein, Wanstreet, Calvin, Overtoom, & Wheaton, 2005). The most significant key to satisfaction in a study by Stein et al. (2005) was related to the course components such as objective, discussions, and overall structure. However, the literature supports the six factors included in this study as a determination of satisfaction. Johnson et al. (2000) found that the performance of the instructor had a significant impact on satisfaction as well as the overall interaction between students and the instructor. Autonomous learning was considered the most significant predictor of satisfaction, in a study by DeWitz and Walsh (2002). Arbaugh and Duray (2002) noted that perceptions of online learning were influenced by other student learners through interaction and collaboration. This study collected information about the expectations and actual experiences students have with regard to satisfaction with their online course(s). The survey used for this study contained five items about satisfaction, including items such as “I prefer distance

education,” “I enjoy studying by distance,” and “I would enjoy my education if all my classes were by distance.”

#### *Research Question 4*

Research Question 3 previously established that no differences were indicated between pre-course expectations and post-course experiences; however, the statistical analyses used for Research Question 4, two MANOVAs, included the independent variables of gender and ethnicity to determine whether there was any affect on the difference between expectation and experience in relation to the course satisfaction and the DELES psychosocial satisfaction scale constructs: (a) instructor support, (b) student interaction, (c) personal relevance, (d) authentic learning, (e) active learning, and (f) student autonomy. With the same restricted range for (a) age, (b) computer efficacy, and (c) effort, only gender and ethnicity were included in the MANOVAs.

The omnibus test failed to achieve significance for gender ( $F = 5.53, p = .26, \eta^2 = .005$ ) or for ethnicity ( $F = .75, p = .63, \eta^2 = .003$ ). Therefore, no differences are indicated for gender and ethnicity in the sample of participants for the pre-course and post-course surveys ( $N = 1,785$ ) on the six DELES psychosocial satisfaction scales and the construct of satisfaction. This signifies that students are not differentiated on those demographic factors.

#### *Research Question 5*

Research Question 5 considered the homogeneity of the sample as well as the overall satisfaction of students enrolled in online courses. Factorial ANOVAs were used to determine whether gender and ethnicity affect levels of satisfaction for post-course survey participants. The

same restricted range for (a) age, (b) computer efficacy, and (c) effort existed in the post-course data as previously indicated for Research Questions 1, 2, and 4. The analyses indicated statistically significant differences for ethnicity ( $p = .01$ ) but failed to reach a reasonable level of practical significance ( $\eta^2 = .002$ ). The amount of variance explained based on ethnicity is less than 1% and is considered negligible. The analysis did not indicate a statistically significant difference for gender ( $p = .85$ ).

Given that the sample is homogenous related to satisfaction on all demographic variables, (a) age, (b) gender, and (c) ethnicity, and on the variables computer efficacy and effort; a discussion of the mean ratings of the overall sample is acceptable. The sample of online students rating satisfaction-related items in the post-course survey ( $N = 3,278$ ) had a mean rating of 3.80 ( $SD = .99$ ) on a 5-point scale where 1 = *Strongly Disagree*, 2 = *Disagree*, 3 = *Neither Disagree or Agree*, 4 = *Agree*, and 5 = *Strongly Agree*. The results of Research Question 5 suggests that the mean rating indicates that, overall, students taking online courses, on average, agree that they were satisfied with the experience of online courses.

## Discussion

Some researchers suggested that online education is the new cutting edge of education and that it will continue to expand the boundaries of the traditional university campus. In some sense we have already seen this expansion with Troy University and its for-profit competitors such as the University of Phoenix. When a person asks for the location of Troy University, the response is often that it is located everywhere. The literature tells us that online learning environments are everywhere and are effective and successful. For example, students enrolled in online courses perform equally as well as students enrolled in traditional in-class courses; and

online learning provides access to higher education to adult students, working students, physically challenged students, and students living in very remote locations who otherwise would not have an opportunity to pursue an education (Bourne et al., 2005; Dutton et al., 2002; Hara & Kling, 2000).

A review of the literature revealed an array of research on student satisfaction in conjunction with distance learning through the Internet. Some researchers consider the Internet just another technology tool used to deliver instruction and that it has no bearing on learning. Kvavik, Caruso, and Morgan (2004) offered that student learning is not improved by the current integration of technology, although it can enhance reflective teaching. And, some researchers suggested that the role of technology and its effect on learning is in its infancy. The implications for the future suggest the focus is more on educating more people and less on how those people are educated. This is evident with the rapid increase in for-profit institutions with their offerings targeting nontraditional adult students. For these institutions, the role of technology is shaping the delivery medium and the challenges will be laden with the connection between technology and pedagogy. The implications from some researchers are that “teaching through technology can motivate and captivate students and stimulate an interest in the learning process” (Mereba, 2003, p. 43).

However, as technology continues to shape educational programs, accreditation standards continue to shape how and to what extent technology is administered. As institutions expand the educational boundaries with online learning opportunities, they must employ qualified and certified faculty to teach the courses. Accreditation bodies closely scrutinize the make-up of such faculty relative to full-time lecturers versus adjunct instructors. Student authenticity and outcomes are an additional concern and are closely monitored by accrediting organizations.

While institutions are ramping up the resources to enter the online education arena, accreditation standards could become a barrier to entry for many institutions enticed to enter.

In a study by Schrum and Hong (2002), characteristics such as technology and access to technology, study skills, motivation, and time commitment were variables that predicted success in online courses. However, while some researchers suggested that the number of online courses taken by a student influences satisfaction levels, other studies focused on the online course content and its affect on satisfaction. A few studies looked at instructor communication and teaching skills that influence satisfaction, several studies looked at technological influences on satisfaction and how it impacts learning, while some researchers viewed course management as a construct to consider when studying satisfaction. This study investigated the online learning environment at one institution with a focus on the relationships between psychosocial satisfaction scales in an online student learning environment. Unlike most research, this study was conducted using pre- and post-test sampling techniques that reflected three data sets representing student expectations, student experiences, and a subgroup sample that compared those expectations and experiences. Troy University not only desires for its students to be satisfied with their online courses, it also desires to improve education delivery systems as well as to increase the number of online programs offered to students.

#### Recommendations for Practice

The results of this study indicated that Troy University students not only expected to be satisfied with their online courses, but were satisfied based on their actual experience. Students' expectations of their online courses are critical to their success, and research shows that by elevating student expectations not only will performance increase, but both student and instructor

behavior will be influenced (Miller, 2001). It may be applicable to suggest that a student's expectations represent his or her vision for a rigorous learning experience. Students live in an increasingly complex society where their personal lives, knowledge, and sense of logic and reasoning are constantly challenged. The technological demands of online programs, the rigidity of online course management, and the plethora of information provided to students can transform student beliefs from one of a successful learner to one of low expectations. In order to elevate those expectations, the University must take a holistic approach to develop program content standards reflected in the curriculum as well as instruction excellence in terms of assessing student diversity and culture due to the lack of face-to-face contact. According to Lumsden (1997), instructors who do not to change their expectations for their students, regardless of the students' race or ethnicity, are highly effective teachers.

Although the goal of this study was to investigate the relationships between psychosocial satisfaction scales in an online environment with regard to student expectations and experiences, the examination discovered four areas that were identified as having the potential to enhance online student satisfaction: orientation and data collection, retention, technological changes, and student services.

