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# Social Presence, Satisfaction, and Perceived Learning of RN-to-BSN Students in Web-Based Nursing Courses

Susan Cobb

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SOCIAL PRESENCE, SATISFACTION, AND PERCEIVED LEARNING  
OF RN-TO-BSN STUDENTS IN WEB-BASED NURSING COURSES

A Dissertation

Submitted to the School of Nursing

Duquesne University

In partial fulfillment of the requirements for  
the degree of Doctor of Philosophy

By

Susan Copley Cobb

August 2008

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Susan Copley Cobb

2008

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Susan Copley Cobb

Approved May 12, 2008

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# ABSTRACT

## SOCIAL PRESENCE, SATISFACTION, AND PERCEIVED LEARNING OF RN-TO-BSN STUDENTS IN WEB-BASED NURSING COURSES

By

Susan Copley Cobb

August 2008

Dissertation supervised by Professor and Associate Dean for Academic Affairs, Joan Such Lockhart, PhD, RN, CORLN, AOCN, CNE, FAAN

While the development of online education has been progressing rapidly, further evaluation research is needed (Atack & Rankin, 2002; Halter et al., 2006). There is a need for further research on nursing students' experiences and satisfaction with online education, and correlating factors to promote the quality of online learning. Social presence is one factor that has been shown to affect outcomes such as satisfaction and perceived learning in online courses (Gunawardena & Zittle, 1997).

The purpose of this study was to assess social presence in online nursing courses and its relationship to student satisfaction and perceived learning. The theoretical framework for the study was the Framework for Assessing Outcomes in Web-based Nursing Courses (Billings, 2000). A descriptive, correlational study design was used. The study instrument was a 34-item questionnaire administered via the Internet and consisting of the Social

Presence Scale and the Satisfaction Scale (Gunawardena & Zittle, 1997), and demographic questions. Subjects in the study were 128 students in an online RN-to-BSN program at one college in the northeastern United States who were taking an online nursing course during the study term. Results indicated that there was a strong relationship between overall satisfaction and overall social presence ( $r_s = .63, p < .001$ ) and instructor performance ( $r_s = .46, p < .001$ ). Four sub-domains of social presence were identified: overall comfort with online and computer-mediated (CMC) communication, communication with CMC and the online environment, comfort and community of CMC/online environment, and attitudes toward CMC/online communication. Four sub-domains of satisfaction were identified: general satisfaction, usefulness of course, learning from course, and stimulation and ongoing learning. All sub-domains of social presence correlated highly ( $r_s = .61 - .72, p < .001$ ) with the satisfaction sub-domains except the communication factor which correlated to a lesser degree ( $r_s = .39 - .45, p < .001$ ). There was a strong relationship between perceived learning and social presence ( $r_s = .61, p < .001$ ) and with comfort with the online course ( $r_s = .66, p < .001$ ). Overall social presence, instructor performance, and the sub-domains of social presence predicted a significant amount ( $p < .001$ ) of total variance in overall satisfaction and perceived learning. No significant relationships were found between the demographic factors and overall social presence or perceived learning. Females had significantly higher scores on the communication factor ( $p = .02$ ) and subjects with more online course experience found the courses more useful ( $p = .04$ ).

## DEDICATION AND ACKNOWLEDGMENTS

I would like to dedicate this work to my parents, Rita and J. Russell Copley, who instilled in me the importance of education and a desire for life-long learning. I would like to thank my family, in particular my husband Roger Allen Cobb, for his support and encouragement throughout my doctoral journey. Thanks also to my daughter Jessica who has been supportive of her mother being a student along with her as she was completing high school and college.

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# Chapter 1

## Introduction

Online education in the United States (U.S.) has been growing exponentially over the past decade. Nearly 3.5 million students in higher education took at least one online course during the fall term of 2006, a 10% increase over the previous year (Allen & Seaman, 2007). The use of technology has also become increasingly important as an educational resource and delivery format for Schools of Nursing (American Association of Colleges of Nursing, 2000; Seiler & Billings, 2004). Online nursing education programs serve a crucial need by increasing access for adult working students (American Association of Colleges of Nursing) and students in remote areas who may not be able to or desire to attend class in a traditional classroom setting. Online nursing programs can also address the barrier of proximity to advanced education and provide opportunities for more nurses to receive advanced degrees, thus helping to reduce the critical shortage of qualified nurse educators (Halter, Kleiner, & Hess, 2006). While the development of online education has been progressing rapidly, further research is needed to understand the experience of students enrolled in these programs (Atack & Rankin, 2002; Halter et

al., 2006) and to identify best practices in Web-based courses (Billings, Connors, & Skiba, 2001; Billings, Skiba, & Connors, 2005).

## 1.1 Background of the Study

Research has supported the fact that students can learn effectively via education delivered by distance technology, such as the Internet, as well as by face-to-face education (Anderson & Miller, 2007; Bata-Jones & Avery, 2004; Buckley, 2003; Creedon, 2007; Frith & Kee, 2003; Halter et al., 2006; Leasure, Davis, & Thievon, 2000; Seiler & Billings, 2004; Woo & Kimmick, 2000). The growth of online education has led to increased emphasis on assessment of learning outcomes in this new teaching and learning format by accrediting bodies, commissions on higher education, academic institutions, schools of nursing, employers, students, and faculty (Billings, 2000). In a report by the Sloan Consortium, 62% of Chief Academic Officers surveyed in 2005 rated learning outcomes in online education as the same or better than those in face-to-face settings (Allen & Seaman, 2006). Other studies have also shown that learning outcomes can be equal or better in online education than traditional classes (Creedon, 2007; Kearns, Shoaf, & Summey, 2004; Seiler & Billings, 2004; Thiele, 2003; Woo & Kimmick, 2000).

While studies support that students can learn effectively in online courses, results related to satisfaction with online education have been varied (Ali, Hodson-Carlton, & Ryan, 2004; Atack & Rankin, 2002; Chumley-Jones, Dobbie, & Alford, 2002, Sit, Chung, Chow, & Wong, 2005). Although an indirect measure of learning outcomes, student satisfaction has been identified as an important outcome in nursing education, in both traditional educational formats (Liegler, 1997) and in Web-based courses (Billings,

2000; Billings et al., 2001; Seiler & Billings, 2004; Sit et al.). Frith and Kee (2003) emphasized the importance of student satisfaction as a critical outcome for evaluating the effectiveness of online learning and noted that existing study findings have been mixed in regards to degree of satisfaction and correlating factors. Social presence, the degree to which a person is perceived as “real” in mediated communication, is one factor that has been shown to affect learning and satisfaction of students in traditional face-to-face settings and computer-mediated conferences (Gunawardena & Zittle, 1997). Social presence has been identified as key to the level of learner participation and success of online collaboration (Lakin, 2008).

In addition to a need for continued evaluation of outcomes in online education, there is a need for ongoing systematic evaluation of online courses and programs using theory-based research (Billings, 2000; Robley, Fransworth, Flynn, & Horne, 2004; Thurmond, 2002). The Framework for Assessing Outcomes and Practices in Web-based Courses in Nursing (Billings, 2000) can serve as a model for theory-based research which can contribute to the development of best practices in online education in nursing. Billings, Skiba, and Connors (2005) emphasized that there is “a need for continued research to identify best practices in Web-based education... and to identify factors that facilitate the development of asynchronous 'learning communities'” (p. 131).

The background literature shows that online education is gaining momentum as a major educational format in its own right, not just as a supplement or second-best to traditional face-to-face education. While online pedagogy is being adopted rapidly by educational institutions, there is need for further evaluation of the quality and efficacy of this instruction (Leners, Wilson, & Sitzman, 2007) as well as more theory-based research

in this area. The literature supports that there is little to no difference in whether students can learn, and to what degree, between online and traditional education, however there are major differences in what the students experience. Further research is needed to understand the specifics of the online educational experience for students so that the best quality educational experience can be provided.

## 1.2 Statement of the Problem

Studies on satisfaction with online education have focused on overall satisfaction (Bloom & Hough, 2003; Motiwalla & Tello, 2000) or convenience and flexibility as outcomes (Morris, Buck-Rolland, & Gagne, 2002; Robley et al., 2004; Ryan, Carlton, & Ali, 1999). Atack and Rankin (2002) revealed that while Web-based courses can be a satisfactory means for nurses to pursue continuing education, few studies have been done regarding the experiences of registered nurses with Web-based learning. They also point out that existing studies emphasize whether students learn in Web-based courses and that insufficient research has been done on the quality of the online learning experience for students. The majority of studies on online nursing students' experiences with technology-driven instruction have been qualitative and the few quantitative studies that exist have used a variety of investigator-developed instruments (Mancusco-Murphy, 2007).

