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## Readiness Factors Contributing to Participant Satisfaction in Online Higher Education Courses

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To the Graduate Council:

I am submitting herewith a dissertation written by Dewey L. Fogerson entitled "Readiness Factors Contributing to Participant Satisfaction in Online Higher Education Courses." I have examined the final electronic copy of this dissertation for form and content and recommend that it be accepted in partial fulfillment of the requirements for the degree of Doctor of Philosophy, with a major in Education.

Ralph Brockett, Major Professor

We have read this dissertation and recommend its acceptance:

Grady Bogue, Ernest Brewer, Julie Little

Accepted for the Council:

Carolyn R. Hodges

Vice Provost and Dean of the Graduate School

(Original signatures are on file with official student records.)

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Julie Little

Accepted for the Council:

Anne Mayhew

Vice Chancellor and

Dean of Graduate Studies

(Original signatures are on file with official student records.)

**READINESS FACTORS CONTRIBUTING TO PARTICIPANT SATISFACTION  
IN ONLINE HIGHER EDUCATION COURSES**

**A Dissertation  
Presented for the  
Doctor of Philosophy  
Degree  
The University of Tennessee, Knoxville**

**Dewey L. Fogerson  
August, 2005**

## DEDICATION

This dissertation is dedicated to my mother

*Winnie Mae Fogerson*

whose devotion to education was passed on to her son;

to my wife

*Frances Fogerson*

who is a model of self-directed learning

and a wonderful companion in the pursuit of knowledge;

and to my children

*Paul, Jennifer, Andrew, Jane, and Amanda*

who are each very special to me

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Each of my committee members made their considerable scholarship and time generously available as resources during the production of this dissertation. Dr. Ralph Brockett, mentor and friend, skillfully guided this research. His tactful suggestions helped shape the final product and his optimistic reassurance kept me on task until its completion. Drs. Grady Bogue, Ernest Brewer, and Julie Little enriched the researcher and the research by contributing their unique talents. Their expertise expressed in assessments of my work broadened my insights and sharpened my focus. I thank each of you.

The Self-Directed Learning Research Group, formed at the beginning of my doctoral program, has been a constant source of friendship, mutual research, and scholarly encouragement. As the last of the original group to obtain a Ph.D. degree, the experiences of those who preceded me gave me the confidence to forge ahead. I wish to express my special appreciation to Dr. Susan Stockdale, also a member of the research group, for the use of her scale, the PRO-SDLS, in my study.

Lastly, my greatest supporter has been my wife, Frances. We began our doctoral journeys together in the same class, and though she completed hers before me, she enthusiastically and patiently cheered me on to the completion of mine. We are looking forward to many new enterprises together. Thank you, my love.

## ABSTRACT

The main purpose of the study was to determine if selected participant readiness variables correlated with selected satisfaction variables in an online higher education course and to examine the correlations between the readiness variables. Also of interest was the combination of readiness factors that could significantly predict learner satisfaction in the online environment.

A total of 317 individuals who had participated in online courses at The University of Tennessee responded to a “Readiness and Satisfaction Questionnaire.” The survey consisted of five readiness and five satisfaction items developed by the researcher, the PRO-SDLS developed by Stockdale (2003), and 11 demographic questions.

It was found that the reliability of the PRO-SDLS was confirmed for the population surveyed. The high level of the scale’s internal consistency ( $\alpha = .91$ ) was similar to the level ( $\alpha = .92$ ) reported by Stockdale (2003).

The demographic section of the questionnaire revealed that individuals who responded to the questionnaire were on average older, with degrees beyond the baccalaureate, and who had completed one or more online course. It also revealed that most were “satisfied” or “very satisfied” with the course for which they responded to the survey. Perhaps because of these participant characteristics, no significant correlations were revealed between the study’s readiness and satisfaction factors.

Statistical analysis of the readiness factors revealed a significant correlation between *self-direction* and *age* ( $r = .287, p < .01$ ). Three of the readiness factors associated with experience correlated significantly with *confidence in online distance learning*. They were *computer-related experience* ( $r = .370, p < .01$ ), *experience with online collaborative environments* ( $r = .398, p < .01$ ), and *experience with online courses* ( $r = .542, p < .01$ ). A stepwise regression analysis demonstrated that the factors of

*experience with online courses, and computer-related experience* are predictive of the level of *confidence in the online learning environment*.

Recommendations for further research include the need for more studies on participant confidence in the online learning environment. Further use of the PRO-SDLS especially with college and university-level students is also recommended. Finally, qualitative studies might enhance understanding of satisfaction with online courses from the participant's point of view.



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## **CHAPTER I**

### **INTRODUCTION TO THE STUDY**

Distance education in the 21<sup>st</sup> century bears little resemblance to techniques utilized as recently as 35 years ago for delivering university-level courses in settings remote from the conventional classroom. Instead of waiting for the postal service to deliver the latest correspondence installment in a course of study, or gathering before a television screen to hear an instructor's lecture, communication between students and instructor may now occur by opening an e-mail, signing in to an online chat room, or attending a virtual class on the Internet. Distance learning facilitated via the Internet has crossed geographic boundaries, providing students from around the world an opportunity to study together in online courses.

Most colleges and universities now deliver at least some courses online (Clarke, 1999; Sikora, 2002). However, this new and dynamically diverse medium has also invited competition from corporate training centers, virtual universities, and other private sector entities. This competition has raised serious concerns about the quality of online courses, especially when they are offered primarily as a means of creating revenue for the sponsoring institutions (Noble, 2001). It has also prompted speculation about a shakeout of organizations providing Internet-based education courses (Symonds, 2001). Longevity as a provider of Internet-based courses may depend largely on participants' satisfaction with their experience of learning in the online environment (Gunawardena & Duphorne, 2001).

Satisfaction with the online learning experience has been shown to be a combination of perceptions relative to the cyber classroom environment along with the perceived educational value of the experience (Moore, 2002). Thus, institutions competing in this arena should give serious forethought to (a) the structure of their courses in this non-traditional environment, (b) students' readiness to participate in a

digital learning venture, and (c) the pedagogical processes of online education. Effective planning in these critical areas should increase the likelihood of participant satisfaction.

### **Statement of the Problem**

Numerous studies such as those by Anderson, Banks, and Leary (2002), Arbaugh (2001), Burnett (2001), Daughenbaugh et al. (2002), Frey and Alman (2003), Gunawardena and Duphorne (2001), and Swan (2001) have addressed participant satisfaction with online distance education in various formats. Kuchinke, Aragon, and Bartlett (2001) suggested that participant satisfaction in university-level online courses partially depends upon various readiness factors, including self-directed learning and technical preparedness for the online environment. Gunawardena and Duphorne suggested that further studies should address a range of readiness issues as they relate to participant satisfaction in online courses.

In an interesting article, Kuchinke, Aragon, and Bartlett (2001) asserted that self-directed learning readiness is a factor in student eligibility for online Human Resource Development (HRD) courses offered at the University of Illinois at Urbana-Champaign. The authors emphasized that participants should possess a higher degree of self-direction than is necessary for participants in a traditional classroom environment. This was based on an assumption that “the level of self-direction required to successfully participate in a distance course is substantially greater than in a traditional classroom environment” (p. 23). As a result, enrollment in the online course was restricted to graduate students and excluded undergraduates on the conjecture that “...graduate students might be more likely to possess the required study skills and levels of self-direction” (p. 23). Although these assumptions seem reasonable, no supporting research was cited.

Understanding how various readiness factors relate to learner satisfaction may help program planners identify participants who will experience the greatest satisfaction

in an Internet-based instructional environment. Higher levels of satisfaction with the online learning experience may translate into higher student completion rates. Satisfaction with the experience may also increase the likelihood that a participant would engage in subsequent online learning enterprises, and would recommend the experience to others. Insights into readiness and satisfaction may also augment understanding of how learning can be enhanced in the non-traditional setting of online educational courses.

Thus, the problem addressed in this study was whether there are correlations among selected learner readiness and satisfaction factors for participants in online courses. Of interest also, was whether there was a combination of readiness factors which can predict learner satisfaction in Internet-based courses. The study also inquired about whether those participants indicating greater satisfaction are more likely to repeat the online learning experience than participants who experience less satisfaction.

### **Purpose of the Study**

The purpose of this study was to determine the extent to which various readiness factors correlate with a learner's satisfaction with the online educational experience. Readiness factors were limited to (a) self-direction, (b) computer-related experience, (c) experience with online collaborative environments, (d) experience with online courses, (e) confidence in the online learning environment, (f) experience with the subject matter, and (g) age. These were included because they relate to a participant's readiness for the online learning environment. Age was included because it could be assumed that younger individuals might have more computer-based experience and therefore a greater propensity for online learning than older learners.

Satisfaction was limited to five variables identified in the literature as relevant to a positive experience with online learning. They included satisfaction with (a) the overall



learning experience, (b) the technical support, (c) interactions with the instructor, (d) interactions with other participants, and (e) interactions with the content.

### **Framework for the Study**

In order to conceptualize the study, the research was illustrated graphically in Figure 1. The seven independent variables, or readiness factors, relate to the level of satisfaction with the online course. Satisfaction is measured in five critical areas.

As illustrated in Figure 1, the study inquired whether the dependent variables, the participants' satisfaction in five specific areas, are significantly related to the independent variables, the individuals' readiness for the experience. This graphic is intended to illustrate the framework for the following research questions.

### **Research Questions**

Four research questions guide this study. They are:

1. Is there a significant relationship between individual scores on the readiness factors and the composite satisfaction score?
2. Is there a significant relationship between individual scores on the readiness factors and the individual satisfaction factors?
3. Are there significant relationships among the readiness factors of self-direction, computer-related experience, experience with online collaborative environments, experience with online courses, confidence in the online learning environment, experience with the subject matter, and age?
4. Is there an optimal combination of readiness factors that would reliably predict learner satisfaction with Internet-based classes?



*Figure 1.* Conceptual framework for participant satisfaction with online higher education courses.

## **Rationale**

This study addresses participant's readiness for an online learning episode and the relationship between selected readiness factors and levels of satisfaction with the experience. Following is a rationale for the study derived from other research related to learners' readiness and satisfaction. Additionally, this section gives attention to the methods for measuring satisfaction.

### ***Readiness and Satisfaction Studies***

Much of the research on participants in online courses has focused on learner satisfaction with the experience. In some ways, learner satisfaction is a relatively simple variable to evaluate. Kirkpatrick (1998), followed by Phillips (2000), identified four levels of evaluating training programs beginning with participant reaction, or satisfaction. Kirkpatrick emphasized that the merit of a favorable program evaluation at this level is: (1) to attract new participants and get present participants to return to future programs, and (2) as an indicator that the teaching or training environment was conducive to learning. The author added, "Positive reaction may not ensure learning, but negative reaction almost certainly reduces the possibility of its occurring" (p. 20). Some have derided student satisfaction surveys because they do not evaluate such characteristics as actual learning or its effect on outcomes such as learner's subsequent performance (Sener & Humbert, 2003).

However, online learning environments can have enormous impact on institutions programmatically and financially. They demand much in time from instructors and offer significant challenges to those accustomed to teaching in the classroom who must adapt their instructional style to the Internet setting. Since student reactions are crucial to the continuation of instructional endeavors, those with such high stakes as online education would surely benefit from measuring satisfaction.

Satisfaction in the online setting may also have significance beyond the scope of that envisioned by Kirkpatrick and Phillips. Since many students taking online courses for credit or certification have also taken traditional classroom courses, they have a basis to compare the learning experiences in the two very different environments. Satisfaction might well be based partly on the perception that the online class was, or was not, as educationally beneficial as a similar class might have been in the traditional setting. Sener and Humbert (2003) asserted, “Establishing that students in online courses are comparably satisfied with their courses relative to students in traditional classroom courses helps legitimize online education” (p. 246).

Satisfaction has been linked to various facets of the experience such as: (a) the learner’s sense that the distant instructor has a social presence, (b) the provision of instructor feedback, (c) a reported phenomenon of students moving from feeling like outsiders to feeling like they are insiders in the instructional setting, and (d) the belief that the learning medium helps to “level the playing field” in that personal characteristics that students sometimes perceive as provoking discrimination in face-to-face settings are not apparent online (Moore, 2002). Moore also noted research on dispositional and situational characteristics that are reasons for student dissatisfaction with the learning experience.

Several studies on satisfaction have looked at various learner readiness factors as precursors or predictors of satisfaction. Employing grounded theory, Eastmond (1994) examined adult students’ learning experiences in an online course. Using data from the study, he developed the Adult Distance Study Through Computer Conferencing (ADSCC) model as a framework for understanding the dynamics of successful learning by computer conferencing. Eastmond’s study revealed that within the context of the online experience three major factors sequentially influence the student’s learning

experience, the first of which is readiness – the personal and environmental factors that prepare the student for study in this instructional mode.

Davis (1986) and Davis, Bagozzi, and Warshaw (1989) proposed the Technology Acceptance Model to account for how ease of use, usefulness, and attitudes predict behavioral intention to use computers. Brosnan (n.d.) utilized Davis' (1986) model and included other factors to predict computer usage. Among these other factors were (a) computer experience, (b) computer anxiety, and (c) self-efficacy. Although not a study of the online learning environment, Brosnan's approach emphasized that participant readiness is predictive of computer acceptance and use.

Eastmond (1995) underscored the importance of technical readiness by stating that participating in an online course “presupposes a level of knowledge and skill with computer telecommunications that not all adults share” (p. 90). He postulated that online studies attract students who already have some degree of technical readiness. Eastmond (1998) also noted that requisite levels of sophistication in technical skills and computer equipment vary depending on the type of online study. For example, computer conferencing requires less advanced computer-related skills than the virtual classroom approach.

Burnett (2001) asserted that the online environment is a natural medium for students to both accentuate and develop self-direction. Distance learning via the Internet alters the role of both teacher and student. Instead of being lecturers, teachers become “facilitators who guide, coach, and motivate” (p. 3). In this environment, the student is encouraged to be more self-directed in planning the acquisition of learning. The online approach “encourages students to take an active part in setting objectives, defining the contents and capitalizing on life experiences” (p. 3). This suggests that students coming into the online environment for the first time should possess a degree of self-direction. Additionally, her claim that the online learning experience promotes further development

of self-direction may have implications for the likelihood that a participant would repeat it. Assuming that self-directed learning readiness is an important predictor of satisfaction, individuals who have completed a course may have a higher level of self-direction, and therefore a greater likelihood for success in subsequent online courses.

The level of comfort a participant has in the online environment also influences the overall satisfaction with the learning experience. Research by Gunawardena and Duphorne (2001) indicates that satisfaction is partly dependent on (a) a learner's confidence that an internet-based approach has potential for distance education, and (b) prior comfort with the medium. From their study a profile emerged of participants who were more satisfied with the online learning environment, that included "prior technical and conferencing skills; a broader and in-depth understanding of the potential and use of computer conferencing; [and] more positive feelings toward the medium. . . ." (p. 23). Both these authors and Eastmond (1994) cited prior learning experiences and comfort with the online environment as factors in participant satisfaction. This suggests that the level of comfort is related to a participant's past experiences with online learning enterprises.

Eastmond (1994) stated that readiness relates to various personal factors a student brings to the learning equation that influence its success. Among those factors was an interest in the course content. Although there appear to be few studies that address this aspect of student readiness for online learning, familiarity with and interest in the course content should be considered. In both the traditional classroom and the online environment, students without previous significant exposure to a course's content or adequate prerequisite preparation for its level of difficulty would be disadvantaged. Struggling to overcome this and other readiness elements typical of the online environment could diminish the possibility of participant satisfaction.

The age of participants is of interest in this study because of two assumptions: (a) that younger individuals tend to be more comfortable with computers and the online environment than older individuals, but (b) that older learners tend to exhibit a higher level of self-direction than those who are younger. The latter assumption was stated by Kuchinke et al. (2001) as a rationale for limiting enrollment in an online course to graduate students. While the current study is not designed to confirm either assumption, the relationship of age to perceived computer-related readiness and perceived self-direction readiness is of interest.

These studies suggest, therefore, that the online learning environment requires a favorable combination of readiness factors in order for the experience to be perceived by the student as satisfying. Additionally, it can be assumed that satisfaction with an Internet-based learning experience increases the likelihood that the participant will repeat the experience.

### *Measuring Satisfaction*

Measuring participant satisfaction with online learning experiences should include factors that have been demonstrated in other studies to be important in meeting participants' expectations about the experience. The five satisfaction variables in this study were selected based on the literature reflecting other research concerning participant satisfaction with online courses.

Gunawardena and Duphorne (2001) and Eastmond (1995) noted that students' perception of the learning experience and the degree to which the online environment was "user-friendly" were areas where levels of satisfaction were expressed. Several studies (Arbaugh, 2001; Soo & Bonk, 1998; Swan, 2001) emphasized the importance of satisfactory interactions between participants and instructors. These include "the instruction, assisting, stimulation and support provided by the instructor to the learner"

(Soo & Bonk, 1998, p.3). Swan (2001) and Soo and Bonk (1998) also focused on the need for attention to the interactions between the participants online as well as the student-content interaction. Soo and Bonk noted that the student-content interaction includes involvement with the content and “the constructing of knowledge through new understanding” (p. 3). Other authors such as Heterick and Twigg (2001) emphasized student attitudes toward the technical support provided in an online learning experience as a means to measure satisfaction.

This study, therefore, builds on the research cited above as well as other studies which focused on satisfaction measures. These studies are reviewed in the following chapter.

### **Significance of the Study**

Distance education that takes place completely online is increasingly attractive to students, instructors, and educational institutions for a variety of reasons. It promises to enlarge the classroom beyond the university campus to include students in distant locations. Students without previous access to university-level courses may now study at a distance via their personal computers. Satisfaction studies should be helpful to program administrators, instructors, and institutions who are concerned with the quality of the experience. As will be discussed later, participant satisfaction is an important component in the development of best practice guidelines for online higher education courses.

As colleges and universities make increased use of online courses, it will be useful to know what personal characteristics and skills enhance the likelihood that the experience will be satisfactory for the participant. This can help instructors and institutions orient students to the kind of skills they will need to function well in the online environment. It can also assist program planners and administrators in setting realistic criteria for determining who should be admitted to an online course. Students



without the characteristics or skills shown to enhance satisfaction may wish to avoid taking an online class or may require special attention.

Because online education is both relatively new and increasingly popular as a medium of learning, accrediting agencies must develop appropriate criteria to judge the efficacy of programs falling within their jurisdiction. Satisfaction studies can provide useful data for developing standards.

A further area of significance is that the current study contributes to the literature and research in the field of adult education in various significant areas including adult learning enhanced by Internet-based courses. The focus on learner readiness for an online course can provide data for understanding what factors contribute to a learner's satisfaction with the experience. Additionally, as one of the first research studies to utilize The Personal Responsibility Orientation to Self-Direction in Learning Scale (PRO-SDLS) (Stockdale, 2003), it provides validation data for that instrument. The scale is discussed further in the literature review and methods chapters.

The study also suggests additional areas for research. Among those could be the recommendation of other studies that take into account the learning or personality characteristics of participants. Such studies could provide an enhanced picture of factors that contribute to satisfaction with online learning.

### **Assumptions**

Four assumptions underlie the study. They are:

1. Respondents to the survey provided accurate and honest information;
2. The survey questions developed for this study adequately reflect the identified readiness variables associated with the online learning environment and course content.

3. The variables selected for satisfaction reflect important responses to the learning experience.

### **Delimitations**

The research design imposed delimitations that defined the parameters of the current study. Four delimitations were enforced throughout this study. They were:

1. Only Internet-based courses offered through a higher education institution were studied. Other sources of online courses, including corporate and virtual universities, were outside the scope of this research.
2. Courses considered for this study were those that were offered completely online, with no face-to-face classroom components. “Blended” classes were excluded.
3. The survey and instrument were administered online.
4. The survey and instrument were the only method of collecting data.

### **Limitations**

The current research was subject to three limitations. These limitations were circumstances which might adversely influence the results or generalizability of the research.

1. All survey and instrument items were subject to the interpretation of the respondent.
2. Since the population was limited to online courses offered at an institution of higher education, the results cannot be generalized to include courses offered by non-college/university organizations.
3. The population of the survey consisted of all the departments in the University that offered online courses fitting the above delimitations. No attempt was

made to control for the quality of the course or the online teaching experience of the instructor.

### **Definitions**

Key terms are defined here for the purpose of clarification. These definitions may be assumed throughout the study:

1. Online collaborative environments – Shared Internet-based methods for communication such as e-mail, chat rooms, listservs, virtual conferencing software, and various courseware programs. These and other methods of online communication form the environments in which collaboration may occur.
2. Comfort – Participants’ perceptions that the online environment and course content are within their range of experience and knowledge.
3. Computer conferencing – There are various kinds of online courses of which two were considered in this study: computer conferencing and virtual courses. Computer conferencing utilizes a printed course guide and textbooks, and may involve the exchange of assignments through the mail. However, “the Internet becomes the main vehicle of instruction and communication” (Eastmond, 1998. p. 35).
4. Confidence – Participants’ perceptions that the technical and pedagogical demands of the online environment are within their range of abilities.
5. Distance learning – In distance learning, students and instructors remain geographically apart (Discenza, Howard, & Schenk., 2002). For this study, distance learning was constrained to mean Internet-based courses offered to participants anywhere in the world. Specifically, in this study it refers to

online courses where interaction occurring between instructors, students, and course content were completely online.

6. Internet – The vast collection of interconnected networks that all use the Transmission Control Protocol/Internet Protocol (TCP/IP) procedures (Barker, 2003). Participants in Internet-based distance education can gain access to the course site from anywhere in the world (assuming such access is not blocked by a third party).
7. Online course – A course of study in which the instructor(s) and participants interact through various Internet-based media.
8. Satisfaction – The extent to which the online course experience was perceived by participants to have met their expectations relative to its processes and learning outcomes.
9. Self-directed learning – An approach to learning that incorporates “both the external characteristics of the instructional process and the internal characteristics of the learner, where the individual assumes primary responsibility for a learning experience” (Brockett & Hiemstra, 1991, p.24). At the time of this statement, the authors were using the term “self-directed learning” to define only the external characteristics of the instructional process. They utilized the term “learner self-direction” to define the internal characteristics of the learner. However, in a personal communication with Brockett in February 2005, the author indicated that since the book was written both he and Hiemstra have come to view the phrase *self-directed learning* as appropriate for describing both the learning process and learner characteristics. Throughout this study, *self-directed learning* most often refers to the characteristics of the learner. The phrase *learner self-direction* and the term *self-direction* are used in the same way.

10. Readiness for self-direction – The extent to which individuals perceive themselves to have the attitudes, abilities, and personality characteristics needed for self-direction in learning (Guglielmino, 1977). This study utilized the PRO-SDLS developed by Stockdale (2003) as a means for measuring this element of readiness for online learning.
11. Virtual courses – This type of online course extends the textual resources of computer conferencing to include “colorful graphics, audio and video segments, and hypertext links” (Eastmond, 1998, p. 35). It may be *asynchronous*; that is, the students may interact with each other, the instructor, and the course content at times of their own choosing, but not necessarily at the same time as other students. Some virtual courses are *synchronous*, however. This means that students assemble online at designated times for real-time interaction. Real-time sessions may be facilitated in a chat room environment where participants interact with the instructor and each other by typing their questions or responses. Real-time sessions may also utilize computer software that accommodates voice and video transmissions allowing participants to hear and see each other. Virtual courses usually require more sophisticated computer capabilities and higher levels of user skill than computer conferencing.

### **Outline of the Study**

Research studies support the importance of evaluating the satisfaction of participants in online distance education courses based on their readiness for the experience. This study focused on seven important readiness factors and how they relate to five critical satisfaction characteristics.

In the remaining body of this study, Chapter II includes a review of the research relative to satisfaction with the online learning experience and participants' readiness to engage in the endeavor. Chapter III describes in detail the method used to identify a population, design and administer a survey, and the statistical procedures used to determine the relationships between the variables. The results of the research are presented in Chapter IV and Chapter V incorporates a summary of conclusions and discussion based on the findings.