#### *Orientation and Data Collection*

The University should collect information in order to assess the propensity of students to succeed in a distance learning environment. In other words, when students decide to take an online course for the first time, what does the University know and how does it know the student will succeed in an online environment even though he or she succeeded in a traditional in-class environment? The University should develop a model that results in assessing a student's

perceived or expected effectiveness in an online environment such as the “student perception model” developed by O’Malley and McCraw (1999). The constructs of “prior educational conditions, characteristics of the student, and students’ perceived characteristics of online learning” (p. 1) would provide information about prior educational habits, student needs, and sociological changes; personality characteristics and the ability to effectively communicate; and program compatibility with the online environment (O’Malley & McCraw, 1999).

Troy University does not offer a program or training session designed to prepare students for online learning. Without some type of orientation or preparation, students are thrust into the online course and must simultaneously navigate the technical requirements while preparing assignments. The University should consider offering a “for credit” online orientation course for students who have no previous experience with online courses. Bozarth, Chapman, and LaMonica (2004) suggested that online learning requires students to be equipped with talents and abilities other than those needed for in-class environments including “new communication patterns and management skills” (p. 88). The researchers also offered that students need more than technical information or abilities such as assistance with online protocol, support resources, and understanding of their readiness for online learning. An orientation course structured for online students would enable the identification of instructor expectations, student expectations, major problem areas for students, and pertinent issues and assumptions. The orientation course should unequivocally provide a realistic understanding of the attitudes, skills, and knowledge students must possess in order to succeed in an online learning environment.

### *Retention and Program Completion*

During the examination of the relationships between student satisfaction constructs, it was discovered the University has a low retention rate for online students. Students take online courses for various reasons, from a course to supplement their traditional degree program to complete online degree programs. Even though it is difficult to track students and measure retention, the University acknowledges a retention rate of approximately 51%. The literature shows that retention rates for online courses have been investigated, but with varying results. Low retention rates could be a reflection on satisfaction levels students have with online courses. While certain variables such as grade point average, experience with previous online courses, experience with technology, as well as demographic variables, have been studied (Dupin-Bryant, 2004; Morris, Wu & Finnegan, 2005) to better understand the affect on retention, there continues to be inferences that we really do not understand student competencies that contribute to retaining students who take online courses (Mandernach, Donneli, & Park, 2006). Additional research is needed to better understand why online students typically have a lower retention rate than traditional students.

### *Technological Changes*

Technology is the platform that enables online learning to exist, grow, and improve. The increased demand for the University to develop additional online programs has inspired changes and commitments toward making technological advancements. The University has overcome skepticism and trends about the future of instructional technology as being one of interest, investment, and subsequent abandonment (Gibbs, Major, & Wright, 2003; Major, 1998). Online programs have made major gains and are rapidly becoming mainstream opportunities for not

only the University, but also for higher education institutions world-wide. To improve online learning programs, the University should better understand the effect innovative and diverse technologies such as podcasts, blogs, wikis, and Web 2.0 will have on its faculty and students. In a study involving 50 faculty members, Gibbs et al. (2003) reported that “better teaching and better learning were the greatest benefits of instructional technologies” (p. 86). Research indicates that technology can either have a positive or negative outcome related to the satisfaction of online students; therefore, additional research is needed in order to better understand not only available technology, but the next generation technology, its use in online education, and the educational changes those technologies will create.

### *Student Services*

Teaching, as well as learning in an online environment, is becoming a very complicated process requiring seamless integration in order to ensure student satisfaction. While a considerable number of institutions use Blackboard as its software and course management system to deliver online education, it is not practical to assume that all students will be satisfied with the same software. This study revealed that at some point in the learning process, students are likely to encounter technological problems with the course management system. Bloom and Hough (2003) reported an adverse effect on student satisfaction and frustrations by faculty when students experience technological difficulties in the delivery of online courses. As technology is enhanced, course management systems will become more complex due to unavoidable interruptions such as connection timeouts, slow performance speeds, and connection issues. Although technical difficulties should be expected, the University should consider developing alternate plans in order to address such difficulties. The University should consider the unique

needs of students who are remotely located, work on their assignments only on weekends, and who typically work alone. Hara and Kling (2000) suggested that hardware problems and limited access to technical support are not only a major source of student anxiety, but they often give up on the substance of the course and have a tendency to avoid online courses in the future. The University provides student support service of one service position for every 700 students, while some institutions provide one position for every 250 online students. A review of the literature indicates that a modicum of research in the area of student frustrations was attributed to inexperienced instructors, but only limited research in the area of student service support and course management.

#### Recommendations for Future Research

Online learning is a pedagogical experience that is becoming more acknowledged and accepted in higher education. In some ways, the growth of online learning suggests that in general students are satisfied with the notion of learning from a distance. This study examined six psychosocial constructs of satisfaction as well as overall satisfaction based on several demographic variables to determine whether student expectations about online courses matched their experiences. Measuring student expectations of online courses and analyzing the relationships between psychosocial satisfaction scales is one way to recognize those variables that are of the most importance to students and if their expectations are consistent with their course experience. Students of the “digital generation” are maturing in an environment where digital media, computer access, hi-speed broadband connectivity, and open access are expected. How will education delivery modalities and instruction design be transformed in order to satisfy this generation’s educational needs? For future research, it is vital to the body of knowledge of

distance learning to extend this research to different populations, different instructional designs, different types of higher education institutions, and different methods of analysis.

### *Different Institutional Types*

This study was limited to one institution and the application of the results may be limited to all but similar universities. In addition, the survey information did not differentiate by type of course or discipline and was administered to all students who enrolled in any online course offered during the 2010 spring term. The demographic and other variables used in this study may be different at other types of institutions such as community colleges, private institutions, and major research universities. Different institutions face different challenges when delivering online education, which may affect student satisfaction in that particular environment. Future research should explore the associations between student expectation and experience with online classes at other types of higher education institutions.

### *Multi-institution Studies*

The literature shows that the majority of research on student satisfaction with online courses included single-institutions. This type of investigation also presents an important limitation, because the results from single-institution studies, such as this study, cannot be generalized to different types of academic settings due to the prevailing variables that are related only to the distinctive institutional setting. Future research should explore multi-institutional research designs where a broad range of similar colleges and universities are included to better understand the changes in student attitudes.

### *Longitudinal Studies*

This study was conducted during one academic term, which does not consider program or course trends that can be used to make applicable revisions to the course design or delivery format. A review of the literature suggests the need for future research to include longitudinal studies that sample a cohort of students at various points in time in order to identify trends and changes in their psychosocial welfare and attitudes toward online learning. A longitudinal study could follow the same students as they progress in their discipline toward their degree and measure changes in expectations and experiences with their online courses. Also, a longitudinal study could examine students taking general education courses over a multiyear time period.

### *Qualitative Studies*

This study employed a quantitative research method designed to pursue facts about the sample of a population, using a subject-object relationship rather than collecting participant viewpoints and observing details. Future research could employ a qualitative research method in order to obtain subjective “robust descriptions” about student expectations and satisfaction in an online learning environment. For example, the use of open-ended questions could provide a richer set of data on student beliefs and attitudes about their experiences in the courses included in the study. In addition, the qualitative items could offer additional insight about new considerations that students believe are relevant to their satisfaction with their online courses. Finally, the use of a mixed method design utilizing quantitative and qualitative questions would add additional subjective information that could be used to verify the quantitative data.