Few studies have focused on identifying factors related to the quality of the online education experience for students and specific factors correlating with satisfaction. Interaction of students with faculty and other students is one factor that has been identified as being important to satisfaction and perceived learning (Brown, Kirkpatrick,

& Wrisley, 2003; Council of Regional Accrediting Commissions, 2001; Thiele, 2003). Interaction has been identified as a component of overall satisfaction (Northrup, Lee, & Burgess, 2002) and social interaction in particular can add to the quality of the online educational experience and enhance learning (Jung, Choi, Lim, & Leem, 2002; Woods & Baker, 2004). Communication and interaction are different in online as compared to face-to-face settings (Creedon, 2007; Gunawardena & Zittle, 1997; Halter et al., 2006; Whiteman, 2002). Failure to consider the relational dynamics in the online setting may increase feelings of isolation among learners, reduce student satisfaction, and lead to poor academic performance and increased attrition (Woods & Baker). Student perception of interaction may be more important to satisfaction with the online educational experience than the quantity of interaction. Sufficient levels of interaction can create a sense of personalization, decrease feelings of remoteness, and enhance a sense of community (Woods & Baker). Despite this emphasis on the importance of interaction to the online educational experience, few studies exist that quantitatively analyze interaction with a research instrument.

The concept of social presence has been studied in relation to communication media, including computer-mediated communication, and is a component of interaction and relationships (Short, Williams, & Christie, 1976). Social presence has been studied in computer conferences (Gunawardena, 1997) and in asynchronous online learning (Jolivet, 2006; Lin, 2004; Reio & Crim, 2006; Richardson & Swan, 2003; Tu & McIsaac, 2002). Despite the existence of the Social Presence Scale (Gunawardena, 1997), an exhaustive search of the literature revealed a dearth of studies examining social presence in online nursing courses. This study seeks to bridge this gap by examining

social presence in online nursing courses and its relation to satisfaction and perceived learning.

### 1.3 Significance of the Study

With nearly 20% of all higher education students in the U.S. taking at least one online course in the fall of 2006 (Allen & Seaman, 2007), it can be expected that the number of nursing students taking online courses will continue to grow (American Association of Colleges of Nursing, 2000; Lahaie, 2007; Seiler & Billings, 2004). In the NLN report *Trends in RN Education: 1998-2008* (Speziale & Jacobson, 2005), administrators of baccalaureate and associate degree nursing programs indicated that Web-based courses are being used more now than in the past and are expected to be used more in the future. Seiler and Billings (2004) also note that Web-based courses are quickly becoming a global phenomenon, with students world-wide now being able to participate in courses offered in their own and other countries.

An RN-to-BSN sample was chosen for this study because there is a great need for more registered nurses to obtain a baccalaureate degree and online programs can help meet this need. The most recent National Sample Survey of Registered Nurses (Human Resources and Service Administration, 2000) reported that only 33% of the RN population in the U.S. had baccalaureate degrees and 10% had masters' or doctoral degrees as the highest degree. A recent landmark study emphasized the importance of the BSN degree by documenting improved surgical patient outcomes in hospitals with higher percentages of staff holding BSN degrees (Aiken, Clarke, Cheung, Sloane, & Silber, 2003). Hospitals seeking Magnet Status designation also aim to have a higher percentage

of nursing staff educated at the BSN level (Crotty, 2004). Underscoring the importance of a BSN degree, The New Jersey State Nurses' Association supports legislation that would require future professional nurses to earn a bachelor's degree within 10 years of initial licensure in order to re-register to practice in the state of New Jersey (New Jersey State Nurses Association, 2007). The baccalaureate degree is a necessary foundation for graduate study. With the critical shortage of nursing faculty, Web-based programs can help extend the reach of faculty, provide access to a baccalaureate education for working RNs, and provide an educational foundation for future nurse educators.

In its Position Statement *Transforming Nursing Education*, the National League for Nursing (NLN) noted that nurse educators are expected to more effectively integrate technology into their teaching through the use of distance education (National League for Nursing, 2005). The American Association of Colleges of Nursing (AACN, 2000) emphasized the importance of developing strategies to increase nurses' access to education through technology as well as the need for further study of this new teaching method and evaluation of outcomes. In a more recent white paper on faculty shortages in baccalaureate and graduate nursing programs, the use of technology was identified as one immediate solution to increase the capacity of faculty to deliver educational course work (AACN, 2005). This study will contribute to the body of knowledge regarding the experiences of students in Web-based nursing courses and the effective use of online pedagogy in nursing education. Educators need to be aware of the experiences of nursing students with online courses (Halter et al., 2006; Seiler & Billings, 2004), including factors related to satisfaction, interaction, social presence, and learner characteristics, in order to develop online educational experiences that meet the needs of students and foster

learning and professional development. Age and other individual characteristics of students may be related to experiences with Web-based learning and there is a need for further study of generational differences in Web-based courses in order to create successful learning environments (Billings, Skiba, & Connors, 2005). The findings in this area to date have been mixed, indicating a need for further study. Information on factors related to the quality of the online learning experience will assist nurse educators in developing effective online communities of learning in nursing programs.

With the increased emphasis on learning outcomes, this study will contribute to knowledge in this area in relation to online teaching and learning. As there is a need for more theory-based research in online education, this study will provide further elucidation on the usefulness of the Billings framework for assessing outcomes and practices in Web-based courses in nursing (Billings, 2000). It will also provide needed information on the role of social presence in online nursing courses, a hypothesized key component of learner satisfaction. This study will add to the body of knowledge in nursing education by providing a better understanding of social presence, satisfaction, and perceived learning, and the interaction of these three important variables, in online nursing courses.

#### 1.4 Purpose of the Study

The purpose of this study is to examine social presence among RN to BSN students in online nursing courses and its relationship to satisfaction and perceived learning, in order to assist in identifying factors that can increase a sense of a community of learning in

online nursing education. This will assist nurse educators in developing and using online education effectively.

## 1.5 Research Questions

1. What is the relationship of social presence to satisfaction in online nursing courses?
2. What is the relationship of social presence to perceived learning in online nursing courses?
3. Are there differences in social presence, satisfaction, and perceived learning in online nursing courses related to characteristics of students such as age, gender, race/ethnicity, or experience with online education?

## 1.6 Definition of Terms

The key terms for this study are operationally defined as follows:

*Social presence.* “The degree of salience of the other person in the interaction and the consequent salience of the interpersonal relationships...” (Short, et. al, 1976, p. 65). It has been further defined as “the degree to which a person is perceived as a ‘real person’ in mediated communication” (Gunawardena & Zittle, 1997, p.9). Social presence will be measured by the Social Presence Scale (Gunawardena & Zittle) consisting of fourteen items scored on a Likert scale of 1-5 that embody the concept of “immediacy” as defined in Short, et.al, 1976.

*Satisfaction.* “Students enjoy learning in Web-based courses, and would choose this experience again” (Billings, 2000, p.62). Satisfaction will be measured by the

Satisfaction Scale (Gunawardena & Zittle, 1997) consisting of ten items scored on a Likert scale of 1–5.

*Perceived learning.* Students' perception of "the extent to which new knowledge and skills are acquired" (Wills & Stommel, 2002, p. 195). Perceived learning will be measured by the first two items of the Satisfaction Scale.

*Web-based (online) course.* For the purposes of this study, the terms Web-based course and online course will be used synonymously. "A course where most or all of the content ( $\geq 80\%$ ) is delivered online. Typically have no face-to-face meetings" (Allen & Seaman, 2007, p. 4). The courses in this study are asynchronous, text-based online courses without any synchronous chats, video streaming or audio enhancement.

## 1.7 Assumptions

- Participants will honestly discuss their experiences with online nursing education.
- The terms "online education" and "Web-based learning" are synonymous and convey learning activities that occur via computer-mediated communication (CMC) via the Internet.
- The terms "questionnaire" and "survey" are synonymous and will be used interchangeably when discussing the research instrument.

## 1.8 Scope and Limitations

- The scope of this study is confined to nurses taking purely online, text-based, asynchronous nursing courses in an RN-to-BSN program at one college.
- This study is limited by:
  - A sample that may not be representative of all nurses taking online courses.
  - Subjects' subjective responses that may not be accurate due to misunderstanding, question structure, placebo effect and/or inaccurate responses.
  - Subjects may be exposed to a range of faculty experience with online teaching, which is beyond the scope of this study.

## 1.9 Summary

Despite the phenomenal growth of online education, insufficient research exists on the experiences of nursing students and the outcomes of this educational format. In order for online programs, and the students in these programs, to be successful there is a need for further study to identify specific factors that may affect learning outcomes and satisfaction with online courses. Social presence has been identified as a component of interaction and has been shown to affect learning and satisfaction in online courses, yet there are insufficient studies of this concept in online nursing education. There is also a need for more theory-based research in online nursing education. Further studies are needed to expand on the body of knowledge regarding

theoretical frameworks in online nursing education, such as the Billings' Framework for Assessing Outcomes and Practices in Web-based Courses in Nursing. This study will provide information that will ultimately assist nurse educators in developing effective online communities of learning in nursing programs and help nurses to have the best possible online learning experience.