## **CHAPTER II**

### **REVIEW OF THE LITERATURE**

Since the introduction of Internet technology, online distance education has been a growing enterprise. Waits and Lewis (2003) reported that 90 % of 2,320 2-year and 4-year Title IV eligible degree-granting institutions indicated they offered Internet courses using asynchronous computer-based instruction during the 2000-2001 school year. In addition, 43 % of the institutions reported offering Internet courses using synchronous computer-based instruction. Of these same institutions, 88 % indicated they would begin using or increase the number of asynchronous Internet courses and 62 % planned to start using or increase the use of synchronous Internet-based instruction.

Among the reasons cited for the increased use of the Internet for instruction have been: (a) telecommunications advancements in the past decade, (b) the increasing importance of information technology in our lives, and (c) the current emphasis on lifelong learning (Berge, 2001; Kearsley, 2000). With these and perhaps other stimuli driving the move toward online learning, an even greater reliance on the Internet for instruction in higher education institutions seems assured. Although online course delivery is in its infancy, relatively speaking, scholarly interest has focused on the importance of student readiness to participate in Internet-based courses. Much scholarly attention has also focused on satisfaction among students and institutions with the quality of the courses and educational outcomes.

This chapter offers a review of the literature relevant to quality, satisfaction, and readiness among participants who take Internet-based courses. The first section summarizes the literature relevant to quality in online studies. The second section presents research and writing on satisfaction with the online course environment. The third section focuses on literature relating to the various readiness factors chosen for this study.

### **Studies on Quality Related to the Online Learning Environment**

Although this study did not attempt to measure quality or quality assurance factors, these issues were alluded to in the statement of its significance. Student readiness and satisfaction were cited as elements that should be utilized by institutions and administrators as they develop quality assurance standards for online course offerings. Although there have been several studies focusing on quality issues, standards and guidelines for quality online educational experiences are still in formative stages.

Heterick and Twigg (2001) suggested that the quality of an Internet-based college-level course could be partially evaluated by generating a “satisfaction index” based on asking students “specific, pre-structured questions designed to take into account those factors that experts believe ensure high quality” (p. 1). The quality assurance subcommittee of the Southern Regional Education Board’s (SREB) Distance Learning Policy Laboratory (2002) concurred suggesting that systematic and usable consumer rating systems should be based not on generalizations but on the presence of elements generally accepted by experts as good practice. The report recommended that students rate their satisfaction on a Likert scale of 1-5, that could then be translated into a satisfaction index. Among the recommendations by the SREB was that institutions should be encouraged to develop more effective evaluative systems to learn student views concerning the quality of distance learning offerings.

In addition to a student satisfaction index, evaluating student readiness for an online experience was cited as a criterion for gauging the quality of an online course. The SREB (2002) report recommended that institutions and faculty assess what it takes for successful completion of an online distance learning course and suggested looking at factors such as higher levels of computer and online literacy skills. A related study done by the Student Services Subcommittee of SREB’s Distance Learning Policy Laboratory recommended that institutions provide potential students with realistic previews of the



distance learning experience. The reasoning of the sub-committee was that distance learning is not appropriate for all students and learning styles. Therefore, according to the group, information should be provided about such readiness criteria as prerequisite hardware, other required technologies, technical competence necessary for the experience, the potential challenges of learning in a technology-based environment, and the level of personal discipline required.

Numerous panels and studies have produced lists of principles for good practice in Internet-based distance education courses. According to a Pew symposium on learning and technology, these studies came about because of the need to address the particular challenges of online teaching and learning. The symposium articulated the challenges to be considered in their deliberations in three related statements: (a) distance learning requires new, separate quality assurance standards because it is different; (b) most distance education programs have low (or no) quality standards, and; (c) there is no consensus on distance learning quality (Twigg, 2001a).

One attempt to formulate principles of good practice occurred in the early 1990s by the Western Cooperative for Educational Telecommunications (WCET) (n.d.). Subsequent groups following WCET's lead developed similar statements. Among those were the American Distance Education Consortium (n.d.) and the Higher Education Program and Policy Council of the American Federation of Teachers (2000). In September 2000, the Council of Regional Accrediting Commissions (2000) in cooperation with WCET, published a set of guidelines that updated to WCET's earlier publication.

The earlier efforts at developing guidelines for good practice helped lay the foundation for later initiatives. Subsequent researchers and practitioners reviewed the existing principles, guidelines, and benchmarks that address best practices in distance learning and found a remarkable degree of congruence among them. One study

commissioned by the National Education Association and Blackboard, Inc. and conducted by the Institute for Higher Education Policy (IHEP) assembled a list of 45 “benchmarks” based on the previous studies. Furthermore, they tested the benchmarks by interviewing leading practitioners in the field. They asked the practitioners to respond to three questions based on the 45 identified criteria: (a) to what extent did they incorporate the benchmarks into their practice, (b) are there additional benchmarks that contribute to quality, and (c) how important to the institution are the benchmarks (Twiggs, 2001a). As a result of the interviews, the researchers dropped 13 of the benchmarks, added three, and combined those that overlapped. The final result was a list of 24 benchmarks IHEP asserted as essential in ensuring quality in online distance education (Phipps & Merisotis, 2000).

Participants of the third Pew Symposia in Learning and Technology held in July 2000 underscored the value of the IHEP study by acknowledging that it is “particularly useful both because it appears to encompass all of the previous efforts and because knowledgeable, experienced practitioners—those with concrete experience as to what works well and what does not in distributed learning environments—have vetted the benchmarks” (Twiggs, 2001b, p. 2). Moreover, as part of the preparation for the symposium, the participants were asked to make their own list of what they considered to be key quality indicators. “Practically all of their responses duplicate the IHEP benchmark list” (Twiggs, 2001b, p. 2).

As impressive as the efforts at standard-setting had been, participants of the July 2000 Pew Symposia in Learning and Technology asserted that they were only “adequate” rather than “best” practices. Several of the symposium participants pointed out that leaders in higher education are willing to settle too soon, accepting a level of performance that is erratic. The report asserted that “there is no concept of ‘world-class’

(which is where the term *benchmarking* comes from)—of meeting or exceeding customer expectations, ideas that are used in the business world” (Twigg, 2001a, p. 8).

The quality assurance subcommittee of the SREB (2002) encouraged a strategic approach by states comprising its membership to adopt quality assurance measures in distance education. Included in the report to the full body were several recommendations relative to quality assurance based on student competencies and views.

The SREB (2002) noted that assuring quality in the Internet-based distance learning environment presents unique challenges. Quality assurance agendas must grapple with issues relative to (a) evaluating academic and non-educational providers of services, (b) learning how to assess the quality of the disaggregated instructional content and learning experience of the student in the online medium, and (c) learning how to deal with “blended programs” that contain elements of both traditional and online classes.

Although agencies and institutions have made some initial gains in defining quality in the online environment, well-defined and widely accepted standards are not yet in place. Such standards may have an impact on student satisfaction in the online learning environment as they normalize such things as standards for course design, teaching resources, technical support, and instructor and student readiness.

### **Studies on Satisfaction Related to the Online Learning Environment**

Participant satisfaction has gained recognition as a means of gauging the quality and effectiveness of online courses. Garrison and Anderson (2003) affirmed that the criteria for evaluating an online course are often set by external stakeholders, but “the interests of the teacher and students are also driving forces within evaluation policies. Comprehensive evaluation includes measures of satisfaction. . .” (p. 92).

This section will review literature and research on participant satisfaction with online courses. Particular attention will be given to course attributes about which students usually express opinions regarding satisfaction.

In a study of 341 students in an online MBA distance education program, Howard, Schenk, and Discenza (2004) sought to identify key components of satisfaction in online learning. The authors reasoned that student satisfaction as a measure of quality in online courses is based on three market drivers. The primary driver is distance education, a major growth segment in education. The two remaining drivers are (a) employees who see the need to update their knowledge relative to career demands and who are consequently enrolling in online courses in increasing numbers, and (b) leaders in educational institutions who perceive institutional growth opportunities. They observed that “the sheer size and complexity of this opportunity significantly raises the stakes for those organizations undertaking distance education” (p. 146).

The researchers further reasoned that since customer satisfaction has been shown to be linked to quality in the commercial business world, it is not unreasonable to identify similar links in online educational enterprises. They cited a study by Gustafsson et al. (2000) showing customer satisfaction significantly linked to quality at the Volvo Car Corporation. They also noted the analysis of well-run companies by Peters and Waterman (1982) who asserted that satisfaction is a key factor contributing to the companies’ performances. The authors then concluded that, from this perspective, “it makes sense that satisfaction, as an important measure of quality, transfers to distance education programs” (p. 146). One of the critical factors to a program’s success, they asserted, “will be the satisfaction of one of its key stakeholders – its students” (p. 146).

Sener and Humbert (2003) agreed that student satisfaction with an online course is often a reflection of its quality. As a result, they asserted that the practice of online learning will continue to benefit by effectively measuring student satisfaction. They also

noted that “as online education continues to evolve in complexity, the need to evaluate students’ satisfaction with their overall learning experience and with key elements of those experiences grows accordingly” (p. 246).

Credible efforts to determine satisfaction with Internet-based courses are not based simply on how the participants felt about the experience, however. In the discussions leading to the development of the Institute for Higher Education Policy Benchmarks, student satisfaction was a key element. To determine satisfaction, they asserted that students should be asked specific, prestructured questions about their experience and that the questions should take into account attributes that experts believe are necessary to ensure high quality (Heterick & Twigg, 2001; Twigg, 2001b). The questions, Twigg asserted, “would ‘operationalize’ agreed-upon principles of good practice” and “would generate an overall ‘satisfaction index’ similar to the star rating systems used on the dot-com sites” (Twigg, p.25).

Gunawardena, Lowe, and Carabajal (2000) reflected on research questions asked and the models employed to evaluate online learning in several studies. In one of those studies by Gunawardena and Zittle (1997), the researchers sought to examine variables that can effectively predict participant satisfaction in online learning networks. They examined which process variables, such as proficiency in technical skills, learner support, and “social presence,” could predict learner satisfaction in a CMC [computer-mediated conference] environment.

They reported using structured survey questions to obtain an overall view of 50 graduate student reactions to a 1993 virtual conference. The researchers utilized an approach by Hiltz (1990) to determine learner satisfaction by examining, among other things, characteristics of the users. A “stepwise regression analysis converged on a three-predictor model revealing that social presence, student perception of having equal opportunity to participate in the conference, and proficiency in technical skills accounted

for about 68% of the explained variance” (Gunawardena & Zittle, 1997, p. 5). They noted that social presence alone contributed to about 60% of the explained variance which suggested that it may be a strong predictor of satisfaction.

In a follow-up study, Gunawardena and Duphorne (2001) tested the Adult Distance Study Through Computer Conferencing (ADSCC) model developed by Eastmond (1994) to determine if learner readiness, online features, and computer-mediated communication (CMC) were associated with participant satisfaction in an academic computer conference. Participants were the same 50 students reported in the above research by Gunawardena and Zittle (1997). The researchers developed a questionnaire consisting of 31 5-point Likert-scale items ranging from *strongly disagree* to *strongly agree*. Learner satisfaction was measured by utilizing a 10-item scale consisting of questions based on Eastmond’s model. Their study revealed that student readiness was positively correlated with satisfaction. They also noted that participants expressed opinions about satisfaction with:

- ability to learn through the medium;
- ability to learn from the discussions;
- stimulation to do additional reading or research on the topics discussed;
- learning to value other points of view;
- the likelihood of participating in another computer conference;
- whether it was a useful learning experience;
- whether it enhanced face-to-face on-campus courses;
- whether the participant made acquaintances electronically in other parts of the country/world;
- whether the diversity of topics prompted participation in discussions;
- whether the participant put in a great deal of effort to learn the CMC system to participate (p. 31, figure 2).

Several studies have found other characteristics to be indicators of satisfaction. In their study, Howard et al.(2004) reported 22 variables derived from their research questionnaire that reflected the learners' satisfaction. Using factor analysis, they were able to extract five possible constructs from these variables which they labeled: (a) Interaction with the Professor (b) Fairness Content of the Course, (c) Classroom Interaction, and (d) Value, Technology and Learning. Based on these constructs, the authors discussed several administrative implications for obtaining more satisfaction in a distance program.

The Institute for Higher Education Policy (IHEP) identified 24 benchmarks for excellence in Internet-based distance learning. Heterick and Twigg (2001) utilized these benchmarks to construct a sample of the kinds of questions that could be posed to participants to create a satisfaction index for a course. The researchers employed the 24 benchmarks and added two questions to construct their Likert-type satisfaction scale. The questions they posed were:

- Was the technology used in the course easy to use?
- How reliable was the technology?
- Was the course content relevant to your educational and professional goals?
- Was the course up-to-date?
- How challenging was the course? Were expectations for performance set high and within reason?
- Did you receive sufficient help when you needed it?
- Was there sufficient feedback to help you achieve your learning goals?
- Was there sufficient interaction with other students to meet your needs?
- Was there sufficient interaction with the instructor to meet your needs?
- Did course activities contribute to your learning goals (vs. being a "waste of time")?

- Was the information you received before enrolling in the course accurate and adequate?
- Did you have sufficient access to learning resources--e.g., libraries, databases?
- Were course expectations clear?
- Did the course experience match the expectations?
- Were assignments and learning activities clear?
- Were evaluations (interim and final) fair?
- Did you receive information about policies, procedures, and support services (registration, payment procedures, financial aid, etc.) that you needed?
- Were your questions answered accurately and in a timely fashion?
- Were complaints addressed adequately?
- Did you receive course materials in a timely fashion?
- Did you receive adequate technical assistance?
- Did you know how to access online resources?
- Was the course flexible enough to meet your needs?
- Was the course worth its cost (p. 2-3)?

From the responses, the authors proposed extracting a “satisfaction index” for the course. Using questions such as these based on the students’ experience in the course, instructors and administrators could gauge participant satisfaction with the experience.

Several authors focused specifically on the importance of satisfaction based on various interactions in the online learning context. Burnett (2001) reported ongoing research at the Florida State University (FSU) School of Information Studies “to determine the importance of interaction (teacher-student, student-teacher, student-student) to the success of World Wide Web-based learning graduate degree programs” (Abstract). Although the study at FSU focused on the above interactions, its review of literature reported three types of interaction that are considered critical aspects of a



learning environment: (a) *learner-content interaction*, which is the interaction of the student with the subject matter and the constructing of knowledge through new understanding; (b) *learner-instructor interaction*, or the instruction, assisting, stimulation, and support provided by the instructor to the student; (c) *learner-learner interaction*, which is the interaction between one learner and other learners whether alone or in a group. It may or may not be in the presence of an instructor.

Swan (2001) reported on an empirical investigation to explore the relationships between student perceptions and course design factors in 73 State University of New York (SUNY) Learning Network courses in Spring 1999. The study found three factors, (a) clarity of design, (b) interaction with instructors, and (c) active discussion among course participants, which significantly influenced students' satisfaction and perceived learning.

Arbaugh's (2001) study on instructor immediacy behaviors in Web-based courses also adds weight to the importance of interactions as measures of satisfaction. Following Mehrabian (1971) and Myers, Zhong and Guan (1998), Arbaugh defined immediacy as "communication behaviors that reduce social and psychological distance between people" (p. 43). While immediacy behaviors are associated with student motivation and learning in the conventional classroom (Menzel & Carrell, 1999), the author sought to demonstrate their significance in the online environment. His study revealed that instructor immediacy behavior was significant in measuring student satisfaction in online courses along with three other variables: (a) student attitudes toward the course software, (b) course length, and (c) prior student and instructor experience with Internet-based courses.

In summary, determining satisfaction in online studies means more than merely ascertaining whether or not the participant enjoyed the experience. Several studies have been done to determine how satisfaction should be measured and how it relates both to

the perceived quality of the online course and whether or not a participant would engage in another Internet-based class or recommend the experience to others. The research studies support utilizing (a) the overall learning experience; (b) the technical support provided before and during the online experience; and (c) interactions with the instructor, other participants, and the course material as measures of satisfaction. These are the measures adopted for this research.

### **Studies on Readiness for Online Learning**

Research indicates that satisfaction may be related to the readiness of the participant to engage in online studies. Numerous studies have attempted to identify various characteristics that prepare a student to participate in an online class and assure a successful outcome in the form of either student satisfaction or course completion. Guglielmino and Guglielmino (2002, February), Gunawardena and Duphorne (2000, 2001), Kuchinke et al. (2001), Lim (2001), and Pachnowski and Jurczyk (2000) are but a few examples. Guglielmino and Guglielmino noted that although the varied forms of online learning have presented new opportunities and freedom for learners, “they require specific kinds of knowledge, skills, and attitudes for successful implementation” (p. 258). Gunawardena and Duphorne (2001) wrote of the need to examine questions related to learner variables noting that there is still much to learn about which readiness factors are most critical in preparing students for online learning situations.

Gunawardena and Duphorne (2001) noted that, according to Eastmond (1994), readiness relates to the various personal factors a student participating in distance learning brings to the experience that influence its success. These factors include learning preferences, array of learning strategies, style, prior learning experiences, interest in the course content, and computer skills. To that list Harasim, Hiltz, Teles, and Turoff (1995) added learner attitudes, motivation, and self-discipline. Gunawardena and Duphorne

(2001) focused on seven readiness factors: (a) prior e-mail experience, (b) prior listserv experience, (c) prior comfort with CMC, (d) adequate technical training at the site, (e) self-efficacy in mastering the CMC system, (f) belief in CMC's potential for distance education, and (g) belief in the medium's capacity for academic discussions.

All three independent variables in the study, learner readiness, online features, and CMC-related learning approaches correlated significantly with learner satisfaction. The authors concluded that "participants who felt more positively about their readiness to participate in an academic computer conference were more satisfied with the conference. As learner readiness increases, so does satisfaction with the learning experience" (Gunawardena & Duphorne, 2001, p. 15). They further asserted:

This shows the importance of paying attention to learner readiness factors. . . .

Paying close attention to the attitudes and skills [adult learners] bring with them, and orienting them to the skills they need to function effectively in an online environment, will help ensure a more satisfying learning experience (p. 15).

In their discussion relative to readiness and satisfaction in an online learning environment, the researchers encouraged further research into the relationship. They recommended looking at learner readiness in a more comprehensive sense. They felt that future research should include items that measure "learning styles, locus of control, critical thinking ability, self-direction, and other personality and motivation factors" (Gunawardena & Duphorne, 2001, p. 19).

The readiness factors identified for this study were derived from the research of scholars who inquired about which student readiness characteristics most affect the successful use of electronic distance learning. As a result, the attributes identified for this study are: (a) self-direction, (b) computer-related experience, (c) experience with online collaborative environments, (d) experience with online courses, (e) confidence in the

online learning environment, (f) experience with the subject matter, and (g) age. Each of these is discussed in the following sections.

### **Readiness Based on Learner Self-Direction**

This segment of the literature review constitutes a review of the research and writing on self-directed learning. Although it is intended to examine the theoretical basis for self-direction as a readiness factor for online learning, the enlarged review is also intended as a description of the background for the PRO-SDLS (Stockdale, 2003). Being the first study to utilize Stockdale's instrument provides a unique opportunity to address its reliability for use with participants in online higher education courses. Therefore, it is useful to review its development as an instrument to measure self-directedness in learning within the framework of the Personal Responsibility Orientation (PRO) Model of Self-Direction (Brockett & Hiemstra, 1991). Because it is based on this later model of self-directed learning, it is also helpful to consider the literature leading up to the PRO Model and subsequently to the PRO-SDLS.

Guglielmino and Guglielmino (2002, February) conducted a review of literature describing research on learner characteristics important for success in online learning. They noted that because of the volume of literature, they utilized compilations of research and previous reviews of the literature where possible. Interestingly, their review revealed that "the most predominant characteristic associated with success in distance learning in the literature is variously referred to as independence, self-direction, or autonomy" (p. 260).

The essential role of learner self-direction in the online class was emphasized by Garrison and Anderson (2003). They viewed it as both an important objective in the online learning environment and a measure of the quality of an educational experience. Addressing the e-learning experience from the instructor's point of view, Garrison and

Anderson asserted that it is “the ultimate challenge to bring students to assume responsibility for their own learning” (p. 15). Self-direction, however, is more than students taking responsibility for their own learning, according to the authors. It is connected with the ability to think critically that lends added weight to self-direction in that the students are empowered to manage and monitor their own learning.

The authors viewed critical thinking as “a cognitive model that naturally starts from the inside and looks out” (Garrison & Anderson, 2003, p. 15). Learners iterate between their own private and shared worlds as they move through the phases of critical thinking: triggering event, exploration, integration, and resolution. Self-directed learning, on the other hand, was seen as a complementary social model that takes an outside perspective and looks inward. In this role, self-directed learning is concerned with an individual’s motivation as well as management of the learning process and monitoring its progress. In the online classroom, self-directed learning is central because of the student’s need to focus on learning management responsibilities and strategies.

Other terms such as “autonomy” and “independent learning” express learning constructs similar to self-directed learning (Brockett & Hiemstra, 1991). Keegan (1996) stressed the essential role of these characteristics in distance learning. He noted that students taking a distance learning course have greater autonomy than in traditional classes and asserted that the essence of distance education is the independence of the student. Although he appeared to restrict autonomy as referring to students learning in isolation, the usage suggests that a student must have a certain degree of self-confidence and self-motivation in such a setting.

The scholars cited in this section emphasized the critical role of participant self-direction in the online learning setting. This suggests that there should be a level of readiness on the part of students for self-direction and that such readiness may contribute to their satisfaction with the learning experience.

Since the current study involved the use of the PRO-SDLS (Stockdale, 2003) to measure the self-directedness of the survey participants, the following sections examine some of the research and other literature leading up to the instrument's development. This review of the literature touches on the early conceptualizations, perspectives, and research relative to self-directed learning.

### ***Early Conceptualizations***

Self-directed learning and self-directed learning readiness have been a persistent focus of research and scholarly writing for more than 40 years (Brockett & Hiemstra, 1991; Brockett et al., 2001, February; Canipe, Fogerson, & Duffley-Renow, 2005, February). Brockett and Hiemstra (1991) noted that many adult education scholars in North America “trace the current interest in such topics as learning projects, andragogy, and self-directed learning to Houle’s (1961) typology of goal, activity, and learning orientations among adult learners, or to Johnstone and Rivera’s (1965) seminal work on adult education participation” (p.7).

The concept, however, predates the more recent concentration of literature and research projects. Self-direction has historically been advocated and practiced extensively. Houle (1992) cited two book-length examples championing self-directed learning in principle, one by William Ellery Channing in 1839 and another by George Eggleston in 1872. In an earlier work, Houle (1984) examined how individuals devise patterns of learning that change as they grow older. Among those he studied were self-directed learners such as Montaigne and Thoreau.

One of the earliest formal investigations into self-directed learning is often attributed to Houle’s (1961) publication of *The Inquiring Mind*. Houle’s study of 22 adult learning participants led him to conclude that adults generally approach learning opportunities from one of three learning orientations. He categorized these as: (a) a

*learning orientation* in which adults engage in education for the sake of learning itself, (b) an *activity orientation* in which the learner pursues a learning project as an opportunity for social interaction, and (c) a *goal orientation* in which adults pursue an educational opportunity as a means to a larger end. Houle's *learning orientation* has been credited with leading Tough to pursue his interest in "adult self-teachers" (Brockett & Hiemstra, 1991).

Tough (1971) was the first to quantify the nature of self-directed learning by building on the learning orientation of Houle. His 1965 doctoral dissertation at the University of Chicago (as cited in Brockett & Hiemstra, 1991) examined adults engaged in a self-teaching task and discovered that they do not necessarily learn in isolation but are highly likely to seek the assistance of others. This insight caused Tough to expand his research and in 1970 he and his colleagues at the Ontario Institute for Studies in Education examined the planning and deciding aspects of adults' learning projects.