## Conclusion

This study found that there were no significant differences between the expectations and experiences of students taking online courses based on the demographic variables measured across the psychosocial satisfaction scales. Noel-Levitz (2009) suggested that satisfied students will be successful students. No significant differences between expectations and experiences and satisfaction in an online learning environment support the theoretical framework grounded in this study. As satisfied customers, students will continue to enroll in online courses as an alternative to traditional courses. Therefore, the results of this study offer sufficient evidence that online course offerings are viable at Troy University and support the institution's goal of developing 100% of its existing traditional courses into online options.

Based on the overall ratings of the DELES psychosocial satisfaction scales, students overall believed (a) instructors provided adequate instructor support, (b) that their assignments were interactive and they had an opportunity to share ideas with other students, (c) they received assignments where they were able to relate their education to actual work experience, (d) real-life associations concomitant with learning objectives were presented, (e) they took an active role with instructors and other students within the learning environment, and (f) they accepted accountability for their learning outcomes.

It is appropriate to conclude that students expected to be satisfied and were actually satisfied with their online course(s) and believed that (a) online "education from a distance" was stimulating, (b) they preferred distance education, (c), online education was exciting, (d) online education was worth their time, (e) they enjoyed studying by distance, (f) they looked forward to learning by distance, (g) they would enjoy their education more if all their classes were from a

distance, and (h) they, in general, were satisfied with the course(s) they completed for the 2010 spring term.

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APPENDIX A  
DEFINITIONS

## Definitions

The following definitions are presented to clarify terms and offer meaning to unique words and phrases used in the context of the study:

*Asynchronous Distance Learning.* A learning environment consisting of activities and assignments which can be completed without simultaneous communication between the student and instructor. An environment where there are no established or scheduled learning times.

*Delivery medium or modality.* The learning platform used to provide a distance education program. The delivery modality could include audio, video, computer, Internet or a combination of all of these.

*Distance Learning.* A learning environment in which there is a physical separation between the instructor and learner or there is a separation between learners. All student participants included in this study enrolled in courses offered online using an asynchronous format.

*E-learning.* The distance learning environment using technology such as a computer, video, Internet and networked systems to deliver instruction.

*Face-to-face.* The traditional classroom learning environment where the instructor and learner are together in the space during the learning experience.

*Learner Autonomy.* According to Confessore and Park (2004), “learner autonomy is the relative capacity to productively participate in learning experiences” (p. 41). There are four constructs including desire, resourcefulness, initiative and persistence.

*Online course.* A learning environment in which the learner used the Internet and network systems to access course contact and complete required assignments.

*Online Environment.* A learning medium where learners participate with the instructor and students using real-time technology such as the Internet.

*Satisfaction.* A learner's sense of accomplishment and comfort after a successful experience that met his or her expectations.

*Synchronous Communications.* A learning environment in which technology is used to create simultaneous learning experience between the instructor and learner as well as interaction between students.

*Traditional Learning Environment.* A learning environment in which learning takes place when the instructor and learner share the same space and are able to communicate face-to-face.

*Traditional or face-to-face course.* None of the content is provided online.

*Web-based Courses.* Online courses that use an online delivery platform and computer software programs in order to engage in course activities.

APPENDIX B

ONLINE COURSES OFFERED BY ECAMPUS

*Online Courses Offered by eCampus*

*Undergraduate Courses Offered by eCampus*

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Term 1, 2009	Term 2, 2009	Term 3, 2010	Term 4, 2010	Term 5, 2010
Orientation and Career Development				
TROY 1101	TROY 1101	TROY 1101	TROY 1101	TROY 1101
College of Arts and Sciences				
Anthropology				
ANT 2200	ANT 2200	ANT 2200	ANT 2200	ANT 2200
ANT 3310		ANT 3310		ANT 3310
Biology				
BIO 1100	BIO 1100	BIO 1100	BIO 1100	BIO 1100
BIO L100	BIO L100	BIO L100	BIO L100	BIO L100
Chemistry				
CHM 1115	CHM 1115	CHM 1115	CHM 1115	CHM 1115
CHM L115	CHM L115	CHM L115	CHM L115	CHM L115
Computer Science				
CS 2250	CS 2250	CS 2250	CS 2250	CS 2250
CS 2255	CS 2255	CS 2255	CS 2255	CS 2255
CS 2265	CS 2265	CS 2265	CS 2265	CS 2265
CS 3320	CS 3320	CS 3320	CS 3320	CS 3320
CS 3325	CS 3325	CS 3325	CS 3325	CS 3325
CS 3330	CS 3330	CS 3330	CS 3330	CS 3330
CS 3332	CS 3332	CS 3332	CS 3332	CS 3332
CS 3347	CS 3347	CS 3347	CS 3347	CS 3347
CS 4420	CS 4420	CS 4420	CS 4420	CS 4420
CS 4443	CS 4443	CS 4443	CS 4443	CS 4443
CS 4445	CS 4445	CS 4445	CS 4445	CS 4445
CS 4447	CS 4447	CS 4447	CS 4447	CS 4447
CS 4448	CS 4448	CS 4448	CS 4448	CS 4448

CS 4449				
CS 4451				
CS 4495				

Criminal Justice

CJ 1101				
CJ 2221				
CJ 2231				
CJ 2241				
CJ 3302				
CJ 3310				
CJ 3325				
CJ 3335				
CJ 3345				
CJ 3352				
CJ 3365				
CJ 3367				
CJ 3375				
CJ 4415				
CJ 4420				
CJ 4421				
CJ 4430				
CJ 4440				
CJ 4442				
CJ 4445				
CJ 4446				
CJ 4447				
CJ 4470				
CJ 4472				
CJ 4499				

English

ENG 1100				
ENG 1101				

ENG 1102				
ENG 2205				
ENG 2206				
ENG 2211				
ENG 2212				
ENG 3341	ENG 3341	ENG 2244	ENG 2245	ENG 3341
	ENG 4465	ENG 3341		ENG 4405
				ENG 4425

Geography

GEO 2210				
GEO 3301	GEO 4402	GEO 3300	GEO 4402	GEO 3301
GEO 3331		GEO 3331		

History

HIS 1101				
HIS 1102				
HIS 1111				
HIS 1112				
HIS 1122				
HIS 1123				
HIS 3309	HIS 3310	HIS 4402	HIS 3304	HIS 3344
HIS 4415	HIS 3316	HIS 4411	HIS 3375	HIS 4412
HIS 4490	HIS 4482	HIS 4445	HIS 4495	
		HIS 4483		

Leadership

		LDR 1100	LDR 1100	LDR 1100
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Math