# Chapter 2

## Review of the Literature

An extensive literature search was conducted using online data bases such as ERIC, OVID, Proquest, Pubmed, and CINAHL searching the terms “education” and “nursing education” and the following keywords: online, Internet, World Wide Web, Web, and social presence. The purpose of this review was to study existing research on online education in nursing and social presence and to identify knowledge gaps. Articles retrieved for this review met the following inclusion criteria: articles/publications published in English within the past ten years and articles/publications that discussed online education and satisfaction, perceived learning, social presence, or other outcomes and variables related to experiences of students with online education. The review of the literature that follows is organized to present the theoretical model framework chosen as the framework for this research study, then to provide a background overview of some advantages and challenges of online education from a student perspective. This will be followed by an exploration of the key variables of interest in this study: perceived learning, satisfaction, and social presence.

## 2.1 Theoretical Framework

The framework that underpins this research is Billings' Framework for Assessing Outcomes and Practices in Web-based Courses (Billings, 2000). This framework was developed to guide the evaluation and assessment of nursing courses and programs offered on the World Wide Web. The framework has five major concepts with associated variables (Appendix 1). The first concept in the framework is *outcomes* that are enabled by Web-based courses. The outcomes are influenced by the concepts of *educational practices, student support, faculty support, and use of technology*.

### *Outcomes*

Outcomes in the model include course and program outcomes associated with undergraduate and graduate nursing curricula. These outcomes include variables that are of particular interest in this research study: *learning, connectedness, and satisfaction*. Perceived learning and satisfaction are variables in this research study and connectedness is related to social presence, another key variable in this study. In regards to the variable learning, Billings (2000) notes that no significant differences in learning outcomes have been found between traditional face-to-face learning and distance learning formats, including Web-based courses. Critical thinking and creativity have been noted as particular learning outcomes supported by Web-based education. The framework includes the outcome variable of *computer tool proficiency*, as students gain computer skills by participating in Web-based courses. Connectedness is an outcome variable in Web-based courses, and e-mail communication and discussion boards can facilitate student and faculty interaction. Earlier studies from the 1990s on Web-based learning noted that some students in online courses experienced social isolation and feelings of

disconnectedness (Ryan et al., 1999), however this concern is dissipating as online communication and learning becomes more prevalent (Billings, 2005). The framework indicates that a key outcomes variable in Web-based learning is student satisfaction, which is also a major variable in this study. While students generally are satisfied with this form of learning, study results have been mixed, revealing that students may be satisfied with the experiences of online learning but at times frustrated by the computer technology. Outcome variables that are related to satisfaction are *convenience* and *access*. Other outcome variables identified in the framework are *recruitment*, *retention*, and *graduation*; *professional practice socialization*; and *preparation for real-world work*, however, these variables are beyond the scope of this study.

The concept of *educational practices* in the framework is based on the landmark work of Chickering and Gamson (1987) “The Seven Principles of Good Practice in Undergraduate Education.”

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**Table 2.1****The Seven Principles of Good Practice in Undergraduate Education**

Good practice in undergraduate education:

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

(Chickering and Gamson, 1987, p. 3)

---

According to the authors, when used consistently these practices result in student learning and satisfaction. These seven principles were originally developed for undergraduate

education in face-to-face settings and more recently have also been applied to the use of technology in education (Chickering & Ehrman, 1996). The variables within education practices in the Billings' framework that have incorporated The Seven Principles are *active learning, time on task, feedback, student-faculty interaction, interaction and collaboration with peers, respect for diversity, and high expectations*. Of particular interest to this research study are *feedback, student-faculty interaction, and interaction and collaboration with peers*, all of which contribute to a feeling of connectedness and less isolation among online learners. *Active learning* relates to the study variable of perceived learning; *interaction and collaboration* relate to satisfaction and social presence.

The remaining concepts in the framework are *student support, faculty support, and use of technology*. *Student support* encompasses information, orientation to technology, ongoing technical support, learning resources, and student services. *Faculty support* includes the variables of faculty development, orientation to technology, ongoing technical support, workload recognition, and rewards. *Use of technology* includes accessible and reliable infrastructure, and use of hard/software that promotes productive use of time. Adequate support and effective use of technology can relate to variables of interest in this study, satisfaction and perceived learning.

The Billings' Framework provides a theoretical framework for identifying the components of teaching and learning in Web-based courses and their relationships, which can guide assessment and evaluation of online education in nursing. The framework can serve as a model for theory-based research, which can contribute to the identification and implementation of best practices in online education. This research study will use the

Billings' Framework as a theoretical framework for exploring factors related to the outcomes of satisfaction and perceived learning in online learning, including the role of social presence. This model is appropriate as a framework for this research study as it focuses on outcomes and practices in Web-based courses in nursing and includes concepts relative to the variables in this research study. Among the outcomes variables in the model are two that are foci of this study – learning and satisfaction. Interaction is included in the educational practices concepts in the model and is a component of social presence. The outcome of connectedness, defined in the model as “students and faculty form an online community that promotes interaction and overcomes isolation” (Billings, 2000, p. 62), also relates to social presence. According to Tu and McIsaac (2002), “three dimensions of social presence - social context, online communication, and interactivity - have emerged as important elements in establishing a sense of community among online learners” (p.131). An effective community of learning can enhance perceived learning and satisfaction with online courses.

The review of the literature that follows is organized to present a background of advantages and challenges in online education from a student perspective and then to explore the key outcome variables of interest in this study and supported by Billings' Framework (2000): perceived learning, satisfaction, and social presence. The review of the literature is further organized according to operational variables and concepts within the Billings' Framework that are within the scope of this study.

## 2.2 Background

### *Advantages of Online Education*

#### *Convenience and access.*

Numerous advantages of online education have been identified in the literature. Two major advantages are convenience and flexibility (American Association of Colleges of Nursing, 2000; Atack & Rankin, 2002; Billings et al., 2001; Chickering & Ehrman, 1996; Halstead & Coudret, 2000; Kearns et al., 2004; Morris et al., 2002; Motiwalla & Tello, 2000; Ryan et al., 1999; Seiler & Billings, 2004; Sit, et al., 2005; Wu & Hiltz, 2003; Young & Norgard, 2006). Access is a key advantage of Web-based courses (Halstead & Coudret; Seiler & Billings). Due to a lack of proximity to a suitable school of nursing, some students would not be able to pursue their education in nursing without access to online learning (Halter, 2006). Students appreciate being able to access their course anytime of day or night that fits into their schedule. They also are able to do their course work wherever they have access to a computer, be it at home, work, or elsewhere. While both the home and work environment offer advantages and disadvantages as settings for online coursework (Atack & Rankin), individual students may learn best in different environments or find one environment more convenient than another. Perceptions of Web-based nursing courses may also become more favorable over time (Wills & Stommel, 2002).

#### *Interaction and connectedness.*

Despite early concerns regarding the lack of face-to-face interaction (Woods & Baker, 2004), it has been shown that online courses can be interactive through the discussion that occurs among students and the instructor (Ali et al., 2004; Atack &

Rankin, 2002; Brown et al., 2003; Ryan et al., 1999; Seiler & Billings, 2004; Wills & Stommel, 2002; Wu & Hiltz, 2003, Young & Norgard, 2006). Interaction is important to learning, no matter what the setting, and appropriate interaction between instructor and students, and among students, has been identified as an important component of best practices in online education (Council of Regional Accrediting Commissions, 2001). Interaction occurs in online courses but is different than interaction in face-to-face courses due to the lack of physical presence and cues and the need to communicate primarily by text (Creedon, 2007; Halter et al., 2006; Thurmond & Wambach, 2004).

An early qualitative study (Cragg, 1994) used semi-structured interviews to explore the experiences of nursing students with a course offered by computer-mediated conferencing. The seven participants were registered nurses who had completed the first nursing course in a post-RN baccalaureate program in Canada. A thematic analysis identified two major themes: hardware/software issues, and interpersonal/social issues. Increased quality of discussion, social interaction and support, and development of a sense of camaraderie were found among students in the course. A limitation of this study was a lack of generalizability due to its subjective findings and small sample size. Initial technical difficulties that some students had with the course could also have influenced the results.

A recent study of the experiences of 41 senior nursing students with a virtual learning environment (VLE) in Ireland (Creedon, 2007) used an online survey developed by the researcher that included demographic items and open-ended questions related to student interaction and student-lecturer interaction. The responses were analyzed by thematic analysis. The students participated in a 12-week course on nursing informatics

that combined classroom lectures with use of the VLE consisting of asynchronous learning activities (discussion board, e-mail, file transfer, and chat) offered through the online learning platform, Blackboard (<http://www.blackboard.com>). Students were very positive about the interaction that occurred in the course and felt the VLE enhanced their learning. The researchers suggest that their findings indicate that Web-based courses may facilitate a deeper understanding of course content than traditional courses. This study was limited by its relatively small sample size, mixture of course formats, and subjective nature of the open-ended responses.