In this study, the group interviewed 66 adults from diverse backgrounds about their involvement in self-planned learning projects over the previous year. This research, which is reported in *The Adult's Learning Projects* (Tough, 1971), found that, on average, adults engage yearly in eight deliberate learning projects. Tough noted that while participants in the research reported various reasons for undertaking these learning projects, most of them were motivated by the anticipated application of what they learned.

Brockett and Hiemstra (1991) suggested that the finding in Tough's research that has had the greatest impact pertains to the question of *who* assumes responsibility for planning an individual's learning projects. The majority (68%) of the projects examined by Tough were planned by the individuals themselves. The importance for the study of self-directed learning, according to Brockett and Hiemstra, was that "while self-direction has long been assumed to be a major goal of adult education, it was not until Tough's

investigation that the impact of this preference for individual responsibility in planning was made apparent” (p. 43).

In summary, Houle (1961) established that adults are often self-directed in their learning and Tough (1971) confirmed the frequency of adults’ self-directed learning projects. From their work efforts to further conceptualize and measure self-directed learning developed vigorously. The following section describes some of the key efforts to define and characterize the essential nature of self-direction.

### ***Definition and Later Conceptualizations***

In the 1970s and 1980s, self-directed learning began to be stressed in the periodical literature and in several books. This activity expanded scholarly inquiry into self-direction beyond the seminal works of Houle and Tough. Among those cited in this section whose works have advanced the thinking and research about self-directed learning are Knowles, Grow, Candy, and Brockett and Hiemstra.

#### ***Malcolm Knowles***

In 1975, Malcolm Knowles widened the concept of self-direction in learning to include adults in formal learning situations. Knowles (1975) defined self-direction as “a process in which individuals take the initiative, with or without the help of others, in diagnosing their learning needs, formulating learning goals, identifying human and material resources for learning, choosing and implementing appropriate learning strategies, and evaluating learning outcomes” (p. 18). Knowles’s view has been utilized frequently in the literature of self-directed learning.

In his work, Knowles laid out a step-by-step method by which the student can develop and carry out a learning plan utilizing help from an instructor as needed. This process included learners diagnosing their own learning needs, formulating learning goals, identifying the needed resources for learning, identifying the learning strategies



and implementing them, and ultimately evaluating their own learning outcomes (Knowles, 1975). Stockdale noted that “a key component of this process involves greater individual control of the learning plans” (Stockdale, 2003 p. 24).

Subsequent research has built on the works of Houle, Tough, and Knowles. Although this research has underscored the diversity of the concept of self-directed learning, it has maintained the theme of the individual’s control in the learning situation. Self-directed learning has been variously viewed as (1) a process of learning “in which people take primary initiative for planning, carrying out, and evaluating their own learning experiences” (Merriam & Caffarella, 1999, p. 293); and (2) a personal attribute of the learner. Additionally, the terminology used to describe it is diverse. Brockett and Hiemstra (1991) noted that such terms as self-planned learning, self-teaching, autonomous learning, independent study, and distance education are often used interchangeably with self-directed learning. Long (2000) included in his list terms such as self-education, self-learning, autodidaxy, and self-regulated learning. Yet, as Brockett and Hiemstra (1991) noted, terms like these descriptions for self-directed learning “offer varied, though often subtly different, emphases” (p. 18).

In addition to the terminology used to describe self-directed learning, various models provide differing perspectives for viewing the concept. One model discussed below reflects self-directed learning primarily from a teaching perspective. Two others portray a broader perspective that includes the learner’s personal attributes, the learner’s social context, and the learning settings. Grow’s model is mentioned briefly as an example of a perspective of self-directed learning. The others are treated in more depth because of their emphases upon self-direction as a personal trait. Self-direction as a characteristic of the learner is emphasized in the current research.

### ***Grow's Staged Self-Directed Learning Model***

Although Grow (1991) viewed self-direction as a characteristic of the learner, he asserted that self-directed learning refers “to the degree of choice that learners have within an instructional situation” (p. 128). In his framework, The Staged Self-Directed Learning Model, Grow stated that his intent was not to address self-directed learning theory, but rather to focus on the teaching – learning setting. He asserted “that learners advance through stages of increasing self-direction and that teachers can help or hinder that development” (p. 125). He further stated that good teaching involves a teacher’s perception of students’ levels of self-direction and helping them to advance to greater self-direction in learning situations. His Staged Self-Directed Learning Model is made up of four stages of self-direction ranging from Dependent to Self-Directed. In each stage, Grow described the role of the teacher and instructional techniques best suited to assist the student in becoming more self-directed.

In response, Tennant (1992) raised a question about who, the teacher or the student, is in the best position to judge when the learner has moved from one stage to another. In his reply, Grow (1994) stated that teachers should use their observational skills to estimate a student’s learning stage. Grow further elaborated on his model by implying that teaching is an imprecise enterprise and requires the teacher to utilize a variety of techniques to integrate self-directed learning modes into the instructional process.

### ***Candy's Model of Self-Direction in Learning***

Candy’s (1991) view of self-directed learning is a multi-dimensional model regarding the individual learner and the educator. He asserted that although instructional techniques are involved in self-directed learning, the concept is more complex in that it must take into account the learner’s personal abilities, the settings in which learning occurs, and the broader social context of the learning enterprises. He affirmed that a goal

of the educational process should be to encourage the development of self-directedness within learners where possible.

The author viewed self-direction as a characteristic embodying both process and product. That is, self-directed learning is a process of education as well as a goal or outcome. He conceptualized that individuals may move from dependency on a teacher or mentor to greater control of their own learning. He also envisioned that such movement occurs in two domains. First, in the instructional domain the learner may assume primary ownership of the learning even though there may still be a residue of teacher-control. The second domain, which Candy (1991) called autodidaxy, is the natural societal setting in which an individual pursues learning opportunities outside the institutional venue. In this domain, “no teacher is present and the learner may not be conscious that he or she is learning” (Merriam & Brockett, 1997, p. 139).

Candy (1991) argued that approaches to education should “aim – either directly or concomitantly – to enhance learner’s ability and willingness to undertake self-directed learning” (p. 417). In his discussion of what educators should consider, he emphatically underscored that there are three dimensions in which self-direction might vary: competence, resources, and rights.

In the area of competence, Candy (1991) noted that “people differ from one another in their ability to be self-directed in learning” (p. 418). He identified seven competencies that he called “building-blocks.” These, he said, may be amenable to educational intervention. They range from circumstantial abilities (essential skills of literacy and numeracy; and information location and retrieval) and simple skills competencies (goal setting; time management; and question-asking behavior) to more complex competencies (critical thinking; and comprehensive monitoring and self-evaluation).

Although development and enhancement of these competencies can be built into the way in which educational activities are conducted, Candy (1991) argued that not many activities are of “sufficient duration or intensity to allow for comprehensive buildup of such abilities and dispositions” (p. 418). He concluded that the process of developing competencies for self-direction is a lifelong endeavor and, therefore, should be built into the overall guidelines and criteria shaping the development of all educational criteria.

In the second dimension, resources, Candy (1991) emphasized, as he had for the first dimension, that encouraging the development of self-directedness must be seen in the broad context of regional, national, and even international concerns. At a basic level, “educators can seek to enhance self-directedness in learning . . . by providing learners with access to adequate, comprehensive, and readily available learning resources” (p. 419). These resources that include things such as libraries and resource centers, laboratories, newspapers, journals, computer-based instructional materials, practicums, internships, and job placements should ideally be widely available.

However, if self-direction is embraced as the independent pursuit of learning opportunities beyond formal institutional settings “then the availability of and access to the means of learning becomes a matter of social policy, which requires a political will at the very highest level” (Candy, 1991, p. 419). Candy makes it clear that viewing self-direction as a universal attainment and goal of education needs to be tempered with the understanding that there are potent forces arrayed against the democratization of learning opportunities. Resources may be protected and not shared freely by individuals or institutions who wish to defend their social or institutional position.

A third dimension, according to Candy (1991), centers on a learner’s rights to be self-directing. In this context, rights are not what an individual is entitled to legally or constitutionally. Rather rights to be self-directing are individual and societal in nature; the sources “enabling personal space or discretionary power to act on one’s own behalf”

(p. 420). The seat of this enabling authority sometimes lies within the individual. Individuals' abilities to be self-directing may be limited by a belief in themselves.

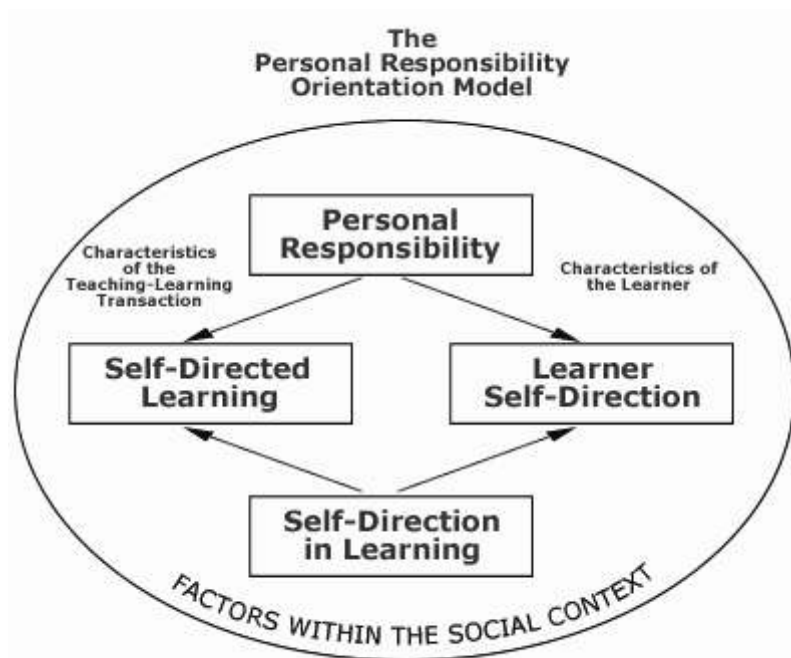
There are also societal aspects of the dimension of rights. These, according to Candy (1991), are hidden barriers that restrict people's ability to be self-directed in learning. They comprise what Candy referred to as a "glass tunnel" in which individuals are trapped "so that although they can look out on the world of learning opportunities, they are unable to stray far from the routes mapped out for them" (p. 421). He identified them as (a) peer pressure, (b) closed ranks often encountered by a person seeking to be self-directed in learning, and (c) the criteria used to distinguish an expert from a novice.

In Candy's (1991) view, the educator who seeks to enhance an individual's ability for self-directed learning should concentrate on the three dimensions of competence, rights, and resources. All three have an individual aspect as well as a social aspect and, according to Candy, individual self-directedness cannot be realized by giving attention to any of these elements in isolation. Additionally, "individual self-directedness cannot be fully achieved without giving due consideration to the social and collective constraints that may inhibit it" (p. 423).

Candy (1991) concluded that moving individuals toward self-directed learning is a valid and defensible objective for adult education. Nevertheless, given the limitations of the dimensions just discussed, not every adult will develop self-directedness at the same rate or in the same fashion. Moreover, for some learners, moving toward self-directed learning would be, for them, an unacceptable choice.

### ***Brockett and Hiemstra's PRO Model***

Brockett and Hiemstra's (1991) conceptualization of self-directed learning, the Personal Responsibility Orientation (PRO) Model (Figure 2), is multi-dimensional involving the characteristics of the teaching-learning situation, the characteristics of the learner, and the social context in which learning occurs. The PRO Model has a



**Figure 2. Brockett and Hiemstra's PRO Model. Reprinted by permission of authors.**

humanist foundation in that it begins with an assumption that human beings are capable of assuming personal responsibility for their own learning. Humanism, the authors noted, “is generally associated with beliefs about freedom and autonomy and notions ‘that human beings are capable of making significant personal choices within the constraints imposed by heredity, personal history, and environment’ (Elias & Merriam, 1980, p. 118)” (Hiemstra & Brockett, 1994, p. 3).

The PRO Model begins with the notion of personal responsibility, by which the authors mean that individuals assume responsibility for their own thoughts and actions. Personal responsibility does not necessarily mean that individuals have control over their personal life circumstances. Rather, it refers to the control all humans have over the manner in which they will respond to a situation and that each person possesses that ability to a greater or lesser degree. The authors note that “within the context of learning,

it is the ability and/or willingness of individuals to take control of their own learning that determines their potential for self-direction” (Brockett & Hiemstra, 1991, p. 26).

The conceptualization offered by Brockett and Hiemstra (1991) reflects the need to distinguish between self-directed learning as a personality characteristic of the learner and the notion of self-directed learning as a process of learning. Among the first to articulate these different meanings of self-direction were Brookfield (1984), Fellenz (1985), and Oddi (1985). In the PRO Model, a distinction is made between *learner self-direction* and *self-directed learning*. *Learner self-direction* refers to the characteristics of individuals that contribute toward their taking personal responsibility for their own learning. *Self-directed learning* is a more external characteristic that emphasizes the teaching-learning transaction in which the student assumes the primary responsibility for planning, implementing, and evaluating the learning experience with the teacher facilitating the process.

The term *self-direction in learning* in the model suggests an encompassing concept that pulls together the internal characteristics of the learner and the external nature of the learning situation. Although the model illustrates the difference between these internal and external features of self-directed learning, it also “recognizes, through the notion of personal responsibility, that there is a strong connection between self-directed learning and learner self-direction” (Brockett & Hiemstra, 1991, pp. 29-30).

Brockett and Hiemstra (1991) further emphasize that the social milieu in which learning occurs must also be taken into account. The social setting, they noted, is the arena in which the activity of self-direction occurs.

This emphasis on the social context notwithstanding, Flannery’s (1993) review of Brockett and Hiemstra (1991) insisted that the authors minimized the sociological and cultural issues by giving them only cursory examination. In her criticism of the model, Flannery asserted that the authors had inadequately considered such factors as a person’s

role in society, cultural issues in other countries that might work against self-direction in learning, and an individual's preferred method of communicating and learning.

Another criticism of the PRO Model was offered by Garrison (1997) who advocated the need to take a more comprehensive look at the psychological dimension of self-directed learning. Garrison noted that much of the study of self-directed learning has emphasized the external control and management of learning tasks and not enough attention has been given to the psychological aspects of self-directed learning. He asserted that in the model by Brockett and Hiemstra (1991) the psychological dimension is limited in that it seems to represent only a personality factor or disposition to be self-directed. Additionally, he contended that the cognitive and metacognitive issues related to the process of learning were not thoroughly addressed. Garrison viewed an adult learner who is fully self-directed as one who "has moved beyond simple task control and has learned to think critically and construct meaning in ill-defined and complex content areas" (p. 21). The challenge for teachers, in his view, is to create an environment that can facilitate learners tapping into personal motivations and resources in order to construct their own deep meaning in a learning situation.

Flannery (1993) and Garrison (1997) were the only two articles discovered in this research to offer critiques of Brockett and Hiemstra's (1991) conceptualization of self-directed learning. Both of them also observed that the PRO Model is a positive development and offers much to the understanding of self-direction in learning. In Stockdale's (2003) view, a major contribution of this model is its recognition of "the differences and similarities between self-direction as a teaching and learning transaction and as a personal orientation internal to the individual" (p. 18).

The PRO-SDLS (Stockdale, 2003), which was developed as a way to measure self-directed learning in students at the college level, is based on the PRO Model. Since the PRO-SDLS is utilized in the current research, literature leading to its development



should be considered. The PRO-SDLS rests on more than three decades of research on self-directed learning. Reviewing representative reports of this research will be helpful in focusing a discussion of the PRO-SDLS.

### ***Research on Self-Directed Learning***

Self-directed learning has been a popular research topic for both educators and scholars since Tough's (1971) learning projects research more than 30 years ago. Brockett and Hiemstra (1991) offered a useful classification of this research by noting that most mainstream research belongs to one of three "streams:" (a) learning projects studies, (b) qualitative approaches, and (c) research involving measurement of self-directed learning levels. They noted that "in our view, this 'three-streams' model still serves as an appropriate classification scheme, for the vast majority of studies on self-direction still fit within one of these categories" (p. 40).

#### ***Descriptive Learning Projects Research***

This stream of research deals with descriptions of adults' self-planned learning projects and the frequency of such projects. It originated with Tough's interviews of 66 people in seven occupational categories that explored the number of self-planned learning projects the individuals undertook in the course of one year. The results of his research were originally published in 1971 and provided evidence of the popularity of self-planned learning among adults.

Brockett and Hiemstra (1991) observed that the most important finding to come out of Tough's (1971) research was that the majority of learning projects (68%) were planned, implemented, and evaluated primarily by the learners themselves. Tough's research made it clear that adults have a preference for personal responsibility in planning for their own learning. Moreover, what adults learn and how they go about it is not adequately reflected through their participation in formal educational programs.

Other scholars adopted Tough's (1971) methodology and replicated it in varying populations. Among those were Coolican (1975), who researched the learning projects of mothers of preschool-age children. The population of a study by Peters and Gordon (1974) was urban and rural adults in Tennessee. Penland (1977) focused on a sample from the United States of persons ages 18 or older. These and other similar studies underscore the level of scholarly interest in the way in which adults carry out learning projects

Brockett and Hiemstra (1991) noted that this research stream has contributed significantly to the understanding self-directed learning. This methodology afforded a means of studying the learning efforts of adults outside the formal educational setting. It helped to redefine the meaning of adult education participation; specifically, that "courses comprise only a very small portion of all adult learning activity" (p. 51). Learning projects research also represents the first efforts by adult education scholars to systematically study self-direction in learning.

By the end of the 1980s some scholars, such as Caffarella and O'Donnell (1988), were suggesting that it was time for a shift in the research on self-directed learning. Brockett and Hiemstra (1991) also suggested that "we have pretty much reached a point of saturation with this approach" (p. 54) and that subsequent research streams represent a healthy evolution in the development of self-directed learning research.

### ***Qualitative Research in Self-Directed Learning***

The qualitative methodology is another paradigm of self-directed learning research that has gained in popularity since the 1980s. Qualitative research, sometimes known as post-positivist or interpretive research, involves an interpretive, naturalistic approach to its subject matter. "Qualitative researchers study things in their natural settings, attempting to make sense of, or interpret, phenomena in terms of the meanings people bring to them" (Denzin & Lincoln, 1994, p. 2). Utilizing procedures such as in-

depth interviewing, case studies, and participant observation, several qualitative studies have added to the knowledge base of self-directed learning.

One such study, undertaken by Gibbons et al. (1980), focused on 20 individuals who became experts in a field of endeavor without formal training past the high school level. Among those studied were such notables as Muhammad Ali, Walt Disney, Amelia Earhart, Henry Ford, Pablo Picasso, Frank Lloyd Wright, and Malcolm X. The purpose of the analysis, according to Gibbons and his colleagues was to “find clues rather than proofs, clues that will both lead us to more pointed empirical investigations of self-directed learners and guide our search for effective ways to teach self-directed learning” (p. 45).

Some of their findings ran counter to assumptions held by most educators. For example, they found that the self-educated experts required a greater diversity in the kinds of expertise and skills than is normally emphasized in formal education. Also, the experts discounted the value of their formal elementary or high school education. Gibbons et al. (1980) noted that “school seems to play a remarkably insignificant role in their becoming expert, and when it is influential, the effect is often reported as negative” (p. 47).

Brookfield’s (1981) study of experts without formal preparation differed from that of Gibbons et al. (1980) in that he was able to gather data from his subjects first-hand. He studied 25 adults who were considered experts in such various activities as dog breeding, chess, theatre, narrow gauge railroads, and philosophy. Among his findings was the concept that the adults believed themselves to be a part of a larger “fellowship of learning” (p. 20). In this fellowship, learners revealed both a great spirit of cooperation and, occasionally, competitiveness. Cooperation was characterized by such activities as requests for advice and talks to interested groups. Also, some of the learners indicated they undertook a learning endeavor for the competitive opportunities it afforded.

Other qualitative research projects span a range of populations. Kasworm's (1988a, 1988b) studies examined self-direction as it relates to formal learning. Her research found that self-direction is an important component of learning at the college or university level. Brockett and Hiemstra (1991) observed that "this research reemphasizes that self-direction can indeed be a vital part of learning in institutions" (p. 92). Other studies include Smith (1990) whose research focused on the role of librarians in facilitating self-directed learning. Cavaliere (1992) investigated the Wright brothers' self-planned efforts that resulted in their first flight.

These and other qualitative studies have added immeasurably to the literature and understanding of self-directed learning. Qualitative studies have an advantage over quantitative approaches in descriptiveness and they add a dimension of understanding to the study of a phenomenon that is not generally attainable in studies focusing on numerical data. Nevertheless, neither the descriptive learning projects research nor the qualitative projects provide the kind of insights gained by studies that measure self-direction through written instruments, observations, and surveys. This stream of inquiry into self-directed learning is included in the next section.

### ***Measurement of Self-Directed Learning***

Learning projects research provided an understanding of the frequency and nature of self-directed learning by adults in various segments of the population. However, in the late 1970s it became clear that other questions needed to be addressed such as those related to the degree of a person's self-directedness or the relationship between self-directedness and other factors assumed to be associated with it.

Two scales, the Self-Directed Learning Readiness Scale (SDLRS) (Guglielmino, 1977), and the Oddi Continuing Learning Inventory (OCLI) (Oddi, 1984) are the most widely used instruments to measure individuals' inclination toward self-directed learning. Although others have been developed, these two instruments are the best known (Wood,

1994). Both instruments have been challenged by scholars raising questions about their appropriateness for measuring self-direction (Brockett, 1985b; Brookfield, 1985b; Landers, 1989; Six, 1989), at least for some populations. Nevertheless, they have continued for decades as respected and widely used scales.

More recently, Stockdale (2003) developed the PRO-SDLS to address later conceptualizations of self-directed learning. The PRO-SDLS was used in the current study to measure the self-directed learning readiness of participants in online courses. The scales by Guglielmino (1997) and Stockdale represent the earliest and latest-to-date attempts at measuring self-directedness in learning. The PRO-SDLS is also an attempt to update the measurement of self-directed learning by incorporating conceptualizations not available when the SDLRS was developed. It seems appropriate to review some of the intervening literature relative to the SDLRS before looking at the PRO-SDLS.

***The Self-Directed Learning Readiness Scale (SDLRS)***. The SDLRS developed by Guglielmino (1977) was designed to predict the degree to which individuals perceive themselves to have the qualities and skills related to self-directedness in learning. Guglielmino developed her instrument through a three-round Delphi procedure involving 14 experts in self-directed learning. The resulting product was a 58-item self-report five-point Likert scale. The scale measures self-directedness in the following eight factors: (a) openness to learning opportunities, (b) learner self-concept, (c) learning initiative and independence, (d) acceptance of responsibility for one's own learning, (e) love of learning, (f) creativity, (g) view of lifelong learning, and (h) ability to use study skills and problem-solving skills.

Numerous studies have utilized the SDLRS primarily in one of two ways: (a) as an instrument to explore relationships between self-directed learning and other variables; and (b) as a diagnostic tool to assess learners' readiness for self-directed learning.

Brockett and Hiemstra (1991) grouped studies using the SDLRS in four categories: (a)

early studies utilizing the instrument, (b) studies examining psychological correlates of self-directed learning, (c) diagnostic studies, and (c) investigations of self-directed learning among nurses (p. 57). These categories are each represented in the following studies using the SDLRS cited as examples. Among the studies employing the instrument were those of Torrance and Mourad (1978a, 1978b) , Brockett (1983, 1985b), Caffarella (1983), and Savoie (1980).