MTH 0096				
MTH 1100				
MTH 1105				
MTH 1110				
MTH 1112				

MTH 1114	MTH 2201	MTH 1114	MTH 2201	MTH 1114
MTH 2201	MTH 2215	MTH 2201	MTH 2215	MTH 2201
MTH 2215		MTH 2215		MTH 2215
Philosophy				
PHI 2203	PHI 2203	PHI 2203	PHI 2203	PHI 2203
PHI 2204	PHI 2204	PHI 2204	PHI 2204	PHI 2204
Physical Science				
Term 1, 2009	Term 2, 2009	Term 3, 2010	Term 4, 2010	Term 5, 2010
SCI 2233	SCI 2233	SCI 2233	SCI 2233	SCI 2233
SCI L233	SCI L233	SCI L233	SCI L233	SCI L233
SCI 2234	SCI 2234	SCI 2234	SCI 2234	SCI 2234
SCI L234	SCI L234	SCI L234	SCI L234	SCI L234
Political Science				
POL 2241	POL 2241	POL 2241	POL 2241	POL 2241
POL 2260	POL 2260	POL 2260	POL 2260	POL 2260
POL 3300	POL 3300	POL 3300	POL 3300	POL 3300
POL 3330	POL 3330	POL 3330	POL 3330	POL 3330
POL 3340	POL 3343	POL 3340	POL 3343	POL 3340
POL 3341	POL 3351	POL 3341	POL 3351	POL 3343
POL 3343	POL 3364	POL 3343	POL 3364	POL 3351
POL 3351	POL 4402	POL 3351	POL 4402	POL 3364
POL 4402	POL 4410	POL 4402	POL 4410	POL 4402
POL 4410	POL 4415	POL 4410	POL 4415	POL 4410
POL 4415	POL 4421	POL 4415	POL 4421	POL 4415
POL 4420	POL 4422	POL 4420	POL 4422	POL 4421
POL 4421	POL 4424	POL 4421	POL 4424	POL 4422
POL 4422	POL 4445	POL 4422	POL 4445	POL 4424
POL 4424	POL 4451	POL 4424	POL 4451	POL 4433
POL 4433	POL 4453	POL 4433	POL 4453	POL 4451
POL 4445	POL 4471	POL 4445	POL 4471	POL 4471
POL 4451		POL 4451		POL 4472

POL 4452		POL 4452		
POL 4453		POL 4453		
POL 4471		POL 4471		
POL 4472		POL 4472		
Religion				
REL 2280	REL 2280	REL 2280	REL 2280	REL 2280
Social Science				
SS 3375	SS 3375	SS 3375	SS 3375	SS 3375
SS 3376	SS 3376	SS 3376	SS 3376	SS 3376
SS 4498	SS 4498	SS 4498	SS 4498	SS 4498
SS 4499	SS 4499	SS 4499	SS 4499	SS 4499
Sociology				
SOC 2230	SOC 2230	SOC 2230	SOC 2230	SOC 2230
SOC 2275	SOC 2275	SOC 2275	SOC 2275	SOC 2275
SOC 3302	SOC 3302	SOC 3302	SOC 3302	SOC 3310
SOC 3323	SOC 3310	SOC 3310	SOC 3310	SOC 3323
SOC 3331	SOC 3323	SOC 3323	SOC 3331	SOC 3331
SOC 3332	SOC 3331	SOC 3331	SOC 3332	SOC 3332
SOC 3357	SOC 3332	SOC 3332	SOC 3356	SOC 3356
SOC 4420	SOC 3356	SOC 3357	SOC 3357	SOC 3357
SOC 4421	SOC 3357	SOC 4433	SOC 4420	SOC 4421
SOC 4495	SOC 4420		SOC 4421	SOC 4459
			SOC 4495	
Sorrell College of Business				
Accounting				
ACT 2291	ACT 2291	ACT 2291	ACT 2291	ACT 2291
ACT 2292	ACT 2292	ACT 2292	ACT 2292	ACT 2292
ACT 3394	ACT 3395	ACT 3395	ACT 3395	ACT 3395
ACT 3395	ACT 3396		ACT 3396	ACT 4435
				ACT 4494
Business Administration				

BUS 1101	BUS 1101	BUS 1101	BUS 1101	BUS 1101
BUS 3382	BUS 3382	BUS 3382	BUS 3382	BUS 3382
Business Law				
LAW 2221	LAW 2221	LAW 2221	LAW 2221	LAW 2221
LAW 3323	LAW 3323	LAW 3323	LAW 3323	LAW 3323
Economics				
ECO 2251	ECO 2251	ECO 2251	ECO 2251	ECO 2251
ECO 2252	ECO 2252	ECO 2252	ECO 2252	ECO 2252
	ECO 3353		ECO 3353	
Finance				
FIN 3331	FIN 3331	FIN 3331	FIN 3331	FIN 3331
FIN 3332	FIN 3332	FIN 3332	FIN 3332	FIN 3332
FIN 3334	FIN 4431	FIN 4431	FIN 4435	FIN 4431
FIN 3337	FIN 4432	FIN 4435		FIN 4432
Information Systems				
IS 2241	IS 2241	IS 2241	IS 2241	IS 2241
IS 3300	IS 3300	IS 3300	IS 3300	IS 3300
Management				
MGT 3371	MGT 3371	MGT 3371	MGT 3371	MGT 3371
MGT 3372	MGT 3372	MGT 3372	MGT 3372	MGT 3372
MGT 3373	MGT 3373	MGT 3373	MGT 3373	MGT 3373
MGT 3375	MGT 3375	MGT 3374	MGT 3375	MGT 3375
MGT 3377	MGT 4460	MGT 3375	MGT 3377	MGT 4452
MGT 4460	MGT 4466	MGT 4460	MGT 4451	MGT 4460
MGT 4471	MGT 4471	MGT 4471	MGT 4452	MGT 4466
MGT 4472	MGT 4472	MGT 4472	MGT 4460	MGT 4471
MGT 4473	MGT 4473	MGT 4473	MGT 4471	MGT 4472
MGT 4474	MGT 4474	MGT 4474	MGT 4472	MGT 4473
MGT 4475	MGT 4475	MGT 4475	MGT 4473	MGT 4474
MGT 4476	MGT 4476	MGT 4476	MGT 4474	MGT 4475

MGT 4478	MGT 4478	MGT 4478	MGT 4475	MGT 4476
MGT 4479	MGT 4479	MGT 4479	MGT 4476	MGT 4478
MGT 4481	MGT 4480	MGT 4481	MGT 4478	MGT 4479
MGT 4482	MGT 4481	MGT 4482	MGT 4479	MGT 4481
MGT 4483	MGT 4482	MGT 4483	MGT 4480	MGT 4482
MGT 4485	MGT 4483	MGT 4485	MGT 4481	MGT 4483
MGT 4496	MGT 4496	MGT 4490	MGT 4482	MGT 4485
		MGT 4496	MGT 4483	MGT 4490
			MGT 4496	MGT 4496

Marketing

MKT 3361				
MKT 4462	MKT 3362	MKT 3362	MKT 3362	MKT 3362
MKT 4463	MKT 4462	MKT 4462	MKT 4462	MKT 4462
MKT 4465	MKT 4463	MKT 4463	MKT 4463	MKT 4463
MKT 4468	MKT 4465	MKT 4464	MKT 4465	MKT 4465
	MKT 4468	MKT 4465	MKT 4468	MKT 4468
		MKT 4468		

Quantitative Methods

QM 2241				
QM 3341				
QM 3342				

College of Communication and Fine Arts

Art and Design

ART 1133				
ART 3375				

Classics and Latin

CLA 2260				
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Music

MUS 1131				
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Communication Studies

COM 1110				
COM 2241				

Foreign Languages

Term 1, 2009	Term 2, 2009	Term 3, 2010	Term 4, 2010	Term 5, 2010
LAT 1131	LAT 1132	SPN 1141	SPN 1142	
SPN 1141	SPN 1142			