Some research suggests that students in online courses are able to ask more questions of the instructor and have enhanced communication with fellow students than in face-to-face classes (Morris et al., 2002; Vonderwell, 2003). Online courses can promote connectedness between students and with the instructor (Anderson & Miller, 2007; Seiler & Billings, 2004; Wu & Hiltz, 2003). Connectedness is an outcome in the Billings' Framework and may vary according to the level of the course. In a major study of best practices in Web-based nursing courses (Billings et al., 2005), differences in perceptions of undergraduate students' and graduate students' experiences in Web-based courses were examined. The tool used for data collection, The Evaluating Educational Uses of the Web in Nursing (EEUWIN) instrument, was based on the Billings' Framework (Billings, 2000). The subjects consisted of 558 students from six schools of nursing with BSN, RN-BSN, MSN, RN-MSN, and doctoral degree (PhD and ND) programs who were enrolled in fully Web-based courses in one semester. No specifics were provided regarding the length or content of the courses or the learning platforms used. The EEUWIN instrument was included in the end of course evaluations primarily

offered via the Web. No differences were found between undergraduate and graduate students in perceptions of interactions and collaboration with peers, respect for diverse ways of learning, feedback, and active learning strategies. Differences were found in the areas of faculty-student interactions and time factors. Undergraduate students had higher perceptions of faculty-student interactions than graduate students. Undergraduate students also reported feeling more connected to their instructor and classmates than graduate students. Graduate students reported spending more time on their Web course work than undergraduate students. Interestingly, this did not lead to higher perceptions of connectedness with their instructor or classmates. Strengths of the study included the large sample size and use of a research instrument that had been developed and pilot-tested specifically to evaluate Web-based education in nursing. The study was also based on the theoretical framework (Billings, 2000) which is being used in this study.

While interaction is important in online courses, few studies to date have explored whether interaction is more important for some students than for others. One study used an Internet survey to examine student perceptions about online courses in the areas of course design, interaction among course participants, course content, technical support, and benefits of online versus face-to-face course delivery (Young & Norgard, 2006). The survey was returned by 233 undergraduate and graduate students enrolled in online courses at one university during one semester. This is one of the few studies to identify significant differences in perspectives of online courses based on student characteristics of gender and age. The study sample was 77.8% female and 13.1% male. Female students felt a stronger need for interaction in online courses than male students ( $F_{1,211} = 4.52, p < .01$ ) and females were more satisfied with the quality of online course discussions ( $F$

$F_{1,212} = 4.52, p < .01$ ). Female students were also more positive about the online course materials ( $F_{1,207} = 7.34, p < .01$ ) and course assignments ( $F_{1,210} = 6.42, p < .01$ ). Based on their study findings and the existing literature, the authors concluded that interaction in online courses may be more important to female than to male students. This study was one of the few found that identified significant differences in student perceptions of the quality of online discussion based on the age of students. Students under age 25 were more comfortable with online discussions and students in the 46-55 age group were the least comfortable ( $F_{4,210} = 4.74, p < .01$ ). Differences in experiences with online education based on individual student characteristics such as gender and age is an area in need of further study. A limitation of the study is that faculty permission was needed for the questionnaire to be distributed to students in the course which may have influenced the results.

*Preparation for real-world work.*

The asynchronous discussion board, where students and faculty can communicate online at any time and at irregular intervals without a pattern of interaction (Palloff & Pratt, 1999, p. 189), allows time for students to reflect on and develop clear responses (Chickering & Ehrman, 1996), and fosters the development of critical thinking skills (Ali et al., 2004; Creedon, 2007; Kozlowski, 2002; Vonderwell, 2003; Wilhelm, Rodehorst, Young, Jensen, & Stepans, 2003). Online courses also provide opportunity for demonstration of synthesis in the asynchronous discussion boards (Leasure et al., 2000). Participation in online courses can lead to development of communication, collaboration, and networking skills (Anderson & Miller, 2007; Bentley, Cook, Davis, Murphy, & Berding, 2003; Leasure et al., 2000; Seiler & Billings, 2004; Thiele, 2003). Shy or

reticent students are able to participate more in an online course as opposed to a traditional classroom setting (Chickering & Ehrman; Cragg, 1994; Halter et al., 2006; Kozlowski; Wilhelm et al.).

Students can develop computer proficiency skills through participation in an online course (Atack & Rankin, 2002; Bentley et al., 2003; Billings et al., 2001; Brown et al., 2003; Halstead & Coudret, 2000; Kozlowski, 2002; Morris et al., 2002), as well as increased confidence with the use of computers (Leasure, 2000), and more positive attitudes towards computers (Lin, Lin, Jiang, & Lee, 2007). Billings, Skiba and Connors (2005) found that undergraduate students reported greater gains in computer proficiency in Web-based courses than graduate students. This is an interesting finding, as it could indicate that graduate students bring more computer skills to Web-based learning; however, this may change in future studies as the millennial generation comes along with greater degrees of computer experience. With the heavy emphasis on the use of writing for communication, participation in online courses may also increase students' writing skills over time (Leasure). Writing, computer proficiency, critical thinking and collaboration are important skills for nurses' preparation for real-world work and professional practice socialization, two outcomes in the Billings Framework (2000).

#### *Challenges in Online Education*

While online education has many advantages, challenges still exist (Atack, 2003). Students have identified that online courses are more time consuming and require more work than expected - more than traditional face-to-face classes (Brown et al., 2003; Kozlowski, 2004; Soon, Sook, Jung, & Im, 2000). Other challenges in online education

noted in the literature are in the area of student perceptions of interaction and collaboration in the online setting, student-faculty interaction, and use of technology.

*Interaction and collaboration.*

While interaction does occur in online courses, students may feel that the quantity or quality of interaction with faculty and peers is insufficient or less than traditional courses (Atack, 2003; Billings et al., 2001; Halstead & Coudret, 2000; Leners & Sitzman, 2006). Some students in online courses experience a feeling of disconnectedness, lack of interaction, and a sense of isolation or loneliness (Halter et al., 2006; Ryan, Carlton, & Ali, 2004; Sit et al., 2005). However, results of the Evaluation of the Web in Nursing (EEUWIN) Benchmarking project in Web-based nursing education has revealed that the issue of isolation or lack of connectedness in Web-based education is dissipating (Billings, 2005). This study also revealed that some students in online courses still desire face-to-face interaction, even if occasional (Seiler & Billings, 2004). Group interaction and collaboration can occur in online courses but there are mixed reviews regarding group collaboration projects in the online course setting (Seiler & Billings). Some students may find it difficult to collaborate with other students regarding class projects in an online environment (Seiler & Billings; Vonderwell, 2003).

*Student-faculty interaction.*

The role of the instructor in online courses is pivotal to creating connections and a sense of collaboration and community in the class. In one study of 233 undergraduate and graduate students taking online courses during one term at an upper level institution, over 90% of survey respondents indicated that interaction between the instructor and students is essential to online learning (Young & Norgard, 2006). In a qualitative case study,

interviews with 22 participants were conducted to explore the experiences and perspectives of students in an online course for undergraduate education majors at a large Midwestern university (Vonderwell, 2003). Data triangulation with multiple sources of information was used: interviews, student and instructor e-mail transcripts, discussion board transcripts, and peer review. A limitation of the study is that the instructor in the course was also the researcher. The course was offered in an asynchronous format within Blackboard. Thematic analysis revealed that some students feel a lack of a one- to-one relationship with the instructor in the online setting. A lack of immediate and consistent feedback from the instructor was also found to be a disadvantage in the online course setting. This can lead to dissatisfaction with the online educational experience, as supported by other studies (Kearns et al., 2004; Soon et al., 2000). Kearns et al. did an exploratory comparative study of performance and satisfaction of second degree BSN students in an undergraduate nursing course offered in a Web-based format and a traditional format with Web enhancements (e.g. Web-based home page, e-mail accessibility). The data collection instrument was an online Student Course Survey which was adapted from a tool originally developed by Motiwalla and Tello (2000). While the Web-based group had higher performance scores than the traditional group, the traditional group had an overall higher satisfaction score than the Web group. The Web group expressed strong dissatisfaction with the timeliness of instructor feedback. Limitations of the study noted by the researcher was that the Web-based course was one of the first courses offered in this new format, the traditional course had Web-enhancements and therefore was not purely face-to-face, and the instructor was the same for both course formats, which could lead to contamination of results. However, this

could also be viewed as positive since there was control of the instructor variable.

Another study that looked at satisfaction with online courses had similar findings (Soon, et al.). The study evaluated satisfaction of RN to BSN students in Korea. Subjects were 60 students who completed a course using an asynchronous computer format. Limited information was provided on the study instrument other than it consisted of a self-report 5-point Likert rating scale of 25 items in eight domains plus open-ended questions. Areas of dissatisfaction reported were insufficient feedback from the professor and excessive time and difficulties connecting to the Internet.