In early studies, research by Torrance and Mourad (1978a, 1978b) utilized the SDLRS to measure the self-directed learning readiness of gifted children. Among the studies examining psychological correlates with self-direction, Brockett (1983, 1985b) addressed the correlation between self-directed learning readiness and life satisfaction in a population of older adults. His study discovered a relationship between these factors and also that adults with higher levels of formal education tend to score higher on self-directed learning readiness as measured by the SDLRS. In diagnostic studies using the SDLRS, Cafarella (1983) sought to discover the value graduate students placed on learning contracts and the perception of their own self-directed learning readiness. Finally, examining self-directed learning among nurses, Savoie (1980) utilized the SDLRS to examine whether it would be possible to predict nurses' success in continuing education courses.

The SDLRS continues to be utilized in studies on self-direction. Canipe and Fogerson (2004, February) noted that the number of doctoral research projects on self-directed learning, some of which utilized the SDLRS, peaked in 1990 and has remained steady since then. Several doctoral dissertations that have recently employed the SDLRS originated at The University of Tennessee (Canipe, 2001; Chuprina, 2001; Cox, 2002; Nelson, 2000; Owen, 1996; Robinson, 2003; Wood, 1994). Additionally, the International Self-Directed Learning Symposium continues to be a forum for reporting research on self-directed learning, some utilizing the SDLRS.

These and other studies illustrate the varied approaches utilizing Guglielmino's (1977) scale and its wide acceptance as a measure of self-directed learning readiness by scholars. Nevertheless, it has also been subjected to criticism from various sources. As a result of his research with older adults of varying educational levels, Brockett (1985b) concluded that the instrument is less effective in measuring self-directed readiness in adults with lower levels of formal education. Although Brockett was the first to express concern about the SDLRS, others such as Brookfield (1985a) considered the instrument "unsuitable for measuring self-directed learning readiness among working class adults" (p. 62). He also stated that more studies were needed in cross-cultural and intra-cultural settings before the SDLRS could be considered a reliable scale for use with all adults.

A critical article by Field (1989) analyzing the validity and reliability of the SDLRS sparked numerous replies defending the scale in the literature. Field criticized using the Delphi technique to formulate the test items. He also questioned the clarity of some of the scale items and definitions. As a result, Field concluded that problems "inherent in the scale are so substantial that it should not continue to be used" (p. 138). The article prompted replies by scholars including Guglielmino (1989), Long (1989), and McCune (1989) supporting the SDLRS and criticizing what the authors saw as a lack of integrity in Field's study.

Since the inception of the SDLRS, Guglielmino has responded to the concerns raised by Brockett (1985a) and Brookfield (1984) cited earlier by developing a version of the scale for adults with lower reading or English proficiency levels. However, although Brockett and Hiemstra (1991) supported the continuing use of the SDLRS, they also indicated that questions remain about the validity of the scale. They expressed the hope that later researchers would "join in the search for new and improved ways of measuring the iceberg [self-directed learning]" (p. 75).

*The PRO-SDLS.* The most recent addition to the research base on self-directed learning measurement is the development of The Personal Responsibility Orientation to Self-Direction in Learning Scale (PRO-SDLS) (Stockdale, 2003). Based on Brockett and Hiemstra's (1991) PRO Model of Self-Direction in Learning, Stockdale's scale represents an approach to the study of self-directed learning founded on one of its later conceptualizations. The PRO-SDLS was selected for the current study as a readiness measure for its self-directed learning variable. Following is a discussion of the scale, its development, and the reasons for utilizing it for this study. Because it was only recently developed, no other studies are available to review.

Merriam and Caffarella (1999) suggested that the lack of a richer research agenda in self-directed learning has been due in part to a shortage of robust critical discussion and data-based studies of later conceptual models. Stockdale (2003) noted that this problem is further compounded by the reliance of most quantitative researchers on the older and unrevised SDLRS.

Prior to the development of the PRO Model, studies on self-directed learning reported in the journals tended to view the construct from either the teacher-learning context or as being a personality characteristic of the learner. Brockett and Hiemstra (1991) suggested that self-directed learning should be conceptualized as including both the learning process, which they labeled "self-directed learning" and the learner characteristics, which they designated "learner self-direction." Selecting the PRO Model as the basis for the development of her scale, Stockdale (2003) sought to (a) identify and operationalize items that reflect the process and learner components of the PRO Model and (b) validate the scale items with other associated measures of self-direction.

According to Stockdale (2003), six research objectives guided her study. They are: (a) the development of a reliable measure of self-directedness; (b) content validation established by a panel of experts; (c) congruent validation of the measure of self-



directedness confirmed by comparing scores on the SDLRS with those of the PRO-SDLS; (d) construct validation verified by comparing scores on self-directed learning with logically related behavioral criteria; (e) convergent validity corroborated by the ratings by professors of the self-directedness of their students who participated in the studies; and (f) demonstration that PRO-SDLS scores add significant unique variance to the prediction of self-direction beyond scores from the SDLRS.

Stockdale's (2003) approach has significance for the study of self-directed learning by providing empirical evidence supporting the two components of the PRO Model, the teaching-learning framework and learner characteristics. It is also a means to validate the more recent conceptualization of self-direction presented in the PRO Model.

Although items in the PRO-SDLS relating to the teaching-learning component (designated as TL by Stockdale) were based largely on the PRO Model and the literature of adult education, research in the literature of psychology and educational psychology was utilized to help illuminate the learner characteristics associated with self-direction (designated as LC by Stockdale). Stockdale (2003) cites research by Deci and Ryan (1985, 2000) as helpful, especially their descriptors of motivation types that "provide operationalized definitions of motivations that may be utilized in item constructions for the learning characteristics (LC) component of the PRO-SDLS" (p. 63-64).

Deci and Ryan (1985, 2000) suggested that self-direction in learning occurs when the motivation for learning is intrinsically or extrinsically experienced by the learner but freely chosen. They noted that some extrinsically experienced motivations to learning may be perceived as other-directed by the learner because of the way they are expressed. Deci (1996) asserted that "people need to feel their behavior is truly chosen by them rather than imposed by some external source" (p. 30).

Stockdale (2003) viewed the psychological construct of self-efficacy as essential to operationalizing the learner characteristics (LC) component of the PRO-SDLS. She

utilized the literature of social cognitive learning theory to conceptualize self-efficacy. She noted that earlier self-directed learning studies explained motivation for self-directed learning in terms of a learner's self-confidence relative to learning activities. However, other adult learning scholars (Jones, 1994; Murphy & Alexander, 2000) contend that self-confidence in adult education should be defined according to Bandura's (1977a) social-cognitive learning theories. Bandura used the term *self-efficacy* (instead of *self-confidence*) and defined it as individuals' "judgment of their capacities to organize and execute courses of action" to attain desired personal results. Based on this, Stockdale suggested that self-efficacy, seen as "competence to perform self-directed learning activities" (p. 67), might be more predictive of actual self-directed learning. She concluded that "items assessing a student's perception of their self-efficacy for self-direction may be a valuable addition to the PRO-SDLS" (p. 67).

Her study involved a convenience sampling of day and evening school students attending The University of Tennessee, Knoxville. The students were enrolled in various sections of an undergraduate educational psychology course in human development and a graduate course in adult learning over a period of three semesters in 2001-2002. The development of the PRO-SDLS required three studies involving 178 students in the Spring 2001 study, 184 in Fall 2001, and 219 in Spring 2002.

The PRO-SDLS evaluates the two main components of self-direction in learning identified by Brockett and Hiemstra: the characteristics of the teacher-learner transaction (TL) and the characteristics of the learner (LC). Prior to engaging the students in her research, Stockdale submitted her survey to six experts in self-directed learning asking them to rate the scale for: (a) item representativeness, (b) item format, and (c) item appropriateness.

The first two studies served as pilot tests for one each of the PRO Model characteristics (Stockdale, 2003). Each of these two groups was asked to respond to (a)

the SDLRS by Guglielmino (1977), (b) an author-designed questionnaire to gather demographic information, and (c) a version of Stockdale's proposed scale reflecting either the TL or LC components. The Spring 2001 group responded to 24 items corresponding to the TL component of Brockett and Hiemstra's (1991) PRO Model of Self-Direction in Learning. The Fall 2001 participants in the study responded to eight items reflecting the LC component of the PRO Model. After each of these studies, Stockdale refined the scale based on the results of the subjects' responses.

In the third study (Spring 2002), participants were asked to complete a version of the PRO-SDLS that contained both the TL and LC components of the PRO Model. Following is a description of the results of each of the three studies and a summary of the findings relative to the project's six research objectives.

Results from the first study in Spring 2001 revealed a high level of internal consistency for the 24-item scale associated with the TL component of the PRO Model. All 24 items taken together yielded a coefficient of .86 on Cronbach's alpha. When five items reflecting the lowest scores were dropped, the estimated value of internal consistency raised the coefficient alpha to .87. Both scores are well above the commonly used criterion ( $>.70$ ) for acceptable reliability (Gay & Airasian, 2000). Stockdale (2003) found, however, that dropping the five items in order to maximize the reliability of the scale also reduced the relationship with variables associated with self-direction such as age, ACT scores, GPA, previous semester hours, and class performance points. As a result, Stockdale retained all 24 questions in the final scale.

In the second study (Fall 2001), 184 students responded to a version of the PRO-SDLS designed to measure the LC component of the PRO Model. The initial estimate of reliability for the eight items in this component generated a coefficient alpha score of .85. Eliminating four items with reliability scores of less than .25 raised the coefficient alpha to .86. However, eliminating the low-score items reduced by 50% the items relating to

the LC component. These four items alone were inadequate to evaluate this component in the scale. As a result, 15 new items were written reflecting the LC. These items were reviewed and edited by an expert in scale construction and ultimately added to the version of the PRO-SDLS administered in the third study.

Stockdale (2003) utilized the results from the third study (Spring 2002) to evaluate her overall findings in light of the six research objectives originally formulated to guide the study. Following is a summary of the objectives and the findings pertaining to them.

*Research Objective #1* was to develop a reliable measure of self-directedness. The resulting measure would be identified as the Personal Responsibility Orientation to Self-Directed Learning Scale (PRO-SDLS). Additionally, the scale was expected to achieve an internal consistency of at least .80 on Cronbach's alpha scale.

In the third study, 190 students completed the revised version of the PRO-SDLS. Beginning with 41 items, six items with less than .30 item-total score were dropped, leaving 35 items. The resulting coefficient alpha for these 35 items was .92. "The high coefficient alpha (.92) indicated that self-direction as measured here can be regarded as a unitary construct" (Stockdale, 2003, p. 114).

*Research Objective #2* was aimed at establishing content validation "using a panel of experts with positive agreement and high inter-rater reliability as to the representativeness of item samples, appropriateness of item content, and appropriateness of item format" (Stockdale, 2003, p. 118). Brockett and Hiemstra, authors of the PRO Model (Brockett & Hiemstra, 1991), and four other experts in self-directed learning provided their input relative to the representativeness and appropriateness of the PRO-SDLS. Comparing the results of the ratings by the experts with the psychometric data for each item, Stockdale concluded that six of the original items should not be included in the final version of the PRO-SDLS.

Stockdale (2003) also asked each rater to decide whether the items appropriately related to the TL or LC component of the PRO model. She concluded that although there was not a 100% agreement between the raters (only six of the 35 final items were unanimously agreed upon by the raters), there was strong agreement that 31 of the 35 items were representative of one or both components of the model.

*Research Objective #3* explored the congruent validity of the measure of self-directedness. To achieve this objective, Stockdale (2003) examined the relationship between scores from the SDLRS (Guglielmino, 1977) and the PRO-SDLS. Utilizing a Pearson product moment correlation coefficient, comparisons between the total PRO-SDLS scores and PRO-SDLS component (the TL and LC components) scores with SDLRS scores yielded an  $r$ -value of  $<.70$  for the relationships. As a result, Stockdale concluded that this research objective had been met.

*Research Objective #4* looked at the construct validity of the scale by “examining the relationships between scores on self-directedness and logically related behavioral criteria, including optional web-site use of supplementary materials, age, gender, GPA, course performance, and previously completed semester hours” (Stockdale, 2003, p. 123). Stockdale obtained this information in the demographics survey included in the research questionnaires. Her correlations revealed significant relationships ( $p <.01$ ) between scores on the PRO-SDLS and age, self-reported GPA scores, previously completed semester hours, and course performance. No significant relationship appeared between self-reported ACT scores and PRO-SDLS scores. Stockdale found a moderately significant relationship ( $r = .203, p <.05$ ) between web access and PRO-SDLS scores for traditional-aged (17-21) students. As a result, Stockdale was able to assert that “construct validity coefficients established significant relationships between PRO-SDLS scores and related behavioral criteria for self-direction” (p. 126).

In *Research Objective #5*, Stockdale evaluated the convergent validity of the PRO-SDLS by examining the relationship between students' scores on self-directedness and ratings by professors on the self-directedness of those same students. This particular comparison occurred with the group of graduate students involved in the study who were attending a graduate adult learning course. Stockdale reported there were no significant relationships between the professor's ratings of students' self-directedness and students' outcomes on the PRO-SDLS or the SDLRS. As a result, convergent validity was not established.

*Research Objective #6* examined whether scores on the PRO-SDLS would add significant unique variance to the prediction of self-direction beyond scores on the SDLRS. Utilizing a hierarchical multiple regression technique, Stockdale (2003) was able to determine that the PRO-SDLS improved on the prediction of GPA, age, and course performance over the SDLRS. The results of the analysis demonstrated that research objective #6 was accomplished.

Stockdale (2003) concluded that, based on the results of her study, there is “a link between self-direction, as measured by the PRO-SDLS, and successful college outcomes” (p. 143). In her recommendations for further research, however, she noted that the “responses employed to establish reliability were drawn from an extremely homogeneous sample” (p. 151). She recommended that the PRO-SDLS be administered to students in different settings or disciplines. One of the objectives of this research is to provide further data on the reliability of the PRO-SDLS among university students taking courses in an online setting.

Another major component of the current research is to determine the correlation between self-directed learning readiness and satisfaction with an online learning experience. The PRO-SDLS was chosen because of its specific application to university-level students and because it reflects a later conceptual model of self-directed learning.

The remaining sections of this literature review will note the research done on the other selected readiness factors: (a) readiness relative to computer-related experience, (b) readiness based on experience with online courses, (c) readiness based on the learner's experience with online collaborative environments, (d) readiness based on the learner's confidence in the online learning environment, (e) readiness deriving from experience with the subject matter, and (f) readiness relative to the age of the participant.

### **Computer-Related Experience**

Several authors emphasized the importance of a level of technical competency that was sufficient to perform the requirements of an online course (Brosnan, n.d.; Burnett, 2001; Daughenbaugh et al., 2002; Gunawardena & Duphorne, 2001; Swan, 2001). One study involved surveying technicians' perceptions about web-based courses in the University of Texas system (Cheurprakobkit, Hale, & Olson, 2002). Not surprisingly, perhaps, these technical support personnel noted that technical competency plays a role in student satisfaction with online studies.

Computer-related skills in this context refer to basic abilities with the computer itself and the Internet. Basic computer abilities include such proficiencies as familiarity with the computer devices. These devices include the mouse, keyboard, monitor, and graphical interfaces. Computer related skills also involve a level of software knowledge necessary to function in the online class environment.

Cahoon (1998) also noted that in order to successfully apply these skills to real-world situations individuals need a level of conceptual understanding in addition to memorizing step-by-step skills. Internet skills learning requires learners to construct mental models allowing them to reason about problems, predict probable events, and discover solutions.

Because online courses require computer use, learners must use them and related technologies regardless of their degree of computer skills. Collins (1998) suggested that when adults are confronted with computers and instructional technologies, they display a variety of reactions ranging from enthusiastic adoption to disabling fear. Since the computer is an indispensable tool for Web-based distance education, it is reasonable to assume that the level of an individual's knowledge of and comfort with basic computer and Internet functions would relate to satisfaction in the online learning experience.

Some studies have suggested that computer-related skills are linked to a student's positive experience in the online learning environment. A positive experience might mean successful completion of the course, satisfaction with the experience, and/or a willingness to engage in a subsequent Web-based course. Guglielmino and Guglielmino (2002, February) examined learner characteristics that related to successful completion of an electronic distance education experience. Their study of a relatively small sample of educators, trainers, and students (N = 76) revealed that "the most highly rated learner characteristics rotated back and forth between the more technical and computer- and Internet-related skills . . . and those skills already identified with self-directed learning" (p. 269).

Cheurprakobkit, Hale, and Olson (2002) focused on the perceptions of the technical staff responsible for facilitating the production of Internet-based course materials at the University of Texas. The technical facilitators were surveyed about their perceptions of faculty and students involved in the online learning enterprises of the University. According to the study, the technical staff asserted that students in online courses need to have basic computer knowledge in order to have a satisfactory online experience. Their view of how to improve the overall quality of Web-based courses was, in order of importance, "(1) more and better technical support, (2) more training (e.g.



more up-front information about how Web-based courses function), and (3) better course evaluation” (p. 255).

Other studies focusing on the role of computer and Internet skills suggested that while such skills are important, they don't contribute directly to satisfaction or other positive outcomes for online learners. They may, however, contribute directly to other factors, such as self-efficacy or learner autonomy, which in turn correlate with positive outcomes.

In her study of satisfaction based on computer self-efficacy and other factors, Lim (2001) examined, in addition to computer self-efficacy, years of computer use, frequency of computer use, computer training, Internet experience in a class, and participation in a workshop for a Web-based course. Reasoning from Bandura's (1977a, 1977b) research on the concept of self-efficacy, Lim defined computer self-efficacy as “one's belief in [sic] ability to use computers and to learn new computer skills” (p. 43). She cited other studies that demonstrated that computer experiences, frequency of computer use, and computer training sessions influence computer self-efficacy. Interestingly, her research found that computer self-efficacy was the only predictor variable that was significantly related to satisfaction.

Other studies noted the link between computer skills and self-efficacy or autonomy. Huang (2002) studied student perceptions in an online mediated environment and found that “computer skills in Microsoft Office and Web browsers were significantly related to learner autonomy” (p. 415). DeTure (2004), studying cognitive style and self-efficacy in students participating in online distance education, discovered that field independent students (based on results of the Group Embedded Figures Test for field dependence/independence) tended to have higher online technologies self-efficacy. However, these students did not receive significantly higher grades than students judged to be field dependent with lower online technologies self-efficacy.

Based on the above studies, computer-related readiness has been demonstrated to be linked to participant satisfaction or other measures of successful outcomes in online courses. As some of the studies indicated, this relationship is not always a direct one but that it may have a positive correlation to self-efficacy or autonomy, which then has a positive correlation with satisfaction.

### **Experience with Online Collaborative Environments**

Experience with online collaborative environments is closely associated with computer-related experience noted in the previous section and experience with online courses mentioned in the next section. As a readiness factor in the current study, it refers to the ability to use a variety of Internet client software such as Web browsers, e-mail programs, and news readers. Although collaboration between participants is not necessarily the result of utilizing these and similar programs, experience with them enhances the possibility that it will occur.

More than just technical knowledge about how to use the software programs, online collaborative experience involves participation in shared media such as e-mail, chat rooms, various courseware programs, and team rooms. Cahoon (1998) described a skillful Internet user as “one who is able to send and reply to e-mail, search for and find Web information, download and install software from on-line archives and participate in Web-based conferences and newsgroups” (p. 7).

Eastmond (1994) noted that online distance students bring various personal factors to the learning equation among which are a variety of computer skills. He observed that the extent and variety of these skills “particularly those related to basic computer operation and networking, stand them in good stead for this experience” (p. 146).

In her study of student cognitive style and self-efficacy, DeTure (2004) affirmed that distance education requires interfacing with technologies in order to facilitate other identified interactions in distance education. Of particular interest in her study is the assertion that the “student’s ability to utilize the delivery system technology and resources affects the level of interaction in a distance education setting” (p. 25). Interestingly, her study found that students who possessed higher online technology self-efficacy did not receive higher grades in Internet-based classes than those with lower online technology self-efficacy. She rejected the hypothesis that self-efficacy relative to online technologies can predict student success (based on GPA) in Web-based distance education courses.

Guglielmino and Guglielmino (2002), on the other hand, determined that experience with computer- and Internet-related skills were among the most highly rated participant characteristics important for success in online learning. In their study, 76 educators, trainers, and students were surveyed to determine their opinions of the relative importance of learner characteristics identified as critical for success in electronic distance learning. The researchers defined success in terms of lower learner frustration and drop-out rates. Among the Internet-based skills those surveyed rated most highly were the abilities of: (a) sending and responding to e-mail, (b) attaching and opening files in e-mail, and (c) utilizing search engines effectively.

In their research, Gunawardena and Duphorne (2001) stressed the need for participant readiness in online collaborative environments and inquired whether there is a relationship between learner readiness in this area and satisfaction with the online experience. Readiness relative to collaborative environments included (a) prior email experience, (b) prior listserv experience, and (c) prior comfort with computer-mediated communication (CMC). Their study showed a moderate, positive correlation between learner readiness and satisfaction ( $r = .27, p < .05$ ). They noted that the results “indicate

that participants who felt more positively about their readiness to participate in an academic computer conference were more satisfied with the conference” (p. 14).

These studies underscore the research relative to participant experience with online collaborative environments. They suggest that prior experience with various online communication and collaboration software likely enhances the potential for satisfaction in the online environment.

### **Experience with Online Courses**

The demographic of previous experience with online courses has been examined in several research studies focusing on student perceptions about the Internet-based course environment (Arbaugh, 2001; Gunawardena & Duphorne, 2001; Huang, 2002; Lim, 2001; Litchfield, Oakland, & Anderson, 2002). It is an important variable since there is an expectancy that experience in an endeavor may afford an increased level of self-confidence in repeating similar experiences. Experience has been shown to be predictive of self-efficacy in computer-related activities (Delcourt & Kinzie, 1993). Huang (2002) suggested that prior experience in the online environment is an obvious and important variable for investigation.

Several studies (Arbaugh, 2001; Gunawardena & Duphorne, 2001; Lim, 2001) utilized previous experience with online courses as a predictor variable for participant satisfaction in the online course environment. Lim’s (2001) study of 235 adult learners taking a Web-based distance education course at five institutions looked at, among other things, the relationship between the number of Internet-based courses an individual had taken and satisfaction. Although she did not discover a direct relationship to satisfaction, her study noted a positive correlation between the number of courses using the Internet and computer self-efficacy. She concluded that participants with higher computer self-efficacy scores were more likely to be satisfied with their Internet-based course.

Gunawardena and Duphorne (2001) included prior comfort with computer mediated conferencing (CMC) as one of the satisfaction variables in their study. They determined that individuals who had developed a level of comfort with the medium in prior experiences generally felt more positive about their ability to adopt CMC-related learning approaches and were more satisfied with their learning experience. They noted that “prior technical and conferencing skills” (p. 23) constituted part of the profile for participants who were more satisfied with computer conferencing.

One of the more interesting studies was Arbaugh (2001), in his study of 25 Web-based class sections offered by the MBA program at the University of Wisconsin, Oshkosh, from Summer 1999 through Spring 2001. Although he was primarily examining the relationship between instructor immediacy behaviors and student satisfaction, his study also found prior student and instructor experience with Web-based courses to be significant predictors.

What makes the study interesting is that Arbaugh (2001) found that prior student experience in online learning was positively associated with satisfaction with the delivery medium. However, prior student experience was negatively associated with course satisfaction. Arbaugh conjectured that the latter finding might be explained by students with previous online learning experience encountering a greater variety of instructors, some skillful in the online environment, others not so skillful. Those students, he assumed, would have higher expectations of their instructors. “For them, the novelty effect of Internet-based courses has likely worn off (Gibson & Gibson, 1995) and as a result they may be less tolerant of bad course experiences regardless of instructor experience level” (p. 49).

These studies suggest that prior experience with Internet-based courses may be a factor in participants’ satisfaction with the online course. Such experience may be

directly or indirectly related to satisfaction and may correlate positively or negatively with satisfaction.