College of Education

Interpreter Program

ASL 1141	ASL 1142	ASL 1141	ASL 1141	ASL 1141
ASL 2241	ASL 2242	ASL 2241	ASL 1142	ASL 1142
ASL 2242	EDU 2200	EDU 3360	ASL 2242	ASL 2241
EDU 2200	EDU 3362	EDU 3366	EDU 3364	ASL 2242
EDU 3360	EDU 3366	EDU 4452	EDU 3368	EDU 2200
	EDU 4451	EDU 4455	EDU 4454	EDU 4451
		EDU 4458		EDU 4456
				EDU 4457

Psychology

PSY 2200				
PSY 2205				
PSY 2210				
PSY 2230				
PSY 3301				
PSY 3304				
PSY 3310				
PSY 3311				
PSY 3312				
PSY 3320				
PSY 3322	PSY 3325	PSY 3325	PSY 3325	PSY 3325
PSY 3325	PSY 3330	PSY 3332	PSY 3330	PSY 3332
PSY 3332	PSY 3332	PSY 3340	PSY 3332	PSY 3340

PSY 3340	PSY 3340	PSY 3351	PSY 3340	PSY 3351
PSY 3351	PSY 3351	PSY 3360	PSY 3351	PSY 3360
PSY 3360	PSY 3360	PSY 3370	PSY 3360	PSY 3370
PSY 3370	PSY 3370	PSY 3380	PSY 3370	PSY 3380
PSY 3380	PSY 3380	PSY 3385	PSY 3380	PSY 3385
PSY 3385	PSY 3385	PSY 4400	PSY 3385	PSY 4400
PSY 4400	PSY 4400	PSY 4401	PSY 4400	PSY 4402
PSY 4402	PSY 4402	PSY 4402	PSY 4402	PSY 4410
PSY 4410	PSY 4410	PSY 4410	PSY 4410	PSY 4421
PSY 4421	PSY 4421	PSY 4421	PSY 4421	PSY 4430
PSY 4430	PSY 4430	PSY 4430	PSY 4430	PSY 4451
PSY 4451	PSY 4434	PSY 4451	PSY 4451	PSY 4460
PSY 4456	PSY 4451	PSY 4460	PSY 4460	PSY 4480
PSY 4460	PSY 4460	PSY 4480	PSY 4480	
PSY 4480	PSY 4480			

College of Health and Human Services

Kinesiology

KHP 1142				
KHP 2200				
KHP 2202				
KHP 2240				
KHP 2242				
KHP 2250				
KHP 2251				
KHP 2260				
KHP 2270				
KHP 3340	KHP 3350	KHP 3340	KHP 3350	KHP 3340
KHP 3360	KHP 3352	KHP 3360	KHP 3352	KHP 3360
KHP 3391	KHP 3355	KHP 3391	KHP 3355	KHP 3391
KHP 4430	KHP 4400	KHP 3395	KHP 4400	KHP 4427
KHP 4435	KHP 4440	KHP 4427	KHP 4440	KHP 4430

KHP 4443	KHP 4451	KHP 4430	KHP 4451	KHP 4435
KHP 4450	KHP 4452	KHP 4435	KHP 4452	KHP 4443
KHP 4453	KHP 4455	KHP 4443	KHP 4455	KHP 4450
KHP 4474	KHP 4459	KHP 4450	KHP 4459	KHP 4453
KHP L474	KHP 4479	KHP 4453	KHP 4478	KHP 4470
KHP 4477	KHP 4490	KHP 4482	KHP 4490	KHP 4474
KHP 4490		KHP 4490		KHP L474
				KHP 4490

*Graduate Courses Offered by eCampus*

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Term 1, 2009	Term 2, 2009	Term 3, 2010	Term 4, 2010	Term 5, 2010
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College of Arts and Science

Master of Science in Criminal Justice (MSCJ)

CJ 5571	CJ 6610	CJ 5571	CJ 6610	CJ 5571
CJ 6610	CJ 6620	CJ 6610	CJ 6620	CJ 6610
CJ 6620	CJ 6621	CJ 6620	CJ 6621	CJ 6620
CJ 6622				
CJ 6624				
CJ 6630	CJ 6636	CJ 6630	CJ 6636	CJ 6630
CJ 6636	CJ 6638	CJ 6636	CJ 6638	CJ 6636
CJ 6638	CJ 6640	CJ 6638	CJ 6640	CJ 6638
CJ 6644	CJ 6650	CJ 6644	CJ 6650	CJ 6644
CJ 6650	CJ 6655	CJ 6650	CJ 6655	CJ 6650
CJ 6652	CJ 6660	CJ 6652	CJ 6660	CJ 6652
CJ 6655	CJ 6671	CJ 6655	CJ 6671	CJ 6655

Master of Science in International Relations (MSIR)

HIS 5504	HIS 5523	HIS 5504	HIS 5523	HIS 5503
IR 5502	IR 5524	IR 5502	IR 5524	HIS 5504
IR 5524	IR 5533	IR 5524	IR 5533	IR 5502
IR 5551	IR 5551	IR 5551	IR 5551	IR 5524

IR 5552	IR 5552	IR 5552	IR 5552	IR 5551
IR 6601	IR 6601	IR 6601	IR 6601	IR 5552
IR 6602	IR 6610	IR 6602	IR 6610	IR 6601
IR 6610	IR 6620	IR 6610	IR 6620	IR 6602
IR 6620	IR 6630	IR 6620	IR 6630	IR 6610
IR 6631	IR 6634	IR 6631	IR 6635	IR 6620
IR 6635	IR 6635	IR 6635	IR 6640	IR 6629
IR 6642	IR 6640	IR 6645	IR 6641	IR 6631
IR 6644	IR 6641	IR 6652	IR 6642	IR 6635
IR 6652	IR 6645	IR 6656	IR 6644	IR 6642
IR 6655	IR 6647	IR 6660	IR 6647	IR 6644
IR 6656	IR 6652	IR 6672	IR 6660	IR 6645
IR 6660	IR 6660	IR 6677	IR 6676	IR 6648
IR 6672	IR 6670	IR 6688	IR 6681	IR 6655
IR 6677	IR 6676		IR 6685	IR 6660
	IR 6685			IR 6677
				IR 6685

Master of Public Administration (MPA) Required Core Courses I

PA 6601				
PA 6610				
PA 6620				
PA 6622				
PA 6624				
PA 6646				
PA 6650				
PA 6699	PA 6679	PA 6679	PA 6679	PA 6699
	PA 6699	PA 6699	PA 6699	

Required Core Courses II

PA 6603				
PA 6631				

Required Core Courses III

PA 6640				
PA 6644				
PA 6674				

Concentration Courses

PA 6630				
PA 6645				
PA 6647	PA 6648	PA 6649	PA 6647	PA 6648
PA 6665	PA 6665	PA 6668	PA 6665	PA 6665
PA 6666	PA 6667	PA 6669	PA 6667	PA 6666
PA 6668	PA 6668	PA 6679	PA 6668	PA 6668
PA 6679	PA 6694	PA 6694	PA 6694	PA 6679
PA 6694	EBS 6615	EBS 6612	EBS 6601	PA 6694
EBS 6603				EBS 6635