The EEUWIN Benchmarking study (Billings, 2005) identified that interaction is an important outcome in Web-based nursing courses but students tend to interact less in this setting than in face-to-face classes unless course design and faculty presence promote interaction. The study also noted that the quality of instructor responses is important to students (Seiler & Billings, 2004). The students identified several positive characteristics of instructor communication including being polite, supportive, caring, helpful, knowledgeable, flexible, understanding, engaging and thought-provoking. Students also identified less desirable communication practices such as just saying “good job” and instructors being “snappy” (p.6).

#### *Use of technology.*

Other challenges in online courses are in the technical area. Technical difficulties, insufficient technical support, and competition for use of the computer at home or at work can create barriers to students in the online setting (Atack & Rankin, 2002; Cragg, 1994; Halstead & Coudret, 2000; Morris et al., 2002; Seiler & Billings, 2004; Soon et al., 2000; Thiele, 2003). While technology in Web-based courses is becoming more reliable,

problems with technology can still occur and may negatively impact educational practices and outcomes, including perceived learning and satisfaction (Billings, 2005; Thurmond & Wambach, 2004). Technical support is critical to satisfaction with online courses and students express a preference for technical support hours that are flexible and available beyond the normal work day (Young & Norgard, 2006). Students also need adequate computer skills to be successful in and enjoy online courses. Lack of sufficient fundamental skills including typing and keyboard skills can be a concern for some students (Kozlowski, 2004).

### 2.3 Learning

While studies have shown that students can learn in both the online and traditional settings, results regarding which format provides improved quantity or quality of learning are mixed. In nursing education, some studies reveal no differences in student learning outcomes in comparison of classroom to Web-based courses for undergraduate nursing students (Buckley, 2003; Leasure et al., 2000; Woo & Kimmick, 2000) or graduate nursing students (Bata-Jones & Avery, 2004; Woo & Kimmick). A few studies report higher student learning, either quality of learning, perceived learning, or student performance, in Web-based courses (Cragg, 1994; Creedon, 2007; Kearns et al., 2004). One study found that respondents felt that they learned more in face-to-face courses than in online courses, although perceptions of learning in online courses became more favorable with subsequent online course experiences (Young & Norgard, 2006). Little research has been done on the effects of specific factors such as types of interaction on learning in Web-based courses (Jung et al., 2002).

### *Learning achievement and effectiveness*

One study which found no differences in student learning outcomes evaluated classroom-based, Web-enhanced, and Web-based formats of a nutrition course for undergraduate nursing students (Buckley, 2003). A convenience sample of 58 students enrolled in consecutive nutrition courses offered during one academic year at a university in the U.S. included students in the traditional 4-year BSN program, an accelerated second degree program, and an RN-to-BSN program. Mastery of the course content was measured by performance on mid-term and final examinations, and final course grades. No significant differences were found between the three groups on these measurements. The fact that a small convenience sample was used and consisted of students from three different types of programs must be considered as a potential limitation of this study.

Another study that found no differences in learning outcomes compared a traditional to a Web-based baccalaureate nursing research course (Leasure et al, 2000). The sample consisted of 48 students who selected the traditional format and 18 students who selected the Internet format. A comparison of mean student examination scores and course grades revealed no significant differences between the two course formats. A limitation of this study is that students self-selected into the two groups and there were a smaller number of students in the Internet format group. The researchers indicated that an analysis of demographic data did not reveal any significant differences in either demographic or academic characteristics between the two groups.

Two studies addressed learning outcomes in Web-based graduate nursing courses. Bata-Jones and Avery (2004) compared student outcomes in an online graduate pharmacology course with those in a face-to-face course offered simultaneously. The

objective measures of student outcomes for the courses were the midterm and final examinations that were the same for both courses. Fifty-two students enrolled in the face-to-face course and 18 enrolled in the Web-based course. No significant differences on mean examination scores were found between the two groups. While the researchers noted no significant differences in learner characteristics between the two groups, the self-selection of the two groups and the differences in sample sizes between the two formats must be considered when reviewing the study findings. Woo and Kimmick (2000) compared test and satisfaction scores of graduate nursing students enrolled in a nursing research course offered in traditional and online formats. The sample consisted of 97 students who chose the course format they wanted. Outcome measures consisted of grades on midterm and final examinations and the standard end-of course evaluations used at the university. No significant differences were found between the two groups on test scores or overall satisfaction. Limitations of this study include the self-selection of the learning formats by the subjects and differences in sample sizes between the traditional and Internet format groups.

While the majority of studies found no significant differences in learning outcomes between traditional and Web courses, two studies reported higher student learning in Web courses, although only one of these studies objectively measured student learning. Kearns et al. (2004) found that students in the Web format of a nursing research course in a second-degree BSN program had higher performance as measured by the course grade than students in the traditional format. Creedon (2007) found that all student respondents to an online survey on use of a virtual learning environment (VLE) in an

informatics class felt that their learning experience was positively enhanced by use of the VLE.

Chickering and Ehrman (1996) emphasized that good learning is collaborative and social as opposed to competitive and isolated. In a study of the effects of different types of interaction on learning achievement among undergraduate students in Web-based courses (Jung et al., 2002), social interaction between learners and the instructor contributed to increased learning achievement. The subjects were 120 students taking an undergraduate course on career assessment skills at a university in Seoul, Korea. The subjects were assigned to three different types of interaction groups. The course materials for each group were the same - what differed was the type of interaction with the instructors and other students. The academic interaction group ( $n = 48$ ) served as the control group and had interaction with the instructor only for content-related matters. No other instructor interaction, such as motivational or interpersonal feedback, was given to this group. The other two groups received either collaborative or social interaction in addition to academic interaction. The collaborative interaction group ( $n = 45$ ) was presented with a list of discussion topics by the instructor and given the opportunity to participate in online discussions with other students. The social interaction ( $n = 27$ ) group was provided with various kinds of interpersonal and social feedback from the instructor, with an emphasis on the social presence of the instructor. A pre-test administered to all subjects found no significant differences between or within the groups regarding prior experience with Web instruction, attitudes towards online learning, and motivation level. Attitude was measured pre-and post-course by the Computer-Mediated Communication (CMC) Questionnaire based on Clark's (1991) instrument. Satisfaction was measured

after completion of the Web-based course using an instrument developed by the researchers, the Web Based Instruction Satisfaction Scale. The students' learning achievement was measured by scores on the five course assignments. Social interaction was found to be more strongly related to learning outcomes and collaboration among the learners was more strongly related to learner satisfaction. Web-based learning experiences resulted in a positive attitude change towards Web-based learning. The investigators highlighted the need for further research on factors related to learning outcomes and satisfaction in Web-based education. A strength of this study is that it had several controls in place. The effects of different types of interaction in one online course with one type of student (undergraduate) were studied, a pre-test was used to assess any differences between and among groups, and the study design had a control group and two treatment groups. Rationale was not given, however for why the three groups were not more equal in size.

### *Active Learning*

Active learning is one of the operational variables within the concept of *educational practices* in the Billings' Framework (2000). Results regarding the degree of active learning in online as compared to traditional courses are mixed. In Cragg's qualitative study (1994) all of the students indicated that they believed they had learned as much in the online course as they would have in a face-to-face section, and some indicated they had learned more because of their active participation in learning. Woo and Kimmick (2000) found that graduate nursing students taking an Internet nursing research course reported significantly higher stimulation of learning than those taking the traditional class. A limitation of these study findings are their subjective nature.

A bench-marking best practices study in online nursing education (Billings et al., 2001) was done by three universities in collaboration with the Flashlight Program, part of the Teaching, Learning, and Technology affiliate of the American Association of Higher Education. The instrument used to collect the bench-marking data and pilot tested in this study was the Flashlight Program's Current Student Inventory tool kit which was the precursor to the EEUWIN instrument (Billings, et al., 2005) used in later studies. The pilot study revealed that students perceive they are actively involved in the learning process online. Data were collected from 219 undergraduate and graduate students enrolled in Web-based nursing courses and active learning was found to be positively correlated ( $p = .01$ ) with feedback ( $r = .40$ ), student-faculty interaction ( $r = .69$ ), and interaction with peers ( $r = .54$ ). Qualitative comments from a follow-up benchmarking study using the EEUWIN survey with 458 students at five participating schools (Seiler & Billings, 2004) revealed that Web-based learning helps students pull together nursing knowledge from previous courses. Students indicated that their learning was enhanced by virtual continual discussions. Other authors have indicated that students are more self-directed and accountable for their own learning in online courses than in face-to-face classes (Bentley et al., 2003; Cragg, 1994; Halstead & Coudret, 2000). Taking responsibility for their own learning in the online course can facilitate students' perceived learning (Sit et al., 2005). Students also indicate that they have increased access to information in an online course (Halstead & Coudret) which can enhance active and independent learning.