### **Confidence in the Online Learning Environment**

Perceptions about learning via the Internet, especially where the course is taught with little or no face-to-face interaction with the instructor or other participants, may correlate with satisfaction with the learning experience. Some students with little confidence in the medium may find themselves in a virtual course because it was one they needed but was not offered in a more traditional format. Howland and Moore (2002) observed that “initial perceptions of the online environment may influence a student’s opinion of learning outcomes” (p. 191).

Among the postulated bases for students not having confidence in the virtual environment is: (a) their inability to conceive of learning effectively taking place in any setting other than the time-honored traditional classroom, and (b) possessing learning styles incompatible with the Internet-based classroom. The former view certainly remains characteristic in some segments of academia. Jaffee (1998) noted that the virtual classroom dematerialized the physical classroom setting and “for many faculty it represents a radical departure from prevailing practice that is incongruous with their understanding of the essential nature of teaching and learning” (p. 25). Some students have the same reservation, perhaps influenced by faculty attitudes or because Internet-based learning is very different from what they experienced before. Howland and Moore (2002) reported that “one student expressed ‘serious doubts that the quality of learning that could be carried out over the Internet’ in comparison to face-to-face environments” (p. 191).

In their meta-analysis, Allen, et al. (2002) found that learning style may “impact as a form of individual difference on the issues of distance education” (p. 92). They noted

that one student may prefer distance learning but another react strongly against it. They concluded, “The link to student style of learning may indicate the need for diagnosis or providing a course in multiple formats” (p. 92). Howland and Moore (2002) reported one student as stating, “I do not care for the Internet-based learning environment. I do much better in a face-to-face mode” (p. 191). They suggested that students with a more positive expectation for learning in the online environment may experience better outcomes.

Other studies included queries about the participants’ view of online learning. Research by Gunawardena and Duphorne (2001) resulted in a profile of the characteristics of students who indicated satisfaction with the online environment. Among the characteristics was “more positive feelings toward the medium” (p. 23). Also students who were less satisfied with the online learning experience exhibited less positive feelings toward the medium.

Smith, Murphy, and Mahoney (2003) tested the potential of McVay’s (2000) Readiness for Online Learning questionnaire for research and practice. They administered the instrument to 107 undergraduate university students participating in a range of courses in the United States and Australia. A factor analysis of the results yielded a two-factor structure that was “readily interpretable in a framework of existing theory” (p. 57). One factor structure, which they interpreted as “comfort with e-learning” (p. 61), included an item relating to the participant’s confidence in the online learning medium. The item stated “I feel that online learning is of at least equal quality to traditional classroom learning” (p. 62). They concluded that confidence in the online medium contributed to readiness for the experience.

As Internet-based courses become more ubiquitous at the college and university level, student confidence in the medium may become somewhat less significant when gauging satisfaction with the virtual learning experience. For now, however, these

studies, all reported within the past four years, suggest that participant confidence in the online learning environment is still an important factor.

### **Experience with the Subject Matter**

Several studies cited the need to consider pre-requisite or prior course subject-matter knowledge as a readiness factor in online learning (Anderson & Garrison, 1998; Chou & Tsai, 2002; Eastmond, 1994; Gunawardena & Duphorne, 2001). Chou and Tsai noted that “features of Web-based curricula are consistent with recent ideas about constructivist practice in education” (p. 631). Constructivist theory emphasizes that knowledge is actively constructed by the learner and that instruction must take into account learner’s prior knowledge.

Interestingly, a study by Hoz, Bowman, and Kozminsky (2001) challenged the concept of required prerequisite courses noting that the established hierarchy between courses and between subjects in a discipline is questionable. Although their study was limited because it was confined to a specific discipline, geological science, and to two courses within the discipline, it demonstrated that a prerequisite course in geology had little or no effect on students learning the contents of a subsequent course. They observed that “theoretically, the subsequent course could even be taught without its ‘prerequisite’” (p. 206).

Nevertheless, Hoz, Bowman, and Kozminsky (2001) affirmed that some prior knowledge of the subject matter is essential to successful learning. Learning can be facilitated “by taking proper means to ensure that students’ knowledge includes ideas of the same nature (dimensions) as the to be learned [sic] contents” (p. 207).

Instructors at the Stanford Center for Professional Development (SCPD) also recognized the need for remedial instruction in areas in which students’ prerequisite knowledge for courses taught online was somewhat lacking. They developed a



comprehensive portfolio of “courselets” which they described as integrated and self-contained sets of learning materials designed as a custom tutorials offered online to support Stanford engineering, science, and engineering management courses (Harris, DiPaolo, & Plummer, 2004). These courselets were considered effective for remedying weak prerequisite course knowledge. But instead of requiring a full prerequisite course, which the student might not need in its entirety, the courselets provided learning in smaller doses designed to address student’s specific requirements.

These studies emphasize the necessity of adequate prerequisite knowledge for courses taught online. Part of this research was designed to examine the relationship between participants’ perceptions of their own prerequisite familiarity with the subject matter and their satisfaction with the course.

### **Age**

Although age is not necessarily a factor that would be naturally associated with satisfaction in an online course, it has been shown to be a factor in student’s attitudes toward computers (Morris, 1988) and course completion in higher education distance learning (Willis, 1992). It was also a characteristic used for screening students desiring to participate in an online course in human resource development at the University of Illinois at Urbana-Champaign (Kuchinke et al., 2001).

Huang (2002) included age in his study as an “obvious and important [variable] to be to be investigated in computer-mediated environments (Wilson, 2000)” (p 410). Citing Willis (1992), Huang observed that students between 30 and 50 years old are most likely to complete a distance learning course successfully. However, younger students are more likely to complete a distance course than older students. This observation was relative to distance education in general, and may or may not apply to online distance education.

Huang (2002) found that age is related to student perceptions of online distance education in: (a) interaction between a learner and the instructor or among learners; (b) course structure that refers to the “rigidity or flexibility in the course organization and delivery” (p. 410); and (c) interface with the courseware, Blackboard in this instance, which served as the medium for the course online. Huang inferred from these correlations that “the instructor or instructional designer needs to take learners’ ages into account in the process of designing an online course” (p. 410).

Since age has been shown to be a factor in learners’ relationships to computers and online courses, it may also be related to satisfaction directly or indirectly. If, for example, age is related to the students’ perceptions of the courseware interface, satisfaction may then be related to how well the courseware accommodates the participant’s age-related abilities.

### **Summary**

This review of literature pertinent to the online learning environment demonstrates that the quality of Internet-based course offerings can be measured in part by participant satisfaction with the experience. Recommendations for assuring quality also include participant readiness as one means to improve the likelihood of satisfaction with an online course.

Satisfaction can be expressed as an overall regard for the Internet-based learning experience and it can be conveyed as an impression of various components of the experience. Among the components utilized in various studies as expressions of student satisfaction with the learning experience have been: satisfaction with the technical support and interactions with the instructor, other participants, and the course material.

Some studies also indicate that there is a relationship between participant readiness and satisfaction. Because the online learning experience is complex, as is the

traditional classroom-based experience, students must possess a variety of competencies in order to make participation possible. Numerous studies have examined the correlation between an assortment of competencies and student satisfaction with the Web-based experience. Readiness factors chosen for this study focus on (a) self-direction, (b) computer-related experience, (c) experience with online collaborative environments (d) experience with online courses, (e) confidence in the online learning environment, (f) experience with the subject matter, and (g) age.

The next chapter presents a description of the method utilized for measuring readiness and gauging satisfaction in the population of online learning participants chosen for this study. Subsequent to that, is a description of the findings of the research along with conclusions and recommendations growing out of its results.

## **CHAPTER III**

### **METHOD**

The review of literature demonstrates there is a need to study factors that influence satisfaction levels in online courses. Research suggests that understanding the factors influencing satisfaction may provide a means of predicting the extent to which a specific online course is a “good fit” for a potential participant. Research into the relationship between satisfaction and course completion may also reinforce efforts on the part of instructors and program planners to ensure that participants have a satisfying experience without sacrificing educational quality. Included in this chapter is a discussion of the research and analysis methodologies employed in this study.

#### **Population**

The population for this study consisted of students enrolled in Internet-based distance learning courses offered through The University of Tennessee system between the Summer 2002 and Spring 2004 terms. It was limited to graduate and undergraduate students who were taking courses for college credit, professional certification, or career advancement. It was further restricted to participants in courses that were offered completely online with no face-to-face components.

Distance Education and Independent Study (DEIS), a section of the University’s Office of Outreach and Independent Study, provided a list of 156 courses that fit the criteria for the study. This list was then submitted to the Office of the Registrar in order to obtain a list of students in the courses. The Registrar’s office provided a list of the 931 names, permanent and local postal addresses, and University e-mail addresses for participants in each of the courses. The entire population was invited to complete an online or paper-based questionnaire. Of that number, 108 were undeliverable either by e-mail or postal mail.

The decision to utilize the whole population resulted from being able to obtain only the University e-mail addresses of the participants. Since students' e-mail accounts expire after their separation from the University, it was assumed that some individuals could not be contacted at the online address provided. Additionally, the researcher anticipated that some of the postal addresses obtained from the Registrar's office would no longer be current. Since the number of invalid addresses was not known beforehand and the entire population consisted of a number manageable by an online survey, the study proceeded utilizing the entire group.

The researcher assumed that contacting the entire population would yield a sufficient number of respondents necessary for a proposed multiple regression analysis of the survey results. According to Gall, Gall, and Borg (2003), the sample size must be sufficient for the number of variables tested. For multiple regression analysis, they suggest a minimum of 15 subjects for each variable included in the analysis (p. 347). Since this study included 11 dependent and independent variables, the minimum number of respondents needed to be at least 165. The actual response rate was 38.2% of the deliverable invitations to participate in the study for a total of 314 respondents.

### **Research Design**

The design of the study was correlational. According to Gall et al. (2003), correlational research designs refer to studies in which the purpose is to discover relationships between variables by using correlational statistics. Ary, Jacobs, and Razavieh (1996) noted that correlational studies are especially useful in trying to understand a complex construct. Additionally, Gall et al. noted that correlational designs are useful for predicting "scores on one variable from participants' scores on other variables" (p. 325).

This design appeared appropriate to answer the research questions since they were intended to identify relationships between the variables. Correlational statistics also seemed appropriate because of the relatively large number of relationships represented in the conceptual framework and because one of the research questions addressed the potential to predict satisfaction based on a combination of readiness scores.

### **Variables**

For this study, the dependent variables were the satisfaction factors consisting of satisfaction with (a) the overall learning experience, (b) the technical support, (c) interactions with the instructor, (d) interactions with other participants, and (d) interactions with the course content. The independent variables were the readiness factors identified as (a) self-direction, (b) computer-related experience, (c) experience with online collaborative environments (d) experience with online courses, (e) confidence in the online learning environment, (f) experience with the subject matter, and (g) age. The demographic factors also helped to describe the study population.

### **Instrumentation**

Two instruments and a demographic form were used in this study: (a) the PRO-SDLS (Stockdale, 2003); (b) a readiness and satisfaction survey developed by the researcher for this study; and (c) a demographic questionnaire, also developed by the researcher. The entire survey is included in Appendix A. Each of the principal components is described in the following sections.

#### ***The PRO-SDLS***

The PRO-SDLS was developed by Stockdale (2003) as her doctoral dissertation at The University of Tennessee. This 25-item instrument is an attempt to “empirically validate new ways of studying self-direction that are informed by more recent conceptualizations of self-direction . . .” (Stockdale, p. 2).

The PRO-SDLS is appealing for this study for three reasons. First, the PRO-SDLS is based on the concept put forward by Brockett and Hiemstra (1991) that personal responsibility is central to understanding self-direction in learning. The authors stated that “by personal responsibility we mean that individuals assume ownership for their thoughts and actions” (p. 26). This characteristic of self-direction in learning is certainly a component of the online learning environment because (a) the learner must accept responsibility in the choice of a medium that is distinctly different from the traditional classroom and (b) the individual has, as in every learning situation, a personal responsibility for satisfying the requirements of the course. Since the learner may participate without face-to-face interactions with fellow students and instructors, persistence may require the learner to exercise greater personal responsibility than in learning situations with face-to-face interactions.

Second, the PRO-SDLS is appealing for this study because it is especially applicable to university students. Additionally, the instrument was developed specifically for use in class settings. Stockdale (2003) noted that one of the delimitations of her study since was that her sample was taken from graduate and undergraduate students attending a large, southeastern, public institution. Because of this focus, the study seems especially applicable for use with university-level students taking courses in an online environment. Using it in the online environment has the added benefit of testing its reliability in a different university population.

Third, the current study provides an opportunity to test the reliability of the PRO-SDLS using a different population than in Stockdale’s (2003) study. Stockdale reported a high coefficient alpha (.92) for the items on the PRO-SDLS. Her findings relative to reliability are reviewed in Chapter IV of the current study.

Stockdale graciously made the PRO-SDLS available for use with the current study. A copy of the correspondence between the researcher and the author of the study granting permission to the researcher to use the instrument is in Appendix B.

### ***Readiness and Satisfaction Survey***

An important component of this study was to assess the level of readiness for the online learning experience and to inquire about the learners' satisfaction with it. In addition to their response to the PRO-SDLS, utilized to assess participants' readiness for self-direction, respondents were asked five questions to rate their readiness for the online environment and course content. Readiness based on age was taken from the demographic questions. The survey questions were constructed to assess participants' readiness to participate in the online course based on (a) self-direction, (b) computer-related experience, (c) experience with online collaborative environments (d) experience with online courses, (e) confidence in the online learning environment, (f) experience with the subject matter, and (g) age.

Additionally, respondents were asked to rate their overall satisfaction with the online experience. The survey questions focused on participants' satisfaction with (a) the overall online learning experience, (b) technical support, (c) interactions with the instructor, (d) interactions with other participants, and (e) interaction with the course content.

Responses were entered on a 5-point Likert scale reflecting the respondents' personal perceptions of readiness and satisfaction. The scale was constructed to reflect incremental levels of perceived readiness and satisfaction from low to high. The scale regarding satisfaction also included a selection of "not applicable."



### ***Demographic Questionnaire***

Of the information collected in the demographic questionnaire, only age was used as an indicator of readiness in this research. Other demographic variables sought were the respondents' gender, ethnic origin, marital status, and educational level. These were used primarily to provide an overall profile of the respondents. Other questions focused on the number of online courses participants had completed, whether or not they completed the course about which they answered the questionnaire, whether or not they would be willing to take another online course, and the approximate distance the participant lived from the educational institution offering the course. Of interest also was whether a participant was required to meet with fellow students as a group during the course. The only open-ended question focused on the reason for the participant's taking the course online. Although these results were not used as part of the statistical analysis in the study, they were useful in providing a better description of the sample.

### **Pilot Testing**

Since part of this study involved the development of a questionnaire to determine the participants' perceived level of readiness and satisfaction, the proposed survey questions were tested with a small group of individuals similar to the target population prior to being used with the study sample, as recommended by several authors (Gall et al., 2003; Gay & Airasian, 2000; Leedy & Ormrod, 2001). Gall et al. described the purpose of the pilot study as a means to "develop and try out data collection methods and other procedures" (p. 37). According to the authors, the pilot study should help to identify and solve problems more easily than during the time when the main study is underway.

Both the pilot study and the survey of the research population were administered online by personnel in the Office of Information Technology (OIT) at The University of Tennessee. Through its Statistical and Research Consulting department, OIT provides statistical consultation to the University's students, faculty, and staff as well as expert

technological assistance in collecting and preserving data in Internet-based studies. A representative assisted the researcher in formatting the survey for effective online presentation.

A group 15 individuals who had taken online higher-education courses for credit or certification were invited to participate in the pilot study. An e-mail to each of the potential participants explained that they would be evaluating whether the questionnaire was clear and concise and if they encountered any difficulty utilizing it online. A total of 9 individuals subsequently responded to the request and took the survey online.

The researcher provided participants a URL address by which they could access the online version of the questionnaire. The online survey was identical to the one utilized in the main study except that the participants were asked to respond to additional items designed to reflect their impressions of the experience. Specifically, they were asked (a) whether the survey questions and statements were clearly written, (b) whether they had any problems accessing the survey or filling it out online, and (c) whether they had any comments or suggestions regarding the survey. Additionally, OIT included two questions about the type of browser and the kind of computer operating system respondents used to access the questionnaire.

None of the participants in the pilot study reported any problem understanding the instructions or survey items. Two individuals reported difficulty receiving the initial e-mail because of a sensitive spam filter. The problem was resolved by resending their invitations to alternate e-mail addresses. Their responses also caused the researcher to reword the subject line of the e-mails in order to minimize possible conflicts with spam filters.

### **Distribution Procedure and Data Collection**

Prior to obtaining any contact information for course participants, the researcher complied with the University's human subjects requirements and filed Form A, *Certification for Exemption from IRB Review for Research Involving Human Subjects*. The certification was approved on April 8, 2004. Participants were notified that completing and submitting the survey constituted their informed consent to be included in the study.

Participants were then invited to participate in the study by an e-mail sent to each person in one of two initial mailings on September 23 and 24, 2004. Since the Registrar's office was unable to provide an e-mail address for 156 of the participants, a postal letter containing the same message as the one sent via e-mail was mailed to these individuals on September 27. Of the e-mails sent to participants, 146 were returned undelivered. A subsequent postal invitation to participate in the study was sent to those individuals on September 30.

The e-mail invitation contained a hot link to the online survey to facilitate quick access. The researcher assumed that some of individuals might prefer not to submit their responses online and provided a link to a web-site that contained a copy of the survey that could be printed, completed, and returned by postal mail. Invitations sent through the postal service contained the URL addresses of the survey and web-site.

Although participants were assured that no attempt would be made to link their names to their survey responses, they were asked to voluntarily provide their e-mail address as a means of eliminating them from follow-up reminders. E-mails and letters were sent to non-responders approximately 2 weeks after the initial invitation reminding them of the survey and asking again for their participation. Self-addressed return envelopes were sent with both the first and second invitations to participants contacted via postal mail.

Individuals who had not responded to the survey approximately 2 weeks after the first reminder received a second reminder. Course participants who had received the first two letters via postal mail received a postcard indicating the survey was about to close and again inviting them to return their responses.

Prior to this third mailing, the researcher discovered that the U.S. Postal Service endorses an online service that facilitates composing and mailing correspondence from individuals or businesses. Through it, the researcher was able to produce the postcard online and send it to the intended recipients at about the same cost and in a fraction of the time necessary to perform the same task manually.

A large number of online course participants had working e-mail addresses when the initial invitation was sent out. Individuals in this group who had not responded to the first e-mail received a reminder via e-mail 2 weeks after the initial invitation to participate. However, since it was not known what percentage of those recipients were no longer checking their University e-mail accounts or had electronic filters potentially blocking the survey invitations, a third contact was made via postal mail. This letter was similar to the second one sent to those who received only postal contacts explaining the study and asking again for their participation.

As an incentive to complete the survey, invitees were offered an opportunity to participate in a drawing for one of four gift certificates from Amazon.com in the amount of \$25.00. Participation in the drawing was optional and required that an individual provide a contact e-mail address. Four participants were selected at random to receive the gift certificates from the list of those who provided an e-mail address and who indicated they desired to participate in the drawing.

The survey resulted in 328 responses; of these 32 declined to participate in the drawing. Only two of the surveys were completed and returned via postal mail; the

remaining participants filled out the questionnaire online. A copy of the correspondence to the research population is included in Appendix C.

### **Overview of Statistical Analysis**

The statistical procedures used to analyze the data obtained from the survey included descriptive statistics, correlations, and multiple regression. This section reviews the reasons for selecting these procedures and details the criteria that guided their execution. Since this research incorporated the entire survey population, sampling procedures were unnecessary. Where applicable, the research question is stated followed by a description of the statistical procedure utilized.

#### ***Descriptive Statistics***

Descriptive statistics give a picture of the properties of samples or, where the complete data are available, a population (Ferguson & Takane, 1989). Ott (1992) noted that a common presentation includes the calculation of numeric statistics such as frequencies and percentages that are displayed in tabular format. More specifically, frequency and percentages are often portrayed in measures of central tendency and measures of variability (Gall et al., 2003).

In this study, respondents completed a demographic section that served to describe the characteristics of the survey population. The researcher employed descriptive statistics to present the results of these responses.

#### ***Correlations***

This study focused on the correlations between the factors and utilized the commonly applied Pearson product-moment correlation coefficient in research questions 1-3. According to Ary et al. (1996) and Gall et al. (2003), the Pearson scale was appropriate because it was applied to the interval data collected in the survey and because

research questions 1-3 are expressed as bivariate relationships. The first three research questions were:

1. Is there a significant relationship between the individual scores for the readiness factors and the composite satisfaction score?
2. Is there a significant relationship between the individual scores on the readiness factors and the individual satisfaction factors?
3. Are there significant relationships among the readiness factors of self-direction, computer-related experience, experience with online collaborative environments, experience with online courses, confidence in the online learning environment, experience with the subject matter, and age?

#### ***Step-Wise Multiple Regression***

The fourth research question was: Is there an optimal combination of readiness factors that would reliably predict learner satisfaction with Internet-based classes? In studies with more than one independent variable, Pedhazur (1997) observed that there is the possibility that the variables might be intercorrelated or that they might “interact in their effects on the dependent variable” (p. 3). He further stated, “Multiple regression analysis... is eminently suited for analyzing collective and separate effects of two or more independent variables on a dependent variable” (p. 3). Regression analysis with more than two independent variables is quite complex, involving calculations best handled through matrix algebra (Pedhazur, 1997). Following the advice of Pedhazur, analysis in this study relied on the SPSS statistical analysis software to perform the required mathematical computations.

Since the aim was to determine if there was an optimal combination of readiness factors that would predict learner satisfaction, multiple regression statistics seemed the

most promising approach to obtain the answer. Kerlinger and Pedhazur (1973) summarized the objective of this method:

On the basis of knowledge of one or more independent variables, the researcher wishes to develop a regression equation to be used for the prediction of a dependent variable, usually some criterion of performance or achievement. The choice of independent variables in the predictive framework is determined primarily by their potential effectiveness in enhancing the prediction of the criterion. (p. 281)

Based on this, the aim of the fourth research question was to determine either the best combination of independent variables or a single variable that would best predict satisfaction.

### **Summary**

Four research questions guided this study. They inquired about possible correlations between the readiness factors and the satisfaction variables (Questions 1 and 2) and potential correlations between the independent variables (Question 3). The fourth question focused on discovering any possible combination of the readiness variables that could reliably predict learner satisfaction with Internet-based courses.

Research tools consisted of the 25-item PRO-SDLS, an instrument developed by Stockdale (2003), and a 10-item readiness and satisfaction questionnaire developed by the researcher and a series of demographic questions. A pilot test obtained feedback on the survey's clarity and ease of use and as a result, the researcher made minor changes to the subject line of e-mails inviting participation in the study.

The population consisted of 931 individuals who had taken online courses from The University of Tennessee for college credit, professional certification, or career advancement. The entire population was invited to participate in the research via e-mail

where a digital address was available or by postal mail if not. Invitees were provided with a link to an online survey form and a link to a web-site where they could download the questionnaire if they preferred not to take the survey online. Two additional mailings encouraged nonrespondents to participate.

An SPSS database received the responses from the online survey form for analysis. The surveys returned by postal mail were entered manually into the SPSS program. Statistical testing involved descriptive statistics, correlational analysis, and multiple regression analysis. The following chapter will describe the results of the statistical analysis.



## **CHAPTER IV**

### **ANALYSIS OF DATA AND RESULTS**

The purpose of this research was to investigate the relationship between selected readiness factors and selected satisfaction variables reported by participants in online higher education courses during the summer 2002 through the spring 2004 terms at The University of Tennessee. This study also examined correlations between the independent (readiness) variables. Responses from 314 individuals were analyzed in order to address four research questions. The following sections in this chapter will consider: (a) the population and survey response rate, (b) demographic profile of the respondents, (c) descriptive survey data, and (d) analysis of the four research questions.