Sorrell College of Business

Business Foundation Courses

Business Programs Foundation Courses

BUS 5502				
BUS 5503				
BUS 5504				
BUS 5505				

(MBA) Required Courses

ACT 6691				
MBA 6605				
MBA 6610				
MBA 6611				
MBA 6631				
MBA 6640				
MBA 6651				
MBA 6661				
MBA 6671	MGT 6671	MBA 6671	MBA 6671	MBA 6671

MBA 6673	MGT 6673	MBA 6673	MGT 6673	MBA 6673
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Master of Science in Human Resource Management (MSHRM)

BUS 5502				
BUS 5503				
BUS 5504				
BUS 5505				
BUS 6610				
HRM 6601				
HRM 6603				
HRM 6604				
HRM 6622				
HRM 6623				
HRM 6632				
HRM 6645	HRM 6698	HRM 6635	HRM 6698	HRM 6635
HRM 6698	MGT 6600	HRM 6645	MGT 6600	HRM 6645
MGT 6600	MGT 6671	HRM 6698	MGT 6671	HRM 6698
MGT 6671		MGT 6600		MGT 6600
		MGT 6671		MGT 6671

Master of Science in Management (MSM)

BUS 5502				
BUS 5503				
BUS 5504				
BUS 5505				
BUS 6610				
HSA 6680				
HSA 6681				
HSA 6682				
HSA 6683				
HSA 6684				
IS 6672				
IS 6674				

IS 6676				
IS 6679				
MGT 6600	MGT 6600	MGT 6627	MGT 6627	MGT 6627
MGT 6627	MGT 6627	MGT 6670	MGT 6670	MGT 6670
MGT 6670	MGT 6670	MGT 6671	MGT 6671	MGT 6671
MGT 6671	MGT 6671	MGT 6673	MGT 6673	MGT 6673
MGT 6673	MGT 6673	MGT 6674	MGT 6674	MGT 6674
MGT 6674	MGT 6674	MGT 6677	MGT 6677	MGT 6677
MGT 6677	MGT 6677	MGT 6681	MGT 6681	MGT 6681
MGT 6681	MGT 6681	MGT 6682	MGT 6682	MGT 6682
MGT 6682	MGT 6682	MGT 6685	MGT 6685	MGT 6685
MGT 6685	MGT 6685	MGT 6695	MGT 6695	MGT 6695
MGT 6695	MGT 6695	MGT 6696	MGT 6696	MGT 6696
MGT 6696	MGT 6696			

College of Education

Master of Science in Post Secondary Education (MSPSE)

ADE 6600	ADE 5560	ADE 6600	ADE 5560	ADE 6600
ADE 6653	ADE 6606	ADE 6653	ADE 6606	ADE 6653
ADE 6674	ADE 6630	ADE 6674	ADE 6630	ADE 6674
EDU 6605	ADE 6653	ADE 6691	ADE 6653	EDU 6605
EDU 6607	ADE 6691	EDU 6605	EDU 6605	EDU 6607
EDU 6614	EDU 6605	EDU 6607	EDU 6606	EDU 6614
EDU 6616	EDU 6605	EDU 6614	EDU 6613	EDU 6616
PSE 6608	EDU 6605	EDU 6616	EDU 6617	PSE 6608
PSE 6612	EDU 6613	EDU 6691	EDU 6618	PSE 6615
PSE 6615	EDU 6617	PSE 6608	PSE 6615	PSE 6642
PSE 6642	EDU 6618	PSE 6612	PSE 6642	PSE 6651
PSE 6651	EDU 6691	PSE 6615	PSE 6651	PSE 6653
PSE 6653	PSE 6615	PSE 6642	PSE 6653	PSE 6658
PSE 6658	PSE 6642	PSE 6651	PSE 6658	PSE 6660

PSE 6670	PSE 6651	PSE 6653	PSE 6660	PSE 6670
PSE 6680	PSE 6653	PSE 6658	PSE 6670	PSE 6680
PSE 6691	PSE 6658	PSE 6660	PSE 6680	PSE 6691
	PSE 6660	PSE 6670	PSE 6691	PSY 6631
	PSE 6670	PSE 6680		
	PSE 6680	PSE 6691		
	PSE 6691			

Miscellaneous Courses

Miscellaneous Courses

PSY 6648	CP 6691	CP 6691	PSY 6635	CP 6652
		PSY 5501	PSY 6669	PSY 6631
				PSY 6635
				PSY 6668

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APPENDIX C

PROTECTION OF HUMAN SUBJECTS  
INSTITUTIONAL REVIEW BOARD

Institutional Review  
Board

Adams Administration  
LL Rm 11 A  
Troy, AL 36082

334-808-6294 Office  
334-670-3912 Fax

<http://www.troy.edu/institutionalreview>



January 12<sup>th</sup>, 2010

Mr. Jim Bookout  
Troy

Dear Mr. Bookout:

The Troy University Institutional Review Board has finished reviewing your application for: Student satisfaction in an On-line learning environment (protocol #2010 – Bookout, J.) and has approved your protocol, as is.

This approval is good from January 12<sup>th</sup>, 2010 until January 12<sup>th</sup>, 2011. If you wish to continue your research after this date, you must complete and submit a Continuation Application.

You must use the IRB-approved and stamped Informed Consent forms that accompany this letter. If you are posting the Informed Consent information on-line you must use the exact wordage from the approved form.

You are also responsible for immediately informing the Institutional Review Board of any changes to your protocol, or of any previously unforeseen risks to the research participants.

Please let me know if you have any questions.

Sincerely,

Eddie Clark, Ph.D, Chair

January 19, 2010

Jim Bookout  
Department of Finance and Business Affairs  
Troy University  
241 Administration Building  
Troy, AL  
Re: IRB#: 10-OR-017 "Influences on Student Satisfaction in an Online Learning Environment"

Dear Mr. Bookout:

The University of Alabama Institutional Review Board has granted approval for your proposed research.

Your application has been given expedited approval according to 45 CFR part 46. You have been granted the requested waiver. Approval has been given under expedited review category 7 as outlined below:

(7) Research on individual or group characteristics or behavior (including, but not limited to, research on perception, cognition, motivation, identity, language, communication, cultural beliefs or practices, and social behavior) or research employing survey, interview, oral history, focus group, program evaluation, human factors evaluation, or quality assurance methodologies

Your application will expire on January 18, 2011. If your research will continue beyond this date, complete the relevant portions of Continuing Review and Closure Form. If you wish to modify the application, complete the Modification of an Approved Protocol. Changes in this study cannot be initiated without IRB approval, except when necessary to eliminate apparent immediate hazards to participants. When the study closes, complete the appropriate portions of the Continuing Review and Closure Form.

Please use reproductions of the IRB approved stamped consent form to obtain consent from your participants.

Should you need to submit any further correspondence regarding this proposal, please include the above application number.

Good luck with your research.

Sincerely,

**J&B**



Carpano T. Myles, MSM, CII Director  
& Research Compliance Officer  
Office of Research Compliance  
The University of Alabama

APPENDIX D  
INFORMED CONSENT FORM

## MEMORANDUM

**To:** Troy University Students

**From:** Ed D. Roach  
Executive Vice Chancellor and Provost

**Re:** Request to Participate in Survey for Doctoral Dissertation

Students, I would appreciate your assistance with a study conducted by Mr. Jim Bookout, Senior Vice Chancellor for Finance and Business Affairs on your experiences with the online learning environment. Mr. Bookout is pursuing his doctorate in higher education administration and this study is necessary in order for him to complete the requirements of his dissertation.