### *Perceived learning*

In a study of 1,406 undergraduate and graduate students participating in any online courses offered through a large state university system distance learning network

(community college through graduate schools at universities) during one term, student satisfaction surveys were used to understand questions related to learning effectiveness in asynchronous online courses (Fredericksen, Pickett, Shea, Pelz, & Swan, 2000). Perceived learning was looked at as a component of student satisfaction and in relationship to specific variables such as interaction, participation, gender, and age. Students were asked to indicate on the survey how much they learned by interaction with the teacher and by interaction with classmates. Little information was given by the authors about the research instrument other than it was a survey that used a four-point Likert scale. Interaction with the teacher was found to be the single most significant contributor to perceived learning in online courses. Interaction with classmates was also a significant contributor. Students who reported that they participated in their online classes at higher levels than in face-to-face classes also reported high levels of perceived learning. An interesting finding is that gender and age were found to play a role in online learning. Women reported higher levels than men of perceived learning in online courses. The youngest students (ages 16-25) reported they learned the least and were the least satisfied with online learning. Students in the 36-45 year old range reported the highest perceived learning and the most satisfaction with online learning. This finding is surprising considering the facility younger students tend to have with computer technology. This study highlights the importance of interaction with the instructor and classmates to perceived learning, and is one of the first studies to address gender and age variations in perceived learning in online courses. While a strength of the study is its large sample size, limitations are that the study was done across institutions and thus had variability in levels of students, courses, instructors, and programs.

In a study of online discussions and perceived learning, 116 students in two undergraduate courses and one graduate course in computer sciences at a technical university returned post-course surveys regarding perceived learning from online discussions, online discussion motivation and enjoyability, and instructor role (Wu & Hiltz, 2003). Gender and number of previous online courses were also looked at as variables. The courses were “mixed-mode” e.g. incorporating online discussions with face-to-face class meetings. The survey was developed by the researchers and was not reported to be based on any existing instrument. Students who perceived more motivation and enjoyability from online discussions also reported higher perceptions of learning from online discussions, and the instructor played an essential role in promoting students’ motivation, enjoyability, and perceptions of learning online. There were no differences between female and male students in perceptions of learning, motivation, and enjoyment from online discussions; although the investigators indicated that this might be due to the sample size having a larger proportion of male than female students. The number of previous online courses was not found to be significantly related to perceptions of learning, motivation and more enjoyability from online discussion. Differences in results based upon undergraduate or graduate student status were not reported. Although the researchers were seeking to study the online discussion component of the courses, the mixed-mode format could have influenced the findings. Other variables that were not controlled and could have influenced the results are the mixture of student levels (undergraduate and graduate), courses, and instructors. In a study of student perceptions of online courses over time (Arbaugh, 2004), 823 students taking online MBA courses at one university during 1998 – 2002 were surveyed about their experiences. Little to no

change in perceived learning was noted with subsequent online course experiences. In contrast to the previous two studies, Young and Norgard (2006) found that students who had more experience taking online courses were more likely to agree that they learn more in online courses than in face-to-face courses.

## 2.4 Satisfaction

Student satisfaction has been identified as critical to the ongoing success of Web-based courses and programs and is included as an important outcomes variable in the Billings Framework (2000). Overall satisfaction with online courses is reported as high (Atack & Rankin, 2002; Bentley et al., 2003; Billings et al., 2001; Bloom & Hough, 2003; Choi, 2003; Cragg, 1994; Morris et al., 2002; Motiwalla & Tello, 2000; Soon et al., 2000) and perceptions of online courses become more favorable over time (Arbaugh, 2004, Jung et al., 2002; Morris et al.; Wills & Stommel, 2002, Young & Norgard, 2006). In direct comparisons of overall satisfaction with traditional and online courses, no difference is usually found. In their study comparing a traditional versus a Web-based baccalaureate nursing research course, Leasure, et al, (2000) found that both groups indicated satisfaction with their choice of either the Internet or class format on the end of course evaluations. Likewise, in their study of graduate nursing students taking a nursing research course in either an Internet or lecture format, Woo and Kimmick (2000) found no significant differences in overall satisfaction. However, some undergraduate nursing students (Kearns et al., 2004) and graduate nursing students (Ryan et al., 1999) may still prefer traditional face-to-face over Web-based courses.

In a study done in Canada of 39 registered nurses' experiences with a baccalaureate level Web-based course, three questionnaires were used: the Learner Demographic Survey, Online Learner Support Instrument (OLSI), and the Follow-up Survey (Atack & Rankin, 2002). The 16-week *Health Care Relationships* course delivered content as Web-based text and used an asynchronous discussion forum for communication on identified weekly topics between and among students and the teacher. This descriptive study compared the experiences of students in three groups which differed by location of access for the course: only from home, only from work, or from home and work. The survey instruments were developed by the researchers. The Learner Demographic Survey consists of 26 items and, in addition to demographic information, requests information on work history, education, access to a computer and the Internet, computer skills and site of course access (from home or work). The OLSI is a 56-item instrument that includes five subscales: Interaction with Teacher and Peers, Course Design and Resources, Technology, Environment, and Overall Impressions. Lawton's (1997) Model of Supportive Learning for Distance Education provided the theoretical framework for the study and was used as a basis for the survey subscales. Content and construct validity of the OLSI was determined by expert panel review. Internal consistency was reported as an alpha coefficient of .95. This study was one of the few studies to explore the experiences of students who withdrew from a Web-based course. The Follow-up Survey, sent to any student who withdrew from the course, consisted of three demographic items, a checklist of reasons for course withdrawal, and an open-ended question for comments. Study findings suggested that most nurses were satisfied with the overall learning experience and the level of support received in the course. The

two major areas of dissatisfaction were interactions with others and the work environment. While the majority of students felt their interactions with the teacher (79%) and their peers (54%) helped them learn, some students indicated they wanted more regular feedback from the teacher and others missed talking in-person to other students. The Work Environment subscale had the lowest mean score, suggesting that the workplace is not a satisfactory learning environment for all nurses. The researchers point out that the number of students who accessed the course from work all or part of the time was small ( $n = 8$ ), which could influence the findings. All of the subjects indicated they would take another Web-based course in the future and the majority (82%) felt that the online course had met their learning needs. An interesting finding was that 25% of the nurses who enrolled in the Web-based course never even began. An additional 16% who started the course eventually withdrew for a variety of reasons including technical difficulties and missing the classroom environment. The researchers point out a need for further study of the “non-starter” phenomenon and identification of students at-risk for attrition. Strengths of this study include its use of a theoretical framework in distance education and use of a validated research instrument. It is one of the only studies to explore the impact of work versus home as online learning environments for nurses, and to use a follow-up survey to explore the experiences of students who withdrew from the course. Limitations of the study include the relatively small sample size and the potential Hawthorne effect, as the instructors teaching the course were fully informed about the research project that could have influenced teaching practices and thus the study findings.

Satisfaction with online courses may be related in part to faculty factors such as expertise in the creation, selection, and use of technology (Bloom & Hough, 2003), and

the degree of interaction of the instructor with students (Ali et al., 2004; Choi, 2003; Soon et al., 2000). Instructor accessibility and timely responses to students also relates to student satisfaction (Ali et al.; Vonderwell, 2003). Not all students may be satisfied with the increased amount of self-directed learning required in online courses. While some students welcome the collaborative learning that can occur in online courses with little faculty intervention. others desire more input or feedback from the instructor (Soon et al.; Wilhelm et al., 2003). The role of the instructor as a facilitator or guide in learning needs to be made clear to students considering online courses (Morris et al., 2002).

Student interaction with their peers may also influence the degree of satisfaction with online courses. Findings in this area are generally positive, with students identifying that they are able to interact sufficiently with their peers in the online setting (Ali et al., 2004; Brown et al., 2003; Cragg, 1994; Leasure et al., 2000; Morris et al., 2002).

Interaction with peers may more strongly influence student satisfaction with Web-based instruction than the amount of interaction with the instructor (Jung et al., 2000). In one study students felt there was more interaction in the classroom as compared to Web-based modules (Ryan et al., 1999). The sample for this study was a convenience sample of 96 graduate students enrolled in one of seven graduate nursing courses surveyed during the academic year of 1998-1999. The courses were a mixture of on-campus classes (seminars) plus Web modules delivered by a variety of electronic tools and including case studies, electronic discussions, and quizzes. The Web modules were completed outside of the traditional classroom setting. More students agreed that interaction was evident in the classroom ( $N = 98$ ) than in the Web modules ( $N = 65$ ). Interaction in the online setting was present but was different than in the classroom

setting; online discussions were thought-provoking and minimized monopolization of discussions by some students. The investigators concluded that the use of the Web facilitated communication and was convenient, with saving time being cited as a major advantage for students.