#### **Population and Survey Response Rate**

As was indicated in Chapter III, participants in Internet-based courses offered by the University of Tennessee were invited via e-mail and regular mail to participate in an online survey regarding their perceptions of readiness and satisfaction relative to the experience. The online survey consisted of a “Readiness and Satisfaction Questionnaire” containing the Personal Responsibility Orientation to Self-Direction in Learning Scale (PRO-SDLS) (Stockdale, 2003), a readiness and satisfaction survey constructed by the researcher, and a demographics section. The survey was also available in paper format for those who were reluctant to complete the online form.

With the assistance of the University’s Distance Education and Independent Study office, 931 individuals were originally identified as having participated in online courses during the semesters studied. These individuals received an invitation to participate in the survey. Of that number, 108 invitations were undeliverable to either the e-mail address or postal address obtained for the participant. Thus, the number of individuals to whom invitations were ultimately delivered totaled 823.

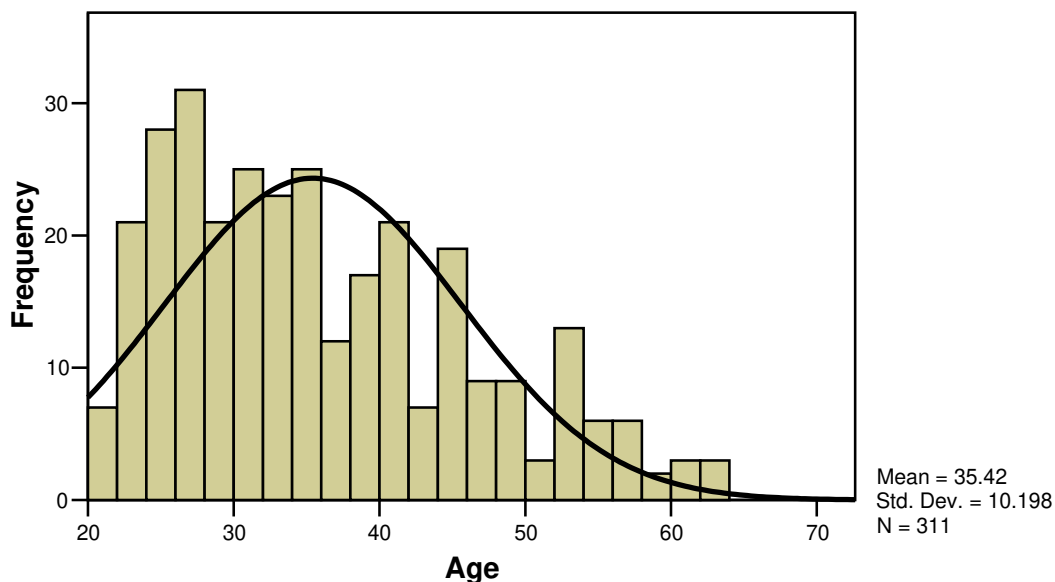
Since some students utilize e-mail accounts other than the one provided by the University, surveys delivered to their University accounts may not have been opened. This might be even more likely if the student was no longer taking courses. Since student e-mail accounts remain active for a period of one year after an individual leaves the institution, it is reasonable to assume that some of the surveys were never opened because they were delivered to an e-mail account the individual no longer checks.

Of the 823 questionnaires sent, 314 were completed and returned; 312 individuals responded to the online version and two returned completed paper questionnaires via postal mail. Using the adjusted total of invitations delivered ( $N = 823$ ), the overall response rate was 38.2%.

### **Demographic Profile of Respondents**

Survey participants were asked to respond to questions relating to age, gender, race, marital status, highest level of education attained, and how far they lived from the University. In addition to these questions about personal characteristics, the demographics section contained several questions relating to the students' experience with online courses. These questions focused on how many courses the individuals had taken online, whether or not they completed the online course about which they were answering the questionnaire, whether they would be willing to take another online course, and if they were required to meet physically with the instructor and/or fellow participants.

The mean age reported by the participants in the study was 35.42 ( $SD = 10.20$ ). Three individuals did not report their ages. Reported ages ranged from 20 to 64 with the median age being 33 and the mode age 27 ( $N = 16$ ). Figure 3 graphically represents the age frequency of the population. Measures of deviation from normality revealed a positive value for skewness ( $g_1 = .68$ ) and a negative value for kurtosis ( $g_2 = -.39$ )



**Figure 3. Frequency and distribution for age.**

suggesting that most of the age values tended to cluster around the mean and that the instances further from the mean tended to be in the right tail toward the older age values. The skewness also suggests that the mean is weighted somewhat toward the extreme values.

A statistician consulted to assist with the analysis of the findings in this study indicated that although skewness and kurtosis revealed a slightly abnormal distribution of the age demographic, the abnormality was not enough to warrant using non-parametric procedures. Therefore, data are analyzed using parametric statistics.

Nearly twice as many females as males participated in the survey. Of the population, 65.8% (N = 206) were female and 34.2% (N = 107) were male. One response was missing. This and the remaining demographic items are listed in Table 1.

**Table 1**  
*Demographic Data for Respondents*

		Frequency	Percent
<b>Gender</b>	Male	107	34.2%
	Female	206	65.8%
<b>Education</b>	Undergraduate	128	40.9%
	Masters	151	48.2%
	Doctoral	23	7.3%
	Other	11	3.5%
<b>Race</b>	African American	12	3.8%
	Caucasian	258	82.4%
	Hispanic	4	1.3%
	Asian	26	8.3%
	Other	13	4.2%
<b>Marital Status</b>	Single	110	35.1%
	Married	180	57.5%
	Separated, widowed, or divorced	23	7.3%
<b>Distance from Institution</b>	Less than 10 miles	100	31.9%
	10-100 miles	98	31.3%
	More than 100 miles	115	36.7%
<b>Number of Previous Online Courses Completed</b>	None	67	21.3%
	1-5	147	46.8%
	6-10	63	20.1%
	More than 10	37	11.8%
<b>Did you Complete This Course?</b>	Yes	261	84.7%
	No	47	15.3%
<b>Would you take another online course?</b>	Yes	284	91.3%
	No	27	8.7%

N = 308 – 314

More than one-half of the participants reported educational attainment above the undergraduate level. Those possessing a masters degree were the most populous subgroup at 48.2%. Of the remaining respondents, 7.3% reported holding a doctorate, 40.9% had an undergraduate degree and 3.5% indicated “other” in response to the question.

The demographic data revealed that the racial makeup of the research population was somewhat diverse. Caucasian participants comprised 82.4% of the respondent group; Asian, 8.3%; African-American, 3.8%; and Hispanic, 1.3%. The remaining respondents (4.2%) indicated “other” in response to this item.

The demographic survey inquired about the marital status of the respondents. Those who were married made up 57.5% of the group. Those who were single and/or previously married comprised 42.4% of the group.

Approximately two-thirds of the participants in this study reported living more than 10 miles from the institution. Those who reported living more than 100 miles from the University were the largest single group at 36.7%. Participants living within 10 miles of the University made up 31.8% and those living between ten and 100 miles made up 31.3% of the population.

Besides gathering demographic data about participants’ personal status, the researcher sought to obtain information regarding their previous online learning experiences. The respondents were asked how many online courses they had taken besides the one about which they answered the questionnaire. Most had taken at least one other Internet-based course with only 21.3% responding that this course was their first. Those having taken from one to five other courses made up 46.8% of the respondents, those with 6-10 made up 20.1%, and individuals with more than 10 courses made up 11.8%.

Most participants (84.7%) responding to the survey indicated they had completed the course. The remainder (15.3%) did not complete the course.

When asked about their willingness to participate in an online course in the future, 91.3% responded in the affirmative. Those who indicated they would not participate in a future Internet-based course made up 8.7% of the respondents.

The only open-ended question in the survey asked participants to describe their reason for taking the course for which they responded to the questionnaire online. Of the 286 individuals who replied to the question, 116 (40%) indicated that it was convenient to take the course online because of personal, occupational or distance circumstances. Another 70 (25%) of the participants stated that the online medium was the only format in which the course was offered. An additional 75 (26%) of the individuals stated that the course was a requirement toward a degree or continuing education unit. However, it was not clear from their responses if online was the only format available. A smaller group, 25 (9%) stated that they took the course online because of personal interest in either the course content or the experience of taking it online.

### **Cross-Tabulation of Selected Demographic Variables**

One of the delimitations of this research was that only courses offered completely online with no face-to-face classroom components were considered in the data analysis. Although contact information supplied by the University's office of Distance Education and Independent Study was filtered accordingly, some of the classes nevertheless required limited face-to-face encounters of the students with each other and the instructor during the course. The questionnaire sent to the survey population inquired whether such a meeting was mandatory. If the individuals responded affirmatively, they were asked two additional questions probing the length of face-to-face meeting time required before and/or during the course. Some respondents entered a value in these fields even though

they had indicated that face-to-face meetings were not required. If respondents entered a value in this field, they were placed in the group who had indicated that face-to-face meetings were required. Of the 314 individuals who responded to the survey, 97 (31%) indicated they were required to meet with fellow students and the instructor at some time during the course. The remaining 217 respondents, therefore, are the primary focus for the following demographics and statistical analyses.

Since age has been demonstrated to be a factor in students' attitudes toward distance education methods and performance in online courses (Morris, 1988; Willis, 1992), filtering the demographic data accordingly helped to shed light on the characteristics of the participants. Demographic factors selected to be cross-tabulated according to participants' ages above and below the mean were: (a) education, (b) marital status, (c) distance from the institution, (d) number of previous online courses completed, (e) whether the participant completed the course for which survey was answered, (f) and whether the participant would take another online course. Although gender and race might otherwise be included in the cross-tabulations, percentages within each category were approximately equal in both age groups and, therefore, would reveal nothing new beyond the observations already made about them.

Since one of the delimitations of this research was to examine only the demographic characteristics of those who were not required to meet with fellow participants or instructors during the course, the data will reflect only that group. Participants for whom face-to-face meeting was not required were grouped according to their ages above the mean ( $> 35$ ) and below the mean ( $\leq 35$ ).

### ***Educational Attainment***

As illustrated in Table 2, comparing attained educational levels according to age revealed that the younger group reported the highest number of undergraduate degrees. Older students reported greater percentages of masters or doctoral degrees.

### ***Marital Status***

As might be expected, a greater percentage of participants in the younger group (41.1%) were single compared to older participants (19.5%), as revealed in Table 3. Older students were more likely to fall into the categories of married, or separated, widowed, or divorced.

### ***Distance from the Institution***

The distance participants lived from the institution offering the online course for which they responded to the survey varied greatly by age. Table 4 shows that of the younger group, 41.9% lived within 10 miles of the university. Only 12.6% of the older participants lived within a 10 mile radius. The older students were much more likely (57.5%) to live more than 100 miles from the institution than the younger participants (36.4%).

### ***Number of Previous Online Courses Completed***

Table 5 presents the data related to the number of previous online courses completed. Only 13.8% of the participants in the older group reported never having taken an online course before the one for which they responded to the survey. For almost one-third (29.5%) of the younger participants the course for which they responded to the questionnaire was their first.

### ***Completion of Course***

Table 6 demonstrates that although most of the participants reported finishing the course about which they responded to the survey, slightly more of the younger group



**Table 2*****Age Group Cross-Tabulation: Participants' Attained Education Levels***

			Age Group		Total
			Lowest to 35	36 to Highest	
What is the highest level of education you have attained?	Undergraduate	Count	56	25	81
		% within Age Group	43.4%	28.7%	37.5%
	Masters	Count	62	52	114
		% within Age Group	48.1%	59.8%	52.8%
	Doctoral	Count	10	8	18
		% within Age Group	7.8%	9.2%	8.3%
	Other	Count	1	2	3
		% within Age Group	.8%	2.3%	1.4%
Total	Count	129	87	216	
	% within Age Group	100.0%	100.0%	100.0%	

**Table 3*****Age Group Cross-Tabulation: Participants' Marital Status***

			Age Group		Total
			Lowest to 35	36 to Highest	
What is your marital status?	Single	Count	53	17	70
		% within Age Group	41.1%	19.5%	32.4%
	Married	Count	72	60	132
		% within Age Group	55.8%	69.0%	61.1%
	Separated, widowed, or divorced	Count	4	10	14
		% within Age Group	3.1%	11.5%	6.5%
Total	Count	129	87	216	
	% within Age Group	100.0%	100.0%	100.0%	

**Table 4*****Age Group Cross-Tabulation: Participants' Distance from Institution***

		Age Group		Total	
		Lowest to 35	36 to Highest		
What is the approximate distance you live from the institution offering this online course?	Less than 10 miles	Count	54	11	65
		% within Age Group	41.9%	12.6%	30.1%
	10-100 miles	Count	28	26	54
		% within Age Group	21.7%	29.9%	25.0%
	More than 100 miles	Count	47	50	97
		% within Age Group	36.4%	57.5%	44.9%
Total	Count	129	87	216	
	% within Age Group	100.0%	100.0%	100.0%	

**Table 5*****Age Group Cross-Tabulation: Participants' Previous Online Course Experience***

		Age Group		Total	
		Lowest to 35	36 to Highest		
How many online courses besides your most recent one have you completed?	None	Count	38	12	50
		% within Age Group	29.5%	13.8%	23.1%
	1-5	Count	60	41	101
		% within Age Group	46.5%	47.1%	46.8%
	6-10	Count	18	18	36
		% within Age Group	14.0%	20.7%	16.7%
	More than 10	Count	13	16	29
		% within Age Group	10.1%	18.4%	13.4%
	Total	Count	129	87	216
		% within Age Group	100.0%	100.0%	100.0%

**Table 6*****Age Group Cross-Tabulation: Participants' Course Completion***

		Age Group		Total	
		Younger	Older		
Did you complete the course this questionnaire is about?	Yes	Count	109	66	175
		% within Age Group	85.2%	78.6%	82.5%
	No	Count	19	18	37
		% within Age Group	14.8%	21.4%	17.5%
Total		Count	128	84	212
		% within Age Group	100.0%	100.0%	100.0%

(85.2%) completed it than those in the older group (78.6%). Huang (2002) noted that younger students are more likely to complete a distance course than older students. Findings in the current study lend weight to the likelihood that Huang's observations also apply to online distance learning.

#### ***Willingness to Take Another Course Online***

Participants' willingness to take another online course was very high at 90.7%. As seen in Table 7, cross-tabulation based on the respondents' ages indicated that the percentages of negative and positive responses were approximately the same in both age groups.

Findings relative to the demographics cross-tabulated according to age add some sharpness to understanding the characteristics of the participants in the current study. Conclusions and implications based on these findings will be discussed in the following chapter.

**Table 7*****Age Group Cross-Tabulation: Participants' Willingness to Take Another Course***

			Age Group		Total
			Younger	Older	
Based on your experience with this course, would you be willing to take another online course?	Yes	Count	115	79	194
		% within Age Group	89.8%	91.9%	90.7%
	No	Count	13	7	20
		% within Age Group	10.2%	8.1%	9.3%
Total		Count	128	86	214
		% within Age Group	100.0%	100.0%	100.0%

**Descriptive Survey Data**

This section includes descriptive data based on the survey items. The first subsection reports response totals for the readiness and satisfaction variables. It also details the mean score and standard deviation for the PRO-SDLS and compares it with Stockdale's (2003) findings. The second subsection addresses the reliability scores for the readiness and satisfaction survey and the PRO-SDLS.

***Survey Response Totals***

It was striking to notice that for all five of the satisfaction variables, most of the participants reported being either *satisfied* or *very satisfied*. Table 8 demonstrates participants' (N = 217) reported levels of satisfaction. The two highest levels of satisfaction accounted for a range of 63.1% to 79.3% of the participants' responses. Other choices were, *not satisfied*, *slightly satisfied*, *satisfied*, and *not applicable*.

As demonstrated in Table 9, responses to the readiness variables revealed that for *computer-related experience*, *experience with online collaborative environments*, and *confidence in the online learning environment*, participants perceived themselves to be on

**Table 8*****Satisfaction Responses Expressed by Participants not Required to Meet***

	Technical Support	Interactions with the instructor	Interactions with other participants	Interactions with the course material	The overall quality of the online learning experience?
Not Applicable	14	2	17	3	1
Percentage	6.6	.9	7.8	1.4	.5
Not Satisfied	4	11	11	9	12
Percentage	1.8	5.1	5.1	4.1	5.5
Slightly Satisfied	10	14	16	12	8
Percentage	4.6	6.5	7.4	5.5	3.7
Somewhat Satisfied	17	26	36	31	25
Percentage	7.8	12.0	16.6	14.3	11.5
Satisfied	111	78	87	95	80
Percentage	51.2	35.9	40.1	43.8	36.9
Very Satisfied	61	85	50	67	91
Percentage	28.1	39.2	23.0	30.9	41.9

N = 217

**Table 9*****Readiness Responses Expressed by Participants not Required to Meet***

	Computer-Related Experience	Experience with Online Collaborative Environments	Experience with Online Courses	Confidence in the Online Learning Environment	Experience with the Subject Matter
None Percentage	0 0	5 2.3	98 45.2	9 4.1	18 8.3
Very Little Percentage	3 1.4	34 15.7	31 14.3	36 16.6	51 23.5
Some Percentage	39 18.0	67 30.9	51 23.5	87 40.1	111 51.2
A Lot Percentage	117 53.9	82 37.8	24 11.1	55 25.3	33 15.2
Extremely High Percentage	57 26.3	28 12.9	12 5.5	29 13.4	3 1.4
Missing	1	1	1	1	1

N = 216

the higher end of the scale. For *computer-related experience*, 80.2% of the group responded with *A Lot* or *Extremely High*. Most of the group (81.6%) responded with *Some*, *A Lot*, or *Extremely High* when asked about *experience with online collaborative environments*. For *confidence in the online learning environment*, 78.8% of the participants replied with *Some*, *A Lot*, or *Extremely High*.

Respondents revealed lower perceptions of readiness for two of the variables. Perhaps not surprisingly, when asked about *experience with the subject matter*, most participants (83%) replied with *Some*, *Very Little*, or *None*. Also, a high percentage (83%) of the group responded with *Some*, *Very Little*, or *None* when asked about *experience with online courses*.

Scores reflecting self-direction as measured by the PRO-SDLS were slightly higher for the current study than in Stockdale's (2003) study. The mean score on the PRO-SDLS for the current study was 96.91 ( $SD = 11.82$ ) out of a possible range of 25 - 125. Analysis by Stockdale for her study sample revealed a mean score on the PRO-SDLS of 84.05 ( $SD = 12.47$ ). Both findings are represented in Table 10.

### ***Survey Reliability Scores***

A part of the current study's significance is to provide reliability data for the PRO-SDLS since it is one of the first studies to utilize the instrument. The 25-item PRO-SDLS yielded a coefficient alpha on Cronbach's scale of .91 based on the 314 responses to the questionnaire. This compares favorably with the measure of internal consistency discovered by Stockdale (2003), which was a coefficient alpha of .92.

In addition to the PRO-SDLS, participants were asked to respond to a short questionnaire regarding their readiness for the online learning experience and their satisfaction with it. The questionnaire consisted of five questions regarding readiness and five questions regarding satisfaction.

Questions about readiness yielded a coefficient alpha on Cronbach's scale of .69. Question number five, concerning the participants' previous experience with the subject matter, reflected the lowest score. When that question was dropped, the coefficient alpha was elevated to .72. The resulting coefficient alpha for the remaining four questions was relatively low, but within the commonly used criterion ( $>.70$ ) for acceptable reliability (Gay & Airasian, 2000).

Questions regarding participant satisfaction returned a Cronbach's alpha of .80. Dropping question #1 relative to satisfaction with the technical support would have increased the coefficient alpha score slightly to .82. However, there was no compelling

**Table 10**

***Comparison of Descriptive Statistics for PRO-SDLS: Stockdale (2003) and Current Study***

	N	Mean	Std. Deviation
PRO-SDLS (Stockdale's Study)	194	84.05	12.47
PRO-SDLS (Current Study)	217	96.91	11.82

reason to eliminate it since the original score was well within the limits of acceptable reliability.

The demographics of the study population covered in this section summarized characteristics of the participants. A cross-tabulation of participant responses provided a view of the characteristics of the population based on age. In addition, responses to the questionnaire items formed the basis for viewing the survey response rate, response totals by category, and reliability of the survey tools and PRO-SDLS. The following section will describe the statistical analysis of the research questions.

### **Analysis of Research Questions**

This study posed four research questions to investigate the relationship between participant readiness and satisfaction in an online course and to ascertain relationships between the readiness factors. Following is a summary of the findings for each of the questions based on the data collected via the survey tools.

Although, as indicated earlier, the following statistical analysis will focus primarily on the 217 individuals who indicated that they were not required to meet with other students or instructors during the course. However, since participants for whom a meeting was required made up a large percentage of the total number, data from their responses are of interest for comparison with responses from the group who were not



required to meet in a face-to-face setting. Therefore, in some instances the statistical analyses for both groups will be presented.

Also, since the age of participants was postulated to be a factor in readiness for learning in the online setting, comparing the older and younger population was also of interest. The inclusion of age was based on the assumption that there might be some generational differences in technology savvy and experience. Therefore, correlational and regression analyses were run for the primary group, those who were not required to meet with fellow participants. These correlations were based on participants' ages above or below the median.

### ***Research Question One***

*Is there a significant relationship between the individual scores for the readiness factors and the composite satisfaction score?* This question was addressed by obtaining Pearson correlations for the composite satisfaction score and each of the readiness variables. Participant scores on the PRO-SDLS were also computed as a composite. As shown in Table 11, no significant relationships were found between any of the six readiness factors and overall satisfaction with the course at an alpha level of .05.

Further, correlational analyses on the scores of individuals who indicated they were required to meet with other participants during the course also revealed no significant relationships (Table 12). Additionally, no significant correlations were discovered when participants who were not required to meet were grouped according to their age above or below the mean (Table 13 and Table 14). This suggests that, for this model, neither the factors of age nor the requirement to meet in a face-to-face setting sometime during the course had an influence on the correlational relationships addressed by this research question.

**Table 11**

***Correlations Between Readiness Factors and Composite Satisfaction Score, Meeting  
not Required***

		Age	Self- Direction	Computer- Related Experience	Experience with Online Collaborative Environments	Experience with Online Courses	Confidence in Online Distance Learning
Satisfaction	Pearson <i>r</i>	.094	.113	-.038	.026	.047	.045
	Sig. (2-tailed)	.169	.097	.579	.704	.491	.514

N = 215-216

**Table 12**

***Correlations Between Readiness Factors and Composite Satisfaction Score, Meeting  
Required***

		Age	Self- Direction	Computer- Related Experience	Experience with Online Collaborative Environments	Experience with Online Courses	Confidence in Online Distance Learning
Satisfaction	Pearson <i>r</i>	.091	.187	-.021	-.101	-.053	.005
	Sig. (2-tailed)	.387	.072	.843	.336	.616	.959

N = 92-93

**Table 13**

***Correlations Between Readiness Factors and Composite Satisfaction Score, Meeting not Required, Age >35***

		Age	Self-Direction	Computer-Related Experience	Experience with Online Collaborative Environments	Experience with Online Courses	Confidence in Online Distance Learning
Satisfaction	Pearson <i>r</i>	-.003	.087	-.100	-.008	.085	-.104
	Sig. (2-tailed)	.978	.421	.358	.943	.436	.338

N = 87

**Table 14**

***Correlations Between Readiness Factors and Composite Satisfaction Score, Meeting not Required, Age ≤ 35***

		Age	Self-Direction	Computer-Related Experience	Experience with Online Collaborative Environments	Experience with Online Courses	Confidence in Online Distance Learning
Satisfaction	Pearson <i>r</i>	.151	.110	.028	.069	.007	.158
	Sig. (2-tailed)	.089	.218	.756	.441	.936	.075

N = 127-128

### ***Research Question Two***

*Is there a significant relationship between the individual scores on the readiness factors and the individual satisfaction factors?* This question was addressed by obtaining the correlation coefficients for each of the readiness factors and each of the satisfaction factors. Again, the participant scores on the PRO-SDLS items were computed as a composite score. As indicated in Table 15, no significant relationships were revealed by the analyses of the individual readiness and satisfaction scores. Also, for participants who were required to meet with fellow students, there were no significant relationships between the individual readiness and satisfaction scores (Table 16).