The study involves a survey about influences on student satisfaction in an online learning environment and you are receiving this letter because you have enrolled in at least one online course for the T3 term. Your participation is voluntary and the results of the study will only be reported in aggregate fashion. The survey will require approximately 10-15 minutes to complete. Please note the IP address of your computer will not be revealed or retained. More than one student may use the same computer (such as in the computer lab) to participate. Any student who wants to see a copy of the results may contact Mr. Bookout directly.

The link to a Web-site to access the survey containing questions and items about your initial expectations of your online course is <http://vovici.com/wsb.dll/s/17bb3g4128b>. This is the pre-course survey part of the study. During the last week of the course, Mr. Bookout will again invite you to participate in a post-course survey containing questions and items about your satisfaction based on your actual experience with the online course. It would really be helpful to him if you complete both surveys.

The survey is strictly **voluntary** and **YOU MUST BE 19 YEARS OLD** to participate. The information gathered from your **voluntary participation** is very valuable to his study and could be used to improve online course delivery for Troy University. You may decline to participate without penalty. If you decide to participate, you may withdraw from the study at any time without penalty and if you withdraw from the study before data collection is completed, your data will be destroyed. Your cooperation and support is greatly appreciated. Feel free to contact Jim Bookout, [jbookout@troy.edu](mailto:jbookout@troy.edu) or 334-670-3108 if you have any questions. If you feel you have not been treated according to the descriptions in this letter, or your rights as a participant in research have been violated during this study, you may contact [IRB@troy.edu](mailto:IRB@troy.edu).

*If you have read and understand the above information and agree to participate with the understanding that you may withdraw at any time without penalty, please click on the following Web-site link <http://vovici.com/wsb.dll/s/17bb3g4128b> and complete the survey.*

Thank you so much for helping Mr. Bookout fulfill his dissertation requirements.

APPENDIX E  
PARTICIPATION REQUEST  
AND  
PRE-COURSE SURVEY INSTRUMENT

Distance Education Learning Environment Survey (DELES)  
Pre-course Survey

Dear Student,

Thank you for participating in this survey about your perception of online courses at Troy University. The survey contains five short sections and includes 1) general demographic information, 2) computer experience, 3) effort in terms of preparation and time spent on your course, 4) expectations of your online experience, and 5) satisfaction with your online experience. There are no 'right' or 'wrong' answers and the survey should only take about 10 – 15 minutes to complete.

You have been invited to participate in this survey because you are enrolled in at least one eCampus online course for the T3 term. All undergraduate and graduate students who are 19 years old and older are being invited to voluntarily participate. The purpose of this survey is to collect some general information about your perceived or expected experiences with the online course. The results from this study are only reported in the aggregate and your individual results will not be revealed to faculty or general staff. The results will also highlight strengths and weaknesses in the online courses and assist the university in improving its undergraduate and graduate distance learning programs.

Section 1: Demographics

This section asks you to provide certain demographic information that best fits your description.

1) 1.1 What is your age as of your last birthday?

- 19-25
- 26-35
- 36-45
- 45-55
- 55+

2) 1.2 Are you female or male?

- Female
- Male

3) 1.3 What is your ethnicity?

- Nonresident alien
- Black, non-Hispanic
- American Indian/Alaska Native
- Asian/Pacific Islander
- Hispanic
- White, non-Hispanic
- Race/ethnicity unknown

- 4) 1.4 What is your highest degree held at the time of registration for this online course?
- No Degree
  - Associate Degree
  - Bachelors Degree
  - Masters Degree
  - Doctorate Degree

Section 2: Computer Experience

This section requests you to select an answer which best represents your experience with computers and online Internet applications. Please respond by selecting one of the following choices: “None”, “Beginner”, “Competent”, “Expert.”

- 5) What is your level of experience with:

	None	Beginner	Competent	Expert
2.1 Word-processing (create, edit, save, print documents)?	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
2.2 e-mail (compose, edit, send, receive)?	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
2.3 Browsing and searching on the Internet?	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
2.4 Accessing library resources using WWW?	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
2.5 Using menus/navigational buttons?	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
2.6 Entering a URL to access a Web-site?	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
2.7 Conducting a search on the Web by using words or phrases in the course?	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
2.8 Printing a Web-site	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
2.9 Downloading (saving) Web material to a hard drive or disk	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>

- 6) 2.10 How many online courses have you previously taken?
- 0 to 2
  - 3 to 5
  - 6 to 8
  - 8 to 10

Section Three: Effort

- 7) 3.1 How much time (on average) do you spend each week preparing for class?
- Less than 3 hours
  - 3 to 5 hours
  - 6 to 10 hours
  - 11 to 15 hours
  - More than 15 hours

8) 3.2 How much time (on average) do you spend each week logged on to your online course Web site?

- Less than 3 hours
- 3 to 5 hours
- 6 to 10 hours
- 11 to 15 hours
- More than 15 hours

9) Section Four: Experience

This section requests you to select an answer which best represents your attitude toward the statement about your expected online learning experience for this course. Please respond by selecting one of the following choices: “Always”, “Often”, “Sometimes”, “Seldom”, “Never.”

	Always	Often	Sometimes	Seldom	Never
4.1 If I have an inquiry, instructor finds time to respond.	<input type="radio"/>				
4.2 The instructor helps me identify problem areas in my study.	<input type="radio"/>				
4.3 The instructor responds promptly to my questions.	<input type="radio"/>				
4.4 The instructor gives me valuable feedback on my assignments.	<input type="radio"/>				
4.5 The instructor adequately will address my questions.	<input type="radio"/>				
4.6 The instructor encourages my participation.	<input type="radio"/>				
4.7 It is easy to contact the instructor.	<input type="radio"/>				
4.8 The instructor provides me positive and negative feedback on my work.	<input type="radio"/>				
4.9 I work with others.	<input type="radio"/>				
4.10 I relate my work to other's work.	<input type="radio"/>				
4.11 I share information with other students.	<input type="radio"/>				
4.12 I discuss my ideas with other students.	<input type="radio"/>				
4.13 I collaborate with other students in the class.	<input type="radio"/>				
4.14 Group work is a part of my activities.	<input type="radio"/>				
4.15 I can relate what I learn to my life outside of university.	<input type="radio"/>				
4.16 I am able to pursue topics that interest me.	<input type="radio"/>				
4.17 I can connect my studies to my activities outside of class.	<input type="radio"/>				
4.18 I apply my everyday experiences in class.	<input type="radio"/>				
4.19 I link class work to my life outside of university.	<input type="radio"/>				
4.20 I learn things about the world outside of university.	<input type="radio"/>				
4.21 I apply my out-of-class experience.	<input type="radio"/>				
4.22 I study real cases related to the class.	<input type="radio"/>				
4.23 I use real facts in class activities.	<input type="radio"/>				
4.24 I work on assignments that deal with real world information.	<input type="radio"/>				

4.25 I work with real examples.	<input type="radio"/>				
4.26 I enter the real world of the topic of study.	<input type="radio"/>				
4.27 I explore my own strategies for learning.	<input type="radio"/>				
4.28 I seek my own answers.	<input type="radio"/>				
4.29 I solve my own problems.	<input type="radio"/>				
4.30 I make decisions about my learning.	<input type="radio"/>				
4.31 I work during times I find convenient.	<input type="radio"/>				
4.32 I am in control of my learning.	<input type="radio"/>				
4.33 I play an important role in my learning.	<input type="radio"/>				
4.34 I approach learning in my own way.	<input type="radio"/>				

10) Section Five: Satisfaction

This section requests you to select an answer which best represents your perception of your degree of expected satisfaction with the online course. Please respond by selecting one of the following choices: “Strongly Disagree”, “Disagree”, “Neither Disagree nor Agree”, “Agree”, “Strongly Agree.”