A study done in Hong Kong (Sit et al., 2005) used a survey based on the Billings (2001) framework to examine student perspectives of the online learning experience with a focus on factors influencing satisfaction. The sample was 198 students in a post-registration baccalaureate nursing program. The subjects were allowed to return one survey per online course in which they participated during one term; with students participating in an average of 1.5 courses per term, 305 questionnaires were returned. The overall satisfaction rating was satisfied to very satisfied for 56.7 percent of the respondents and dissatisfied to very dissatisfied for 42.8 percent. These results indicate that while slightly more than half of the students were satisfied with online learning, close to half were not. Of note in this study was that face-to-face learning resource sessions were offered to the students in addition to the asynchronous online course. The most frequently identified aspect of satisfaction identified by the students was convenience in studying, followed by access to information and learning materials, and opportunities to interact with teachers and classmates. The study had some mixed results in the area of interaction, as more than half the respondents identified inadequate opportunity to discuss with teachers (64%) and inadequate opportunity to establish peer support (63.3%) as hindrances to learning. So while the online setting can provide opportunities to interact with faculty and fellow students electronically, students may desire more opportunities for discussion and the development of supportive relationships.

A study done in Taiwan (Lin et al., 2007) examined nursing informatics competency and satisfaction with online education among nurses at a medical center. The sample was a convenience sample of 218 nurses who chose to participate in at least four hours of online education related to the clinical ladder system at the medical center and who completed an online questionnaire after participating in the educational program. The tool used was researcher-developed and based on a tool developed by Jiang, Chen, and Chen (2004). Satisfaction with online education was positively correlated to total clinical working experience, personal computer (PC) ownership, amount of online course experience, and ability to use more than three computer applications. Online course experience and PC ownership were the most significant variables for online education satisfaction, accounting for 5.0% of total variance. The nurses were most satisfied with learning results and least satisfied with course content. They rated online education high in the areas of “time saving” and “easy to use”. The study also found that nursing informatics competency and satisfaction with online education are highly correlated.

Two other studies (Arbaugh, 2004, Young & Norgard, 2006) found that satisfaction with online courses increases as students become more experienced with online courses. In Arbaugh’s study of MBA students taking online courses, the greatest differences in perceptions of online courses occurred between the first and second online course experience. Perceived participant interaction, usefulness of technology, and flexibility of and satisfaction with the online course delivery increased with multiple course experiences but the most significant gains were between the first and second courses. Based on the study findings, Arbaugh emphasized the importance of support for novice online learners and suggested that encouraging students to try a second online

course before deciding not to continue further could help with retention in online programs. Young and Norgard (2006) found that as students gain experience with online learning they report greater satisfaction.

### *Areas of dissatisfaction*

Researchers have identified a number of areas of dissatisfaction with online education including the work place as a learning environment and lack of time (Atack & Rankin, 2002), unrealistic expectations regarding time demands for online courses and difficulties connecting to the Internet (Halstead & Coudret, 2000); lack of information regarding related websites (Soon, et al., 2000); and insufficient quantity or timeliness of feedback from the instructor (Halstead & Coudret; Soon; Vonderwell, 2003). Social isolation and lack of connectedness with peers and faculty may be areas of dissatisfaction with online courses for some students (Billings, 2001; Halstead & Coudret, Sit et al., 2005). Students may feel a lack of one-to-one connection with the instructor in the online setting and may be dissatisfied with the degree of participation of their fellow students (Vonderwell). It is important for nurse educators to be aware that while overall satisfaction with online education is high, areas of dissatisfaction still exist and are areas for improvement.

## 2.5 Social Presence

Social presence is a concept that has its base in the telecommunications literature. Short, Williams, and Christie (1976) developed social presence theory as a model for analyzing the social - psychological dimensions of mediated communication from a “social cues perspective” (Gunawardena & Zittle, 1997). They defined social presence as

“the degree of salience of the other person in the interaction and the consequent salience of the interpersonal relationships” (Short, et al., p. 65). They viewed social presence as a quality of the communications medium itself and hypothesized that “communications media vary in their degree of social presence, and ...these variations are important in determining the way individuals interact” (p. 65). The capacity of the medium to transmit information about facial expression and non-verbal cues contribute to the degree of social presence of a communications medium. Differences in how these factors contribute to social presence and the importance of each of these factors are highly individualized. According to Homer, et al. (2008), a general finding of the body of research into social presence and learning is that when information is presented in a way that increases social presence, it is better remembered by learners and the learning process is considered more engaging. A recent study of the experiences of students in online nursing courses (Sit et al., 2005) underscores the continued importance of social presence in the CMC setting in that 36% of the subjects identified that there was inadequate opportunity for human contact and interaction in the online learning mode. One subject commented that she felt like she was “talking to the computer” and felt lonely and sometimes bored.

Short et al. (1976) described social presence as a construct comprised of two concepts: intimacy (Argyle & Dean, 1965) and immediacy (Wiener & Mehrabian, 1968). Argyle and Dean asserted that intimacy in a communication medium is influenced by the factors of physical distance, eye contact, smiling, and personal topics of conversation. Short, et al., suggested that social presence be added to the list of factors that contribute to intimacy of a communication medium. Wiener and Mehrabian conceptualized immediacy as a measure of psychological distance that a communicator puts between

himself and the object of his communication. Immediacy and non-immediacy can be conveyed verbally or non-verbally through physical proximity, formality of dress, and facial expression. Immediacy enhances social presence (Gunawardena & Zittle, 1997).

Viewed within Short, Williams, and Christie's framework, text-based computer-mediated communication (CMC) could be considered to be potentially low in social presence. Gunawardena (1995) took Short, et al.'s work a step further by refining the definition of social presence as "the degree to which a person is perceived as a "real person" in mediated communication" (p. 151) and asserted that social presence can be "cultured" among participants in teleconferences and computer-mediated communication. Gunawardena (1995) reported on two studies of student perceptions of CMC in computer conferences linking graduate students to discuss distance education issues and research related to distance education. The instrument was a researcher-developed questionnaire used to evaluate the conferences that included 17 five-point bipolar scales soliciting student reactions on a range of feelings towards CMC. The first study sample consisted of 70 graduate students from four universities in the U.S. that participated in the conference. The second study was a comparison of two student groups (n=90) at one university that participated in the conference the following year. Findings from both studies indicated that CMC was characterized by the subjects as highly interactive, active, stimulating, and a social medium. The role of the moderator was identified as critical to creating a sense of online community and enhancing social presence. Useful techniques include providing a forum for introductions of participants, facilitating some social interaction along with academic interaction, and providing collaborative learning experiences. Gunawardena believes that "it is these techniques, rather than the medium,

that will ultimately impact students' perception of interaction and social presence" (p. 165). Gunawardena and Zittle (1997) differentiate social presence and interaction, indicating that interactivity is a potential quality of communication that may or may not be realized by the individual. When it is realized and noticed by participants, there is "social presence." Tu and McIssac (2002) also supported the reciprocal relation of interaction and social presence, noting that in order to increase the level of online interaction, the degree of social presence must also be increased.

Gunawardena and Zittle (1997) also studied how effective social presence is as a predictor of overall student satisfaction in an inter-university computer conference using CMC. The subjects were fifty graduate students in distance education from five universities in the U.S. who participated in an inter-university virtual conference. The conference was a class requirement that ran the length of the semester. Students were required to do a research project, share results with the other students, moderate discussion on their research project, and participate in discussions of other student research projects. Communication was conducted online via asynchronous, text-based computer mediated communication. The instrument used in the study was the GlobalEd questionnaire, which was developed by the researchers to evaluate the conference and assess student responses to CMC, including social presence. Social presence was found to be a strong predictor of student satisfaction. Another finding of the study was that among subjects with a low level of social presence, emoticon use had no effect on satisfaction, while at higher levels of social presence emoticon use is associated with increased satisfaction. According to Lahaie (2007) "emoticons (e.g., smiley faces) are anthropomorphic symbols used frequently in online interactions, such as in e-mail and

discussions” (p. 100). These symbols as well as acronyms such as “LOL” for laughing out loud, influence social presence in online courses by compensating for the lack of voice inflections, facial expressions, and other physical gestures (Lahaie). In an exhaustive search of the literature, no studies were found that explored the use of emoticons in text-based communication in online nursing courses.

Garrison, Anderson, and Archer (2000) included social presence in a model of community inquiry which they developed for use as a conceptual framework in computer-mediated communication in higher education. The model identified three core elements of an educational experience that included *social presence* and two other concepts: *cognitive presence*, and *teaching presence*. *Cognitive presence*, a vital element in critical thinking, refers to the extent to which participants in a community of inquiry are able to construct meaning through sustained communication. *Teaching presence* refers to designing and managing learning, providing subject matter expertise, and facilitation of active learning. In the model, *social presence* is defined as “the ability of participants in the community of inquiry to project their personal characteristics into the community, thereby presenting themselves to others as 'real people'” (Garrison, et al., p. 89). Three categories of social presence are identified in the model: expression of emotion, open communication, and group cohesion. Emotional expression includes humor and self-disclosure. Open communication consists of reciprocal and respectful exchanges. Examples of open communication are mutual awareness and recognition of each other’s contributions. Group cohesion refers to activities that foster a sense of group commitment and a sense of belonging. Garrison (2000) and his colleagues argue that cognitive presence itself is not enough to sustain a community of learners— individuals

must feel comfortable relating to each other. Therefore, social presence is critical to cognitive presence and to establishing a critical community of learners, as explicated by the authors: “social presence marks a qualitative difference between a collaborative community of inquiry and a simple process of downloading information” (Garrison, et al., p. 96). The third element of the model, teaching presence, consists of the design of the educational experience and facilitation. Teaching presence is “a means to an end—to support and enhance social and cognitive presence for the purpose of realizing educational outcomes” (Garrison, et al., p. 90). While the teaching role is pivotal in building a community of learners, when the Community of Inquiry Model (e.g. cognitive presence, social presence, and teaching presence) is applied to a computer conferencing environment, social presence is regarded as a function of both learners and teachers (Rourke, Anderson, Garrison, & Archer, 1999). Rourke et al. postulated that while fairly high levels of social presence are necessary to support the development of deep and meaningful online learning, there is an optimal level above which too much social presence may be detrimental to learning. This is an interesting area for further study.