When the age of the participants was taken in to account, however, two correlations were discovered for the older students (>35). Interestingly, both were negative. Table 17 reveals a significant negative correlation ( $r = -.24, p = .05$ ) between the individual's *computer-related experience* and their satisfaction with *interactions with other participants*. Another negative correlation ( $r = -.24, p = .05$ ) appeared between participants' levels of *confidence in online distance learning* and *interactions with other participants*, among the older students.

The negative correlations between the older students are somewhat interesting. They suggest that as participant satisfaction with *interactions with other participants* increases or decreases, *computer-related experience* and *confidence in the online learning environment* moves in the opposite direction. However, in all the cases where correlations based on age were discovered, the values were very small, accounting for 5% or less of the variations.

For the younger participants ( $\text{age} \leq 35$ ), a positive correlation ( $r = .21, p = .05$ ) was found between students' *ages* and their *interactions with the course material* (Table 18). Additionally, a positive correlation ( $r = .21, p = .05$ ) was revealed between a

**Table 15**

***Correlations Between Individual Readiness and Satisfaction Factors, Participants not Required to Meet***

		Age	Self-Direction	Computer-Related Experience	Experience with Online Collaborative Environments	Experience with Online Courses	Confidence in Online Distance Learning
Technical Support	Pearson <i>r</i>	.103	.076	-.071	-.076	.014	.035
	Sig. (2-tailed)	.133	.267	.302	.266	.840	.609
	N	216	217	216	216	216	216
Interactions with the instructor	Pearson <i>r</i>	.095	.116	.064	.060	.074	.075
	Sig. (2-tailed)	.165	.089	.347	.382	.283	.275
	N	215	216	215	215	215	215
Interactions with other participants	Pearson <i>r</i>	.059	.048	-.131	.013	-.059	-.062
	Sig. (2-tailed)	.388	.484	.054	.845	.385	.367
	N	216	217	216	216	216	216
Interactions with course material	Pearson <i>r</i>	.056	.087	.020	.044	.077	.041
	Sig. (2-tailed)	.414	.202	.768	.524	.263	.551
	N	216	217	216	216	216	216
Quality of the online experience?	Pearson <i>r</i>	.031	.098	.008	.039	.085	.085
	Sig. (2-tailed)	.654	.149	.905	.569	.212	.215
	N	216	217	216	216	216	216

N = 216-217

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

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

**Table 16*****Correlations Between Individual Readiness and Satisfaction Factors, Participants******Required to Meet***

		Age	Self- Direction	Computer- Related Experience	Experience with Online Collaborative Environments	Experience with Online Courses	Confidence in Online Distance Learning
Technical Support	Pearson <i>r</i>	.173	.162	-.034	.041	.072	-.066
	Sig. (2-tailed)	.097	.119	.743	.695	.495	.530
Interactions with instructor	Pearson <i>r</i>	.025	.164	-.018	-.119	-.022	.036
	Sig. (2-tailed)	.814	.115	.862	.254	.834	.734
Interactions w/ participants	Pearson <i>r</i>	.091	.132	.047	-.043	-.044	.036
	Sig. (2-tailed)	.388	.209	.656	.685	.679	.731
Interactions with material	Pearson <i>r</i>	-.038	.190	-.022	-.127	-.139	-.030
	Sig. (2-tailed)	.717	.067	.836	.222	.183	.773
Quality of experience?	Pearson <i>r</i>	.067	.081	-.054	-.135	-.086	.051
	Sig. (2-tailed)	.524	.439	.602	.193	.413	.627

N = 92-94

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

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

**Table 17*****Correlations Between Individual Readiness and Satisfaction Factors, Participants not******Required to Meet, Age >35***

		Age	Self- Direction	Computer- Related Experience	Experience with Online Collaborative Environments	Experience with Online Courses	Confidence in Online Distance Learning
Technical Support	Pearson <i>r</i>	-.026	.143	.009	.032	.094	-.029
	Sig. (2-tailed)	.809	.187	.937	.768	.385	.793
Interactions with instructor	Pearson <i>r</i>	.093	.126	-.008	-.001	.092	-.001
	Sig. (2-tailed)	.389	.245	.941	.993	.398	.993
Interactions w/ participants	Pearson <i>r</i>	-.060	.009	-.239*	-.039	-.108	-.244*
	Sig. (2-tailed)	.579	.934	.026	.723	.319	.023
Interactions with material	Pearson <i>r</i>	.034	.032	-.018	.013	.156	-.026
	Sig. (2-tailed)	.754	.766	.869	.903	.149	.811
Quality of experience?	Pearson <i>r</i>	-.040	.039	-.086	-.025	.129	-.060
	Sig. (2-tailed)	.711	.718	.430	.818	.235	.581

N = 87

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

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

**Table 18**

***Correlations Between Individual Readiness and Satisfaction Factors, Participants not Required to Meet, Age ≤ 35***

		Age	Self-Direction	Computer-Related Experience	Experience with Online Collaborative Environments	Experience with Online Courses	Confidence in Online Distance Learning
Technical Support	Pearson <i>r</i>	.121	.014	-.094	-.117	-.039	.069
	Sig. (2-tailed)	.173	.871	.290	.187	.662	.440
Interactions with instructor	Pearson <i>r</i>	.044	.093	.141	.121	.046	.134
	Sig. (2-tailed)	.625	.297	.114	.177	.607	.133
Interactions w/ participants	Pearson <i>r</i>	.081	.048	-.042	.066	-.031	.065
	Sig. (2-tailed)	.360	.588	.635	.461	.726	.469
Interactions with material	Pearson <i>r</i>	.214*	.129	.046	.060	.013	.091
	Sig. (2-tailed)	.015	.145	.609	.503	.888	.307
Quality of experience?	Pearson <i>r</i>	.120	.140	.091	.093	.041	.206*
	Sig. (2-tailed)	.175	.113	.309	.297	.644	.020

N = 127-129

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

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

participant's *confidence in the online learning environment* and satisfaction with the *overall quality of the online learning experience*.

### ***Research Question Three***

*Are there significant relationships among the readiness factors of self-direction, computer-related experience, experience with online collaborative environments, experience with online courses, confidence in the online learning environment, experience with the subject matter, and age?* Statistical investigation of the readiness factors discovered significant correlations and also suggested a useful multiple regression analysis. Findings in this section will be grouped under the subheadings of “Readiness Scores” and “Regression Analysis.”

### ***Readiness Scores***

As revealed in Table 19, there is one significant relationship at the .05 level and seven relationships significant at the .01 level based on Pearson Product Moment Correlation analyses. These relationships between the readiness factors are important in that they may shed some light on the interplay between the skills and attitudes participants bring to the online learning environment. Since *experience with the subject matter* was excluded because of the Cronbach's Alpha analysis, it is not included in the following results.

The single correlation at the .05 level was between *self-direction* and *computer-related experience*. The Pearson Correlation revealed a positive coefficient of .14 between an overall score on the PRO-SDLS and *computer-related experience*. However, the coefficient of determination for this relationship ( $r^2 = .02$ ) indicates it is weak. Gall, Gall, and Borg (2003) noted that the coefficient of determination "expresses the amount of variance in the criterion variable that is explainable by a predictor variable" (p. 345). This means that only 2% of the variance in one of the variables is explainable by the other.

Stronger correlational coefficients, significant at the .01 level, are evident between seven other pairs of the readiness factors. First, *age* and *self-direction* revealed a positive correlation coefficient of .29.

Second, perhaps not surprisingly, *computer-related experience* was found to be correlated with *experience in online collaborative environments* ( $r = .49$ ).

Third, a significant correlation was found between *computer-related experience* and *experience with online courses* ( $r = .26$ ). This and the previous correlation suggest that as *computer-related experience* increases *experience in online collaborative environments* and *experience with online courses* will increase also.



**Table 19*****Correlations Between Readiness Factors, Participants not Required to Meet***

		Computer- Related Experience	Experience with Online Collaborative Environments	Experience with Online Courses	Confidence in Online Distance Learning	Age
Self-Direction	Pearson <i>r</i>	.142*	-.006	-.063	.102	.287**
	Sig. (2-tailed)	.036	.929	.355	.136	.000
Computer-Related Experience	Pearson <i>r</i>		.488**	.259**	.370**	-.097
	Sig. (2-tailed)		.000	.000	.000	.156
Exp. with Online Environments?	Pearson <i>r</i>			.425**	.398**	-.130
	Sig. (2-tailed)			.000	.000	.056
Experience with Online Courses	Pearson <i>r</i>				.542**	.062
	Sig. (2-tailed)				.000	.364
Confidence in Online Distance Learning	Pearson <i>r</i>					.037
	Sig. (2-tailed)					.593

N = 215-216

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

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

However, the fourth positive relationship discovered between *computer-related experience* and *confidence in online distance learning* ( $r = .370$ ) may suggest that the individual who is more computer-savvy is more likely to be confident in the online learning environment. Being in one's "comfort zone" may translate into greater confidence in the medium of online learning.

Fifth, *experience with online collaborative environments* was positively related to *experience with online courses* ( $r = .43$ ). Sixth, *experience with online collaborative environments* was also correlated with *confidence in online distance learning* ( $r = .40$ ). Seventh, *experience with online courses* was also positively related to *confidence in online distance learning* ( $r = .54$ ).

Since results of the demographic questions revealed that nearly 80% of the respondents had taken at least one previous online course, correlations between *experience with online collaborative environments* and *experience with online courses* (the fifth correlation above) might be expected. However, the finding that both

*experience with online collaborative environments* and *experience with online courses* are correlated with *confidence in online distance learning*, (correlations six and seven above) while perhaps not surprising, is notable. These may emphasize the importance of previous online collaborative experiences as readiness factors for online learning. This will be probed further in the following chapter.

No correlational analyses between readiness factors were performed for participants who were required to meet with other participants during the course. Since this study focused on participants who were not required to meet with fellow students, finding relationships between readiness factors for the other group would not add to an understanding of the research problem.

Because age was of interest in this study, the readiness factors were examined according to the age of the population. Participants above the mean age of 35 revealed higher significant correlations in five of the relationships as demonstrated in Table 20. On the other hand, as represented in Table 21, higher correlations were discovered for younger participants in two relationships. These differing levels of significant correlations between the groups might reveal useful insights into the characteristics of the participants based on age. Some possible insights are noted in the following paragraphs.

To determine if the disparities in the correlations were significant, the outcome pairs were subjected to a Z-test designed to compare two independent correlations (Bissonnette, 2000). The comparisons revealed that out of the seven significant relationships, two of the differing correlations were significant. The comparisons indicated that in these two relationships the correlations are actually stronger in the older group as discussed in the following paragraphs.

In the older group, *computer-related experience* correlated with *experience with online courses* at a significantly higher level than in the younger group. The relationship

**Table 20*****Correlations Between Readiness Factors for Participants > 35***

		Computer- Related Experience	Experience with Online Collaborative Environments	Experience with Online Courses	Confidence in Online Distance Learning	Age
Self-Direction	Pearson <i>r</i>	.101	.064	.015	.151	.182
	Sig. (2-tailed)	.353	.555	.887	.162	.091
Computer-Related Experience	Pearson <i>r</i>		.509**	.421**	.454**	.136
	Sig. (2-tailed)		.000	.000	.000	.208
Exp. with Online Environments?	Pearson <i>r</i>			.498**	.385**	.068
	Sig. (2-tailed)			.000	.000	.533
Experience with Online Courses	Pearson <i>r</i>				.619**	-.009
	Sig. (2-tailed)				.000	.933
Confidence in Online Learning	Pearson <i>r</i>					.094
	Sig. (2-tailed)					.388

N = 87

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

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

**Table 21*****Correlations Between Readiness Factors for Participants ≤ 35***

		Computer- Related Experience	Experience with Online Collaborative Environments	Experience with Online Courses	Confidence in Online Distance Learning	Age
Self-Direction	Pearson <i>r</i>	.248**	.000	-.150	.075	.242**
	Sig. (2-tailed)	.005	.998	.091	.398	.006
Computer-Related Experience	Pearson <i>r</i>		.454**	.178*	.323**	.076
	Sig. (2-tailed)		.000	.044	.000	.393
Exp. with Online Environments?	Pearson <i>r</i>			.397**	.416**	-.174
	Sig. (2-tailed)			.000	.000	.050
Experience with Online Courses	Pearson <i>r</i>				.490**	-.026
	Sig. (2-tailed)				.000	.772
Confidence in Online Learning	Pearson <i>r</i>					.034
	Sig. (2-tailed)					.707

N = 128-129

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

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

between these variables was .26 for the entire group, but it was .42 for the older group. The difference was even greater between the older and younger group where the correlation between *computer-related experience* and *experience with online courses* was .42 for the older group and .18 for the younger group. According to Bissonnette's (2000) test, the one-tailed difference in the correlations discovered for the older and younger groups is significant at the .03 level ( $Z.Diff. = 1.91$ ).

This may suggest a difference in the way computers are utilized by the older participants. One possibility is that older participants may be more likely to use their computer knowledge for online classes than those who are younger. Younger students, for whom computers are perhaps a more ever-present accessory than they were for older students, may employ computers for a wider range of applications such as for games, music, and personal communication.

The relationship between *experience with online courses* and *confidence in online distance learning* was .62 for the older group and .49 for the younger. Although the significance of the difference in the correlations ( $p = .09$ , 1-tailed) was beyond the upper limit of .05 accepted in this study, it is perhaps strong enough to suggest that the relationship between *experience with online courses* and *confidence in the online environment* might be stronger for the older group than for the younger. The age-relatedness of this relationship may bear further examination.

### ***Regression Analysis***

Beyond the correlational analyses, the research included a regression analysis of the readiness factors. The reason for this was that *confidence in online distance learning* could be viewed as an outcome variable correlating with the remaining readiness factors. Some researchers (Gunawardena & Duphorne, 2001; Smith et al., 2003) focused on confidence in the online medium in their studies and concluded that it correlated with participant satisfaction with the online learning experience and that it also contributed to

readiness for the experience. As a contributor to readiness for online learning, are other readiness variables, or a combination of them, predictors of the strength of this one factor?

This factor was also viewed as substantially different from the other five readiness factors. The variables of *age* and *self-direction* are personal characteristics of the individual while *computer-related experience*, *experience with the online collaborative environment*, and *experience with online courses* relate to the student's familiarity with the technology. On the other hand, *confidence in online distance learning* corresponds to individuals' attitudes toward the medium and may be partly contingent on age, self-direction and experience with the technology and Internet-related components of the online course.

Table 22 demonstrates the step-wise regression outcomes utilizing *confidence in the online learning environment* as a dependent variable. *Experience with online courses* accounts for nearly 30% of the variation in the confidence factor. The two variables, *experience with online courses*, and *previous experience with computers* taken together account for 35% of the variation in the confidence factor. This suggests that experience with these two components of Internet-based education is predictive of a higher level of confidence in the online learning environment.

As Table 23 indicates, however, this previous experience with computers and online courses is slightly more predictive of confidence among students above the median age. For younger participants, although the predictor values are not greatly different from those of the whole group, the regression analysis entered a third predictor variable, *experience with online collaborative environments* (Table 24).

**Table 22*****Linear Regression Model Summary of Readiness Factors, Dependent Variable:******"Confidence in Online Distance Learning"***

Model	R	R Square	Adjusted R Square	Std. Error of the Estimate
1	.543(a)	.295	.292	.866
2	.593(b)	.351	.345	.833

a Predictors: (Constant), What was your previous experience with online courses?

b Predictors: (Constant), What was your previous experience with online courses?, What was your experience with computers before taking this course?

**Table 23*****Linear Regression Model Summary of Readiness Factors, Dependent Variable:******"Confidence in Online Distance Learning," Age > 35***

Model	R	R Square	Adjusted R Square	Std. Error of the Estimate
1	.619(a)	.383	.376	.823
2	.655(b)	.429	.415	.797

a Predictors: (Constant), What was your previous experience with online courses?

b Predictors: (Constant), What was your previous experience with online courses?, What was your experience with computers before taking this course?

**Table 24*****Linear Regression Model Summary of Readiness Factors, Dependent Variable:******"Confidence in Online Distance Learning," Age ≤ 35***

Model	R	R Square	Adjusted R Square	Std. Error of the Estimate
1	.490(a)	.240	.234	.897
2	.546(b)	.298	.287	.866
3	.567(c)	.321	.305	.855

a Predictors: (Constant), What was your previous experience with online courses?

b Predictors: (Constant), What was your previous experience with online courses?, What was your experience with online collaborative environments such as e-mail, chat rooms, and/or discussion threads before taking this course?

c Predictors: (Constant), What was your previous experience with online courses?, What was your experience with online collaborative environments such as e-mail, chat rooms, and/or discussion threads before taking this course?, What was your experience with computers before taking this course?

***Research Question Four***

*Is there an optimal combination of readiness factors that would reliably predict learner satisfaction with Internet-based classes?* To address this question, the researcher utilized a step-wise linear regression procedure with the composite satisfaction score as the dependent variable. Predictor variables included the six readiness variables examined consistently throughout this research.

The regression procedure excluded all predictor variables indicating that for this model there are no factors that might predict satisfaction in an online learning experience. However, when the participants who indicated they were required to meet with fellow participants were included, the step-wise regression model entered *self-direction* as a predictor of satisfaction. However, the significance of the relationship was very weak accounting for only 2.3% of the variation in satisfaction ( $r^2 = .02, p = .05$ ).

### **Summary**

An analysis of the data gathered by the “Readiness and Satisfaction Questionnaire” revealed no significant relationships between the readiness factors and the composite satisfaction score. When all the satisfaction scores were examined separately, analysis again demonstrated no significant relationships. Since no significant relationships were discovered, neither were there any combinations of readiness factors that could predict participant satisfaction as examined in the fourth research question.

Analysis of the data revealed eight significant correlations between the readiness factors. Additionally, when the age of the participants was taken into account, there were significant differences in two of the seven readiness correlations. A test for the significance of the difference in the correlations indicated that the two sets of correlations were stronger for the older students.

The following chapter will address the findings of this study including possible explanations for the lack of correlations between the readiness and satisfaction variables. Also included will be a discussion of the importance and possible implications of the relationships discovered among the readiness factors. The conclusion of the chapter will also contain recommendations for further study and research.



## CHAPTER V

### SUMMARY AND CONCLUSIONS

This chapter will offer a summary of the study of the relationships between selected readiness and satisfaction factors for participants in Internet-based courses offered at The University of Tennessee. Sections in the chapter include: (a) Summary of the Study, (b) Principle Findings, (c) Implications and Discussion of the Results, and (d) Recommendations for Future Research.

#### Summary of the Study

A purpose of the study was to determine the extent to which selected participant readiness variables correlated with selected satisfaction variables in an online course. Another purpose was to examine the correlations between the readiness variables. Also of interest also was the potential combination of readiness factors that could significantly predict learner satisfaction in the online environment.

Investigation into the relatively new educational medium of online learning has importance because of the potential of Internet-based learning to expand educational opportunities beyond the traditional classroom. How participants in this method of learning perceive their experience has relevance for instructors and program administrators who apply enormous resources toward online instructional enterprises.

Student readiness for all learning ventures may be an essential prerequisite for satisfactory and effective experiences. Satisfaction also may be a reflection of students' perceptions of the effectiveness of the learning medium and the quality of the learning experience compared to the more familiar traditional classroom setting. For instructors and administrators, participant satisfaction is a necessary validation for the enterprise. Students who have confidence that online courses afford learning experiences comparable to the traditional classroom may be one means of measuring quality.

Additionally, students who are satisfied with the online experience are necessary to the future of such ventures since they are more likely to repeat the experience and recommend it to others.

In this study, six readiness factors were correlated with five satisfaction variables. To achieve this objective, 931 individuals who had participated in selected online courses at The University of Tennessee were invited to respond to a “Readiness and Satisfaction Questionnaire.” These individuals were offered the opportunity to complete a Web-based survey or a paper format of the survey that could be obtained online or by postal mail from the researcher. After approximately two weeks, individuals who did not respond to the initial invitation were sent a second request to fill out the survey. Participants who had not responded to the second request after two weeks were approached a third time via postcard. Adjusting for undeliverable invitations, the overall response rate was 314 (38.2%). Further, 97 responses were separated from the analysis of the population because they were submitted by individuals whose online learning experience fell outside the delimitations of the research. This left a total of 217 participants who fit within the research delimitations. Responses from the 97 excluded surveys were sometimes used in comparison with responses from the study population.

Data from the Web-based survey form were electronically compiled in an SPSS database. Two participants elected to return the survey by postal mail and their responses were manually added to the database. Descriptive statistics were derived from 11 demographic items, while readiness and satisfaction items were subjected to correlational analysis. Stepwise regression analyses were performed to determine the optimum combination of readiness factors contributing to participant satisfaction and whether readiness variables could predict participant confidence in online learning.

One of the readiness factors, *confidence in the online distance learning*, was viewed as a potential outcome variable. As such it was analyzed as a dependent variable

and the remaining readiness factors were treated as predictor variables. Stepwise regression analysis was utilized to determine if there was an optimum combination among the independent variables that would predict participant confidence in the online learning medium.

### **Principal Findings**

The current research generated the following principal findings based on responses to the demographic questions and outcomes of the four research questions:

1. The demographic profile of the population revealed that reported average age, education level, and the number of previous Internet-based courses were above their medians. Participants on average were 35.42 years of age, 55.5% held masters or doctorate degrees, and all but 21.3% (N = 67) had taken at least one online course before the one about which they responded in the survey. The demographic profile also revealed that 68% of the participants reported living 10 or more miles from the university.
2. Notably, 78.8% indicated they were either “satisfied” or “very satisfied” with the overall quality of the online experience. Most of the participants (91.3%) indicated they would be willing to take another online course.
3. The reliability of the PRO-SDLS (Stockdale, 2003) was confirmed for the population surveyed in the current study. The high level of the scale’s internal consistency ( $\alpha = .91$ ) was similar to the level ( $\alpha = .92$ ) reported by Stockdale.
4. Although other studies such as Gunawardena and Duphorne (2001) and Gunawardena and Zittle (1997) noted correlations between selected readiness factors and satisfaction with online learning courses, the model utilized in the current study revealed no correlations between the dependent and independent variables. A statistical analysis of the relationship between the readiness

factors and a composite score for satisfaction revealed no significant correlations. Also, a step-wise regression analysis failed to reveal a combination of readiness factors that would predict satisfaction with the online course.

5. A correlational analysis of individual readiness factors and satisfaction variables revealed no significant relationships for the group as a whole. However, when age was taken into account, four weak but statistically significant correlations emerged.
6. Within the readiness factors, experience with computers and elements of the online environment were significantly related to *confidence in online distance learning*. A stepwise regression analysis revealed that two factors, *experience with online courses* and *computer-related experience*, are significant predictors of *confidence in online distance learning*.
7. A significant positive correlation was found between self-directed learning and participants' ages in the whole group ( $r = .29, p < .01$ ). No significant correlation was evident between *self-direction* and *age* for participants above the median age. However, a significant correlation was discovered between *age* and *self-direction* ( $r = .24, p < .01$ ) for the younger group. Also a weak but significant correlation ( $r = .14, p < .05$ ) was discovered between *self-direction* and *computer-related experience* for the whole group.
8. Four correlations appeared to be greatly disparate between the younger and older participants. Of these, two proved to be significant differences. A higher correlation appeared between *computer-related experience* and *experience with online courses* for the older group ( $r = .42, p < .01$ ) than for those in the younger group ( $r = .18, p < .01$ ). Also, a higher correlation was evident between *experience with online courses* and *confidence in online distance*

*learning* for the older group ( $r = .62, p < .01$ ) than for the younger group ( $r = .49, p < .01$ ).