	Strongly Disagree	Disagree	Neither Disagree nor Agree	Agree	Strongly Agree
5.1 Distance education is stimulating.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
5.2 I prefer distance education.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
5.3 Distance education is exciting.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
5.4 Distance education is worth my time.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
5.5 I enjoy studying by distance.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
5.6 I look forward to learning by distance.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
5.7 I would enjoy my education more if all my classes were by distance.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
5.8 I am satisfied with this class.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>

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APPENDIX F  
POST-COURSE SURVEY INSTRUMENT

## Distance Education Learning Environment Survey (DELES)

### Post-course Survey

Dear Student,

Thank you for participating in this survey about your online experience at Troy University. This survey contains three short sections and includes effort in terms of preparation and time spent on your course, expectations of your online experience, and satisfaction with your online experience. There are no 'right' or 'wrong' answers and the survey should only take about 10 – 15 minutes to complete.

You have been invited to participate in this survey because you are enrolled in at least one eCampus online course for the T3 term. All undergraduate and graduate students who are 19 years old and older are being invited to voluntarily participate. The purpose of this survey is to collect some general information about your perceived or expected experiences with the online course. The results from this study are only reported in the aggregate and your individual results will not be revealed to faculty or general staff. The results will also highlight strengths and weaknesses in the online courses and assist the university in improving its undergraduate and graduate distance learning programs.

#### Section 1: Demographics

This section asks you to provide certain demographic information that best fits your description.

1) 1.1 What is your age as of your last birthday?

- 19-25
- 26-35
- 36-45
- 45-55
- 55+

2) 1.2 Are you female or male?

- Female
- Male

3) 1.3 What is your ethnicity?

- Nonresident alien
- Black, non-Hispanic
- American Indian/Alaska Native
- Asian/Pacific Islander
- Hispanic
- White, non-Hispanic
- Race/ethnicity unknown

- 4) 1.4 What is your highest degree held at the time of registration for this online course?
- No Degree
  - Associate Degree
  - Bachelors Degree
  - Masters Degree
  - Doctorate Degree

Section 2: Computer Experience

This section requests you to select an answer which best represents your experience with computers and online Internet applications. Please respond by selecting one of the following choices: “None”, “Beginner”, “Competent”, “Expert.”

- 5) What is your level of experience with:

	None	Beginner	Competent	Expert
2.1 Word-processing (create, edit, save, print documents)?	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
2.2 e-mail (compose, edit, send, receive)?	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
2.3 Browsing and searching on the Internet?	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
2.4 Accessing library resources using WWW?	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
2.5 Using menus/navigational buttons?	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
2.6 Entering a URL to access a Web-site?	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
2.7 Conducting a search on the Web by using words or phrases in the course?	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
2.8 Printing a Web-site	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
2.9 Downloading (saving) Web material to a hard drive or disk	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>

- 6) 2.10 How many online courses have you previously taken?
- 0 to 2
  - 3 to 5
  - 6 to 8
  - 8 to 10

Section Three: Effort

- 7) 3.1 How much time (on average) do you spend each week preparing for class?
- Less than 3 hours
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  - 6 to 10 hours
  - 11 to 15 hours
  - More than 15 hours

8) 3.2 How much time (on average) do you spend each week logged on to your online course Web site?

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- 3 to 5 hours
- 6 to 10 hours
- 11 to 15 hours
- More than 15 hours

9) Section Four: Experience

This section requests you to select an answer which best represents your attitude toward the statement about your expected online learning experience for this course. Please respond by selecting one of the following choices: “Always”, “Often”, “Sometimes”, “Seldom”, “Never.”

	Always	Often	Sometimes	Seldom	Never
4.1 If I have an inquiry, instructor finds time to respond.	<input type="radio"/>				
4.2 The instructor helps me identify problem areas in my study.	<input type="radio"/>				
4.3 The instructor responds promptly to my questions.	<input type="radio"/>				
4.4 The instructor gives me valuable feedback on my assignments.	<input type="radio"/>				
4.5 The instructor adequately will address my questions.	<input type="radio"/>				
4.6 The instructor encourages my participation.	<input type="radio"/>				
4.7 It is easy to contact the instructor.	<input type="radio"/>				
4.8 The instructor provides me positive and negative feedback on my work.	<input type="radio"/>				
4.9 I work with others.	<input type="radio"/>				
4.10 I relate my work to other's work.	<input type="radio"/>				
4.11 I share information with other students.	<input type="radio"/>				
4.12 I discuss my ideas with other students.	<input type="radio"/>				
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4.15 I can relate what I learn to my life outside of university.	<input type="radio"/>				
4.16 I am able to pursue topics that interest me.	<input type="radio"/>				
4.17 I can connect my studies to my activities outside of class.	<input type="radio"/>				
4.18 I apply my everyday experiences in class.	<input type="radio"/>				
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4.20 I learn things about the world outside of university.	<input type="radio"/>				
4.21 I apply my out-of-class experience.	<input type="radio"/>				
4.22 I study real cases related to the class.	<input type="radio"/>				
4.23 I use real facts in class activities.	<input type="radio"/>				
4.24 I work on assignments that deal with real world information.	<input type="radio"/>				

4.25 I work with real examples.	<input type="radio"/>				
4.26 I enter the real world of the topic of study.	<input type="radio"/>				
4.27 I explore my own strategies for learning.	<input type="radio"/>				
4.28 I seek my own answers.	<input type="radio"/>				
4.29 I solve my own problems.	<input type="radio"/>				
4.30 I make decisions about my learning.	<input type="radio"/>				
4.31 I work during times I find convenient.	<input type="radio"/>				
4.32 I am in control of my learning.	<input type="radio"/>				
4.33 I play an important role in my learning.	<input type="radio"/>				
4.34 I approach learning in my own way.	<input type="radio"/>				

10) Section Five: Satisfaction

This section requests you to select an answer which best represents your perception of your degree of expected satisfaction with the online course. Please respond by selecting one of the following choices: “Strongly Disagree”, “Disagree”, “Neither Disagree nor Agree”, “Agree”, “Strongly Agree.”

	Strongly Disagree	Disagree	Neither Disagree nor Agree	Agree	Strongly Agree
5.1 Distance education is stimulating.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
5.2 I prefer distance education.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
5.3 Distance education is exciting.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
5.4 Distance education is worth my time.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
5.5 I enjoy studying by distance.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
5.6 I look forward to learning by distance.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
5.7 I would enjoy my education more if all my classes were by distance.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
5.8 I am satisfied with this class.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>

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