### **Implications and Discussion of the Findings**

Although the number of students identified for the population of this study was relatively large ( $N = 931$ ), the actual number of individuals who responded to the survey is somewhat smaller ( $N = 314$ ). Subtracting an additional number of participants ( $N = 97$ ) who indicated they were required to meet with fellow participants and/or instructors during the course, the number is even smaller ( $N = 217$ ). The remaining responses that conformed to the delimitations of the study were in essence a self-selected sample of the population. The characteristics of this group revealed by the demographic data may help to explain some of the findings of the current research and provide suggestions for studying similar populations in the future.

The demographics of the study population revealed that age of the participants and their education level were skewed toward the higher values. In addition, most had taken at least one online course prior to the one about which they responded in the survey. This suggests that the population for the study had a considerable level of maturity, educational experience, and practice with online courses when they took the class this study focuses on. While the impact of these demographics on the study cannot be fully ascertained, these above average participant characteristics should be considered when viewing most of the findings of the current study.

Another factor revealed in the demographics was that a very high percentage (78.8%) of the participants indicated they were satisfied with the overall quality of the course, and most (91.3%) replied that they would be willing to take another online course. These percentages may reflect the level of maturity, education, and experience the participants brought to the online course. Since many had already taken Internet-

based courses, most would likely not hesitate to take another. Considering the distance many reported living from the university, it also seems logical that online courses might provide a convenient means to obtain credits needed for an advanced degree or professional certification.

The high level of satisfaction and previous experience with online courses among participants supports the presumption that the respondents constitute a self-selected sample of the population. Apparently those who were satisfied chose to respond to the survey, perhaps because they were comfortable with online learning and it was convenient for them to utilize it as a way of earning needed educational credits. Individuals whose experience with the online medium was not very satisfactory may have been somewhat reluctant to respond to an online survey about their online experience.

Regardless of the reasons for the high level of expressed satisfaction, one of the apparent results was the absence of correlations between the readiness and satisfaction variables. If the satisfaction level of the respondents with online learning was high coming into the course, finding correlations with readiness factors is unlikely. It is possible that a larger number of significant correlations would have emerged if a larger segment of the respondents had expressed greater dissatisfaction with the experience.

Maturity and previous experience with online courses may also temper a participant's expectations in an online learning situation. Arbaugh (2001) noted a negative correlation between participants' experiences in the online learning environment and satisfaction with the course. He reasoned that, for those participants, Internet-based courses may have lost their novelty and the experienced students might therefore be less tolerant of bad course experiences.

This study also noted two negative correlations between readiness and satisfaction factors among the older respondents. Although Arbaugh's (2001) conclusion noted above may apply to participants in this study, it also seems likely that previous experience may

serve to inform participant expectations about online learning resulting in more realistic assessments of satisfaction. A higher level of satisfaction might be an expression of learners' perceptions that the course met their expectations.

One of the interesting and somewhat surprising outcomes of the survey was the relatively large number of older participants. Approximately 40% of the respondents are represented in the group above the mean age of 35. By cross-tabulating the demographic responses based on age, it was apparent that there were a few situational differences between the older and younger participants. Younger participants tended to be single and live within 10 miles of the institution. As would be expected, more of these participants had achieved the bachelors degree as their highest level of education and had taken fewer online courses than those in the older group. Possibly many of them lived on campus when they participated in the online course about which they responded to the survey.

Older participants tended to live more than 10 miles from the institution with nearly 60% living more than 100 miles from the university. Most were married or single after having been married. As a group they had higher levels of education and more online course experience than the younger group. Many of these individuals perhaps have family responsibilities and are pursuing advanced degrees, meeting career goals, or satisfying professional educational requirements while working full time.

Undoubtedly, there are many personal life scenarios represented in both groups that cannot be summarized easily. However, the wide range of individual circumstances represented in the demographic data testifies to the broad appeal of online learning.

It was apparent in the study that age had a considerable impact on the statistical outcomes. This impact was noticeable in the correlations between age and self-direction within the different groupings. For the group as a whole, there was a positive correlation of .29 between *age* and *self-direction*. Other studies, such as Bitterman (1989), Guglielmino, Guglielmino, and Long (1987), Hoban and Sersland (1999), Jones, (1994)

Long and Agyekum (1984), and Long and Morris (1996), have demonstrated that self-direction tends to increase with age.

Interestingly, no significant correlation between *age* and *self-direction* was revealed for participants above the median age indicating that most of the variances between the two factors occurred within the younger group of participants. One other positive correlation relative to self-direction that occurred only in the younger group was between *self-direction* and *computer-related experience*. This does not indicate that the younger group was more self-directed than the older participants. It does indicate, however, that self-direction may have more of an impact on the readiness of the younger participants than on those who are older. Older participants in Internet-based courses may bring a higher level of self-direction to the experience thus making it less significant as a readiness factor.

Additionally, some of the differences in the correlations within the age groups may reflect a generational attitude toward technology. For example, the considerably higher correlation in the older group between *computer-related experience* and *experience with online courses* may suggest that the older participants are more likely to apply their computer knowledge to online educational pursuits. For younger individuals, computers may be used for a wider range of activities including recreation, personal relationships and communication, in addition to educational activities.

The model utilized in the current study examining the relationships between the readiness and satisfaction factors did not reveal any significant correlations. As a result, the combination of readiness variables that might predict participant satisfaction anticipated in research question four also did not materialize. Although the ultimate cause is not clear, several possibilities exist that may have limited the discovery of significant relationships. One possibility relates to the quality of the online courses and the online teaching experience of the instructors. At present, The University of Tennessee has not



adopted standards of best practices relative to online courses. As a result, consistency relative to such criteria as pedagogy, student support, and course assessment is uncertain. Wide variations of course quality, instructor experience, and support for participants may adversely impact studies on readiness and satisfaction in online learning environments.

Another potential limitation to the study relates to the above average age, education, and online experience of the participants. For those with such characteristics, satisfaction may have been more related to factors other than readiness because of their previous experience with online learning. Readiness variables like those in the current study may be more applicable to a population with more evenly distributed demographic characteristics.

An examination of the relationships within the readiness factors revealed the strongest correlations especially between the experience variables and *confidence in online distance learning*. Participants were asked prior to taking the online course about their experiences relative to computers and technology, online collaborative environments (such as e-mail, chat rooms, and discussion threads), and online classes. They were also asked about their level of confidence in online distance learning before they took the class. All three experience variables were significantly related to the participant's level of confidence in online distance learning.

One conclusion that could be drawn from these relationships is that experience engenders confidence relative to the online learning environment. Confidence in the medium and confidence that one has the skills to utilize the medium and learn within it are often seen as prerequisites for learning in any environment, especially online (Allen et al., 2002; Gunawardena & Duphorne, 2001; Howland & Moore, 2002; Smith et al., 2003). Since wide-spread learning via computer-based technology is still relatively new, confidence based on experience with the medium is not as common among participants

as it may become in the future. As more people use computer technology, experience and the resulting confidence in its potential for education will likely increase.

Perhaps one of the implications of this relationship between experience and confidence is that students should be introduced to the requisite skills and experiences prior to participating in the online environment. Students might gain experience in online collaboration and the online class environment in more traditional classroom settings. Assignments and exercises utilizing some of the technologies and online learning strategies inherent in Internet-based courses could assist students in developing the experience that would ultimately engender confidence in the online environment. However it might be accomplished, helping students learn how to learn is a critical part of the educational process. Providing limited experiences with online learning in a familiar setting is one way to foster student confidence in the medium.

Another implication of the relationships between experience and confidence in online distance learning is that at least two of the experience factors can be used in evaluating an individual's readiness for participating in an online course. Based on the current study, (a) experience with online courses and (b) computer-based experience are predictive of participant confidence in the online distance learning environment. These should constitute part of the requisite criteria for participating in an Internet-based course.

### **Recommendations for Future Research**

The population of the study was made up of students at a major university who during a two year time period had participated in at least one online class for which there were no required face-to-face interactions between students with other students or between students with course instructors. Similar populations might be identified at other institutions of higher education within which readiness and satisfaction studies could be

carried out. Following are recommendations for future research relative to participant readiness for and satisfaction with online learning.

1. Further research should include strategies that would encourage a more diverse response to the survey. Responses weighted heavily toward satisfaction in the current study suggest the need for a method to elicit responses from less satisfied participants. Among potential approaches might be a survey facilitated with help from the instructor at the end of the course. Such an approach might encourage more students to evaluate their experiences, even if the assessment was negative. Another approach might be to conduct an online survey similar to the one utilized in the current study, but at the end of each semester for a period of two or three years. Both approaches would facilitate surveying participants shortly after their online learning experience at a time when it is still fresh in their memories.
2. This study joins that of Gunawardena and Duphorne (2001) in emphasizing the need for studies evaluating readiness factors pertaining to Internet-based courses such as self-directed learning. Research approaches seeking to follow this suggestion might include further use of the PRO-SDLS (Stockdale, 2003) relative to readiness for online distance learning. Stockdale's instrument is especially useful because of its high level of reliability, its specific application to university-level students, and its reflection of a later conceptual model of self-direction.
3. The factor of age was important in this study because of interest in its relationship to satisfaction with an online course and its correlation to other readiness variables. Additional studies could expand the focus on how demographic variables relate to readiness and satisfaction by including such

factors as gender, level of education, and distance from the institution offering the online course.

4. Other studies could utilize available scales for measuring readiness or satisfaction. For example, studies utilizing Heterick and Twigg's (2001) 26-point scale might afford a productive way of assessing satisfaction.
5. Further studies should be conducted on confidence in the online learning environment as both a readiness and an outcome factor. As an outcome factor, it was correlated in this study with other readiness variables associated with experience in some aspect of the online learning experience. Further examination of the relationship between confidence in the online environment and satisfaction may add support to the studies (Gunawardena & Duphorne, 2001; Lim, 2001) that have discovered such a relationship. Additionally, confidence should be further broken down and studied as: (1) participants' personal assurance about the value of the online medium as an effective learning environment; and (2) participants' self-efficacy in utilizing both the technology and the online setting for learning. Even as computer and Internet usage expands in higher education, confidence in the medium as an effective means of learning will likely be dependent on an individual's experience with it.
6. Conducting a study similar to this one in institutions with criteria for best practices in Internet-based learning would eliminate the uncertainty relative to the consistency of instructor experience and course quality.
7. Qualitative studies seeking to learn more from the participants about their view of the online course experience might be useful. A disadvantage of quantitative studies is that they may not adequately address the online learning event from the participants' perspectives. Although this study inquired about

readiness and satisfaction in specific areas, the questions might not have focused on items relative to the students' experiences in all cases. Qualitative studies might also be useful in adding to our understanding of the role of confidence in the online learning environment.

### **Concluding Comments**

This study was intended to advance understanding of the characteristics of students who take online higher education classes. It is a population whose satisfaction with the experience and confidence in the medium should be considered in the development of online courses and curricula. The views of this population should also be a factor in setting standards assuring the quality of the online learning experience.

Participant readiness is an important prerequisite to confidence and, as other studies have found, to satisfaction. Additional studies should focus on student characteristics which best prepare individuals for learning in the online environment in order to determine which are most essential and to design ways to facilitate that readiness.

In the fast-developing enterprise of online education, studies involving all the stakeholders are necessary in order to ensure course quality and participant satisfaction and confidence. The student's view is a critical part facilitating learning in the online environment.

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**APPENDICES**

**Appendix A**

**Readiness and Satisfaction Questionnaire**

## Readiness and Satisfaction Questionnaire

### **Section A - Readiness**

Please answer the following questions about your readiness for your most recent online learning experience:

		None	Very Little	Some	A Lot	Extremely High
1	What was your experience with computers before taking this course?					
2	What was your experience with online collaborative environments such as e-mail, chat rooms, and/or discussion threads before taking this course?					
3	What was your previous experience with online courses?					
4	What was your level of confidence in online distance learning before taking this course?					
5	What was your knowledge of the course's subject material before starting this course?					

### **Section B - Satisfaction**

Please answer the following questions about your satisfaction with your most recent online learning experience.

	<b>How satisfied were you with:</b>	Not Satisfied	Slightly Satisfied	Somewhat Satisfied	Satisfied	Very Satisfied	Not Applicable
1	The technical support provided to you before and/or during the course?						
2	Interactions with the instructor (such as expectations, dialogue, feedback)?						
3	Interactions with other participants (such as in chat rooms or through e-mail)?						
4	Interactions with the course material (such as in text books, online discussions with the instructor and students, team projects)?						
5	The overall quality of the online learning experience?						



**Section C - The Learning Experiences Scale****The Learning Experiences Scale (PRO-SDLS)**

Please indicate one answer for each statement. There are no "right" answers to these statements, that pertain to your recent learning experiences in college -- not just those experiences from this class (although they may be the same).

	ITEM	Strongly Disagree	Disagree	Sometimes	Agree	Strongly Agree
1	I am confident in my ability to consistently motivate myself.					
2	I frequently do extra work in a course just because I am interested.					
3	I don't see any connection between the work I do for my courses and my personal goals and interests.					
4	If I'm not doing as well as I would like in a course, I always independently make the changes necessary for improvement.					
5	I always effectively take responsibility for my own learning.					
6	I often have a problem motivating myself to learn.					
7	I am very confident in my ability to independently prioritize my learning goals.					
8	I complete most of my college activities because I WANT to, not because I HAVE to.					
9	I would rather take the initiative to learn new things in a course rather than wait for the instructor to foster new learning.					
10	I often use materials I've found on my own to help me in a course.					
11	For most of my classes I really don't know why I complete the work I do.					
12	I am very convinced I have the ability to take personal control of my learning.					
13	I usually struggle in classes if the professor allows me to set my own timetable for work completion.					
14	Most of the work I do for my college is personally enjoyable or seems relevant to my reasons for attending college.					

	ITEM	Strongly Disagree	Disagree	Sometimes	Agree	Strongly Agree
15	Even after a course is over, I continue spending time learning about the topic.					
16	The primary reason I complete course requirements is to obtain the grade that is expected of me.					
17	I often collect additional information about interesting topics even after the course has ended.					
18	The main reason I do the course activities I do is to avoid feeling guilty or getting a bad grade.					
19	I am very successful at prioritizing my learning goals.					
20	Most of the activities I complete for my college classes are NOT really personally useful or interesting.					
21	I am really uncertain about my capacity to take primary responsibility for my learning.					
22	I am unsure about my ability to independently find needed outside materials for my courses.					
23	I always effectively organize my study time.					
24	I don't have much confidence in my ability to independently carry out my study plans.					
25	I always rely on the instructor to tell me what I need to do in a course to succeed.					

### **Section D - Demographic Questions**

1.	What is your age?	_____
2.	What is your gender?	Male _____ Female _____
3.	What is your race?	African-American _____ Caucasian _____ Hispanic _____ Asian _____ Other _____
4.	What is your marital status?	Single _____ Married _____ Separated, widowed, or divorced _____

5.	What is the highest level of college education you have attained?	Undergraduate _____ Masters _____ Doctoral _____ Other _____
6.	How many online courses besides your most recent one have you completed?	None _____ 1-5 _____ 6-10 _____ More than 10 _____
7.	Did you complete the course this questionnaire is about?	Yes _____ No _____
8.	Based on your experience with this course, would you be willing to take another online course?	Yes _____ No _____
9.	What is the approximate distance you live from the institution offering the online course	Less than 10 miles _____ 10-100 miles _____ More than 100 miles _____
10.	Were you required to physically meet with fellow participants as a group during the course	Yes _____ No _____
	When?	First session _____ During the course _____ Not Applicable _____
	How Long?	First Session _____ hrs During the course _____ hrs <i>(If not applicable, leave both blank)</i>
11.	What was your reason for taking this course online?	_____ _____
		_____

In order to know who has responded to this questionnaire, you are requested to enter your e-mail address below. Doing so is optional. If you choose to provide it, your e-mail address will not in any way be identified with your responses.

Also, please indicate below if you would like to participate in the drawing for one of the \$25.00 gift certificates from Amazon.com. You will need to provide your email or mail address to be eligible for the drawing so that you can be notified if you are selected.

Your e-mail address: \_\_\_\_\_

Mailing address: \_\_\_\_\_

\_\_\_\_\_

\_\_\_\_\_

\_\_\_\_\_

\_\_\_\_\_ Yes, I want to participate in the drawing for one of the \$25.00 gift certificates from Amazon.com (You must provide your e-mail or mailing address so that you may be contacted if you are one of the recipients).

\_\_\_\_\_ No, I prefer to not be included in the drawing.

Thank you again for your participation in this survey.

Please return this completed form to:

**Readiness and Satisfaction Survey**  
**c/o Dewey Fogerson**  
**70-A Glocker Administration Building**  
**University of Tennessee**  
**Knoxville, TN 37996**

**Appendix B**

**Permission to use the PRO-SDLS**

 <b>"Susan Stockdale"</b> <sstockda@kennesaw.edu> 04/11/2005 01:00 PM	To	<DeweyFogerson@ln.utk.edu>
	cc	
	bcc	
	Subject	Re: Request to use PRO-SDLS

History:  This message has been replied to.

Dewey,  
You certainly have my permission to use the PRO-SDLScale in your dissertation work. Please let me know your results.

Sincerely,

Susan L. Stockdale, Ph. D.  
Assistant Professor of Educational Psychology and Middle Grades  
Education  
Bagwell College of Education  
Kennesaw State University  
1000 Chastain Road #1008  
Kennesaw, GA 30144-5591  
678-797-2060  
sstockda@kennesaw.edu

**Appendix C**  
**Correspondence to Population**

**To:** Dewey Fogerson

**From:** Dewey Fogerson  
Department of Educational Psychology  
College of Education, Health and Human Sciences  
The University of Tennessee, Knoxville

I am heading a project to determine how participant readiness for online educational courses and satisfaction with the experience are related. As one who has taken an Internet-based course at the University of Tennessee in the past two years, your response to an online survey is valuable.

Since online courses have become increasingly attractive to both students and educational institutions, knowledge about the personal characteristics and skills which may assure a more satisfactory learning experience is important. Your experiences in the online environment are a rich source for this information. Please take a few minutes to respond to a questionnaire regarding your latest online course from the University of Tennessee.

You may access the survey online at:

<http://surveys.utk.edu/dlf/online/index.htm>

The questionnaire should take approximately 10 minutes and your answers will be completely confidential. Only totals for all the collected data will be reported; individual scores will not be singled out. If you choose, you do not need to identify yourself in any way. However, you will be asked to provide your e-mail address as a means to determine who has completed a survey. Your name or e-mail address will not in any way be identified with your responses.

Providing your e-mail will also allow you to be entered into a drawing for one of four \$25 gift certificates from Amazon.com as a token of appreciation for completing the survey. After the survey, I will randomly select four recipients to receive one of the \$25 gift certificates. You will be notified by e-mail if you have won.

If you would prefer a paper copy of the survey, one is available online at <http://bus.utk.edu/dlf/survey/>. You may also e-mail me your postal address and I will mail you a survey along with a postage-paid return envelope.

If you wish to have a copy of the results e-mailed to you, please contact me by e-mail at [dlf@utk.edu](mailto:dlf@utk.edu) or by phone at 865-974-4629.

Thank you,  
Dewey Fogerson



October 6, 2004

Name  
Address  
City, State, ZIP

Re: Research Questionnaire, University of Tennessee

***This invitation to participate in a research project was sent recently by e-mail. However, because of e-mail filters or other reasons, it may not have reached everyone on our list. If you have already completed the questionnaire or do not wish to do so, you may discard this follow-up letter.***

I am heading a project to determine how participant readiness for online educational courses and satisfaction with the experience are related. As one who has taken an Internet-based course at the University of Tennessee in the past two years, your response to an online survey is valuable.

Since online courses have become increasingly attractive to both students and educational institutions, knowledge about the personal characteristics and skills which may assure a more satisfactory learning experience is important. Your experiences in the online environment are a rich source for this information. Please take a few minutes to respond to a questionnaire regarding your latest online course from the University of Tennessee.

You may access the survey online at:

<http://surveys.utk.edu/dlf/online/index.htm>

The questionnaire should take approximately 10 minutes and your answers will be completely confidential. Only totals for all the collected data will be reported; individual scores will not be singled out. If you choose, you do not need to identify yourself in any way. However, you will be asked to provide your e-mail address as a means to determine who has completed a survey. Your name or e-mail address will not in any way be identified with your responses.

Providing your e-mail will also allow you to be entered into a drawing for one of four \$25 gift certificates from Amazon.com as a token of appreciation for completing the survey. After the survey, I will randomly select four recipients to receive one of the \$25 gift certificates. You will be notified by e-mail if you have won.

If you would prefer a paper copy of the survey, one is available online at <http://bus.utk.edu/dlf/survey/>. A return envelop is provided with this letter for your convenience.

If you wish to have a copy of the results e-mailed to you, please contact me by e-mail at [dlf@utk.edu](mailto:dlf@utk.edu) or by phone at 865-974-4629.

Thank you,  
Dewey Fogerson  
Department of Educational Psychology

October 18, 2004

Name  
Address  
City, State, ZIP

Re: Research Questionnaire, University of Tennessee

Two weeks ago, I sent a letter to individuals who have taken one or more internet-based courses at the University of Tennessee inviting them to participate in a research survey. Your response is important to the study of how participant readiness for online educational courses and satisfaction with the experience are related.

If you haven't already done so, please take a few minutes to respond to the questionnaire regarding your latest online course from the University of Tennessee.

You may access the survey online at:

<http://surveys.utk.edu/dlf/online/index.htm>

The questionnaire should take approximately 10 minutes and your answers will be completely confidential. Only totals for all the collected data will be reported; individual scores will not be singled out. If you choose, you do not need to identify yourself in any way.

However, you will be asked to voluntarily supply your e-mail address if you wish to be entered into a drawing for one of four \$25 gift certificates from Amazon.com as a token of appreciation for completing the survey. After the survey, I will randomly select four recipients to receive one of the gift certificates and will notify you by e-mail if you have won.

If you provide your e-mail address it will not in any way be identified with your responses.

If you would prefer a paper copy of the survey, one is available online at <http://bus.utk.edu/dlf/survey/>. A return envelope is provided with this letter for your convenience.

If you wish to have a copy of the results e-mailed to you, please contact me by e-mail at [dlf@utk.edu](mailto:dlf@utk.edu) or by phone at 865-974-4629.

Thank you,  
Dewey Fogerson  
Department of Educational Psychology

## Just a Reminder . . .

Our study of **Readiness and Satisfaction in Online Courses** is coming to an end and your response to our survey is very important.

Please take a few minutes to fill out the questionnaire at:  
<http://surveys.utk.edu/df/online/index.htm>

If you prefer, you may download a paper copy at  
<http://bus.utk.edu/df/survey> and return it in the envelop you received in the last mailing.

Thank you so much for your help,  
**Dewey Fogerson**  
Project Director

## VITA

Dewey Fogerson was born in Clovis, New Mexico. His father worked in the family wholesale food business and his mother was an elementary school teacher. He has five children and eight grandchildren. Dewey and his wife, Frances, currently live in Knoxville in a house ruled by one queen cat and her 10 subjects – eight other cats and two humans. Dewey attended Eastern New Mexico University where he received a Bachelor of Science degree in Religious Studies in 1974 and a Master of Arts degree in Religious Studies in 1977. For 25 years he was a minister for various churches in New Mexico, Texas, and Tennessee. He has been employed with The University of Tennessee for the past six years and is currently Director of Internet Applications for the College of Business Administration.

Since its inception in 1998, Dewey has been actively involved in the Self-Directed Learning Research Group at The University of Tennessee. The group is a collaboration of students and faculty engaged in various research projects in self-directed learning. As a part of his research activity, Dewey has participated in the production of three publications and has given 10 presentations at various professional conferences. His Ph.D. in Education with a concentration in Educational Psychology in 2005 is his most recent addition to the literature of self-directed learning.