In a study of best practices and social presence in a Web-based international nursing informatics pilot course (Skiba, Holloway, & Springer, 2000), a university in the United States and one in Holland participated in creating a pilot graduate course in nursing informatics. Eleven students, all American, participated in the evaluation of the course. Three Dutch students who were originally enrolled in the course did not continue participation due to course overloads and according to the authors, “the abstract nature of the course” (p. 651). Only a few students elected to take the course for graduate credit, and the majority participated for continuing education credit. The evaluation tool used

was the Best Practices in Teaching and Learning in Web-Based Nursing Courses, of which 49 closed ended items were selected for this study, focusing on the areas of outcomes, educational practices and technology use/user support. Three open-ended questions were also included: best things about the course, how it can be improved, and the amount of hours per week spent on the course. The social presence tool was the 14-item Social Presence Scale developed by Gunawardena and Zittle as part of the GlobalEd questionnaire (1997). Average means were reported for each of the social presence items, but no mean overall social presence scores were reported nor were any correlations made between social presence and any other variables. A qualitative component of evaluation was included in which students were interviewed regarding their lived experiences with online education. More than half (54%) of the students indicated they were more likely to enjoy learning in the course due to electronic communications as compared to a similar class that relied primarily on face-to-face discussions. Students also felt that electronic communication made them less likely to feel isolated from other students (54%) and the instructor (54%) as compared to face-to-face discussions. The students expressed a universal theme of building social presence through online education. The most frequently identified barrier to social presence was lack of student participation. Students suggested strategies to enhance social presence such as providing team building exercises, posting student and instructor biographies at the beginning of the class, offering exercises in critical thinking, and including project presentations. Limitations of the study are the small sample size and the fact that some students elected to take the course for graduate credit and others for continuing education credit.

In a mixed methods study of the relationship of social presence and interaction in online classes (Tu & McIsaac, 2002), social presence was described as “a measure of the feeling of community that a learner experiences in an online environment” (p. 131). Forty-three students enrolled in a graduate level online course participated in the study. The researchers did not further describe the type of course by subject. The course was delivered by FirstClass, a computer conferencing system that provides e-mail, bulletin board, and real-time chat functions. Text-based computer-mediated communication was used as the online communication format in the course. The research instrument used in the study was the online Computer-Mediated Communication (CMC) Questionnaire developed by one of the researchers. The questionnaire included seventeen social-presence items and thirteen privacy items, each with a five-point Likert scale. Based on the literature, the researchers chose to examine three dimensions of social presence: social context, online communication, and interactivity. For the purposes of the study, interactivity was defined as “the activities in which CMC users engage and the communication styles they use” (p. 135). The dimensions of social context, online communication, and interactivity were found to positively impact social presence. Perceived social presence ( $M = 3.32$ ,  $SD = .39$ ) and privacy ( $M = 3.08$ ,  $SD = .53$ ) of CMC were not found to be highly correlated ( $r = .286$ ). Based on the study results, the researchers concluded that social presence is a more complicated construct than previous studies indicated and they further described social presence as “the degree of feeling, perception, and reaction of being connected by CMC to another intellectual entity through a text-based encounter” (p. 140). Qualitative data were collected by participant observation and suggested that social presence is impacted by students’ social

relationships such as demonstrating caring, exchanging information, and providing services. Consistent with Gunawardena's (1997) findings, students used emoticons to compensate for the lack of social context cues in the online communication environment. Response time by faculty to student questions was also found to be critical to online interaction and was related to the degree of perceived social presence. While the study was limited by a relatively small sample size, the mixed methods design provided breadth and depth of data.

In a study of undergraduate and graduate students ( $N = 97$ ) participating in all online learning courses during one term at a college, a correlational design was used to examine the relationship of social presence, perceived learning, and satisfaction with the instructor (Richardson & Swan, 2003). The authors did not identify whether subjects were undergraduate or graduate students, or both. The survey consisted of a modified version of Gunawardena and Zittle's (1997) Social Presence Scale along with questions about students' overall perceptions of the course and general demographic items. This was one of the few studies in which the researchers examined individual course activities including: lectures; notes and reading assignments; written assignments; individual projects; group projects; and self-tests, module tests, and the final exam. Perceptions of social presence correlated positively to perceived learning and perceived satisfaction with the instructor. Students' perceptions of social presence served as a predictor of perceived learning. This is also one of the few studies to examine gender differences in experiences with online education. There was a statistically significant correlation between gender and overall social presence scores ( $p < .05$ ), indicating that gender accounted for approximately 5% of the variability in students' overall social presence scores, with

women having higher perceived social presence. Perception of social presence was not influenced by age or amount of college experience. In the analysis of individual course activities, a significant correlation was found between social presence and perceived learning in each of the activities, with the strongest correlation being in class discussions and question and answer areas ( $r = .83$ ,  $p < .01$ ,  $R^2 = .69$ ), followed by group projects ( $r = .80$ ,  $p < .01$ ,  $R^2 = .64$ ). The investigators believe this shows that the social presence of the instructor and/or other students was perceived by students as a key component of the educational experience and that social presence occurs in learning activities normally thought of as individual in nature. While they included the variable 'number of previous online courses' on their questionnaire, they did not report their findings in this area.

## 2.6 Summary

While there are numerous advantages of online education, challenges and barriers still exist (Atack & Rankin, 2002). Much of the early literature on online education in nursing was anecdotal and the majority of recent studies have been qualitative (Mancusco-Murphy, 2007). Limitations of existing studies include small sample sizes, mixtures of online class formats and levels of students, use of instructors as researchers, and a lack of studies building on previous studies using reliable and valid research instruments. The results of existing studies are often mixed and there is a lack of research that validates instruments for evaluation of the online educational experience. There are insufficient studies focusing on outcomes in online education and correlating factors. According to Atack and Rankin (2002), in Web-based learning "considerable emphasis has been put on whether students learn, however insufficient attention has been paid to

the quality of the student's learning experience" (p. 458). There is a need for further study of the experiences of nursing students with online courses and outcomes including satisfaction and perceived learning.

Interaction has been identified as a key component of the online educational experience, yet there is a lack of reliable and valid research instruments and studies in this area. Social presence has been identified as a component of interaction and there is a growing body of literature indicating the importance of social presence in online education. Yet there have been few studies published on social presence in online nursing courses. Further study is indicated to provide more information on this important construct that will assist nurse educators in planning optimal online educational experiences for nursing students.

There are few studies which have explored the relationship of factors such as age, gender and online educational experience to social presence, perceived learning, and satisfaction with online education. No studies were found that explored the relationship of ethnicity or cultural background to the quality and outcomes of the online educational experience in nursing or the experiences of English as second language (ESL) students. This an area of knowledge that needs to be developed so that distance education technology can be used effectively to promote learning for diverse groups of students (Billings, 2007). Two studies found that use of emoticons was related to social presence, but this has not been examined in any nursing studies. These factors will be explored in this study in order to build the base of nursing knowledge in this area.

There is also a need to build on the existing theory-based research in online nursing education (Billings, 2000). This study will add to body of knowledge regarding

online pedagogy and theoretical underpinnings by using the Billings' Framework for Assessing Outcomes and Practices in Web-based Courses in Nursing as the conceptual framework. This study will also contribute to the body of knowledge in online education in nursing by providing needed specific information on the experiences of nurses with this educational format, including the relationship of social presence to the outcomes of satisfaction and perceived learning. Factors that may influence students' experiences with online education, such as age, gender, ethnicity, experience with online education, and use of emoticons will also be explored. This information can be used by nurse educators to develop effective online communities of learning which meet the scholarly, professional, and social learning needs of nursing students.

# Chapter 3

## Methodology

The purpose of this study is to assess social presence in online nursing courses and its relationship to student satisfaction and perceived learning. Chapters one and two presented the study problem statement, significance of the study, purpose of the study, research questions, and a review of the literature. This chapter describes the methodology used for the study including the research design, the sampling plan, procedure for the protection of human participants, description of the instruments, and procedure for data collection and analysis.

### 3.1 Research Design

This study used a descriptive, correlational design with self-administered questionnaires via the Internet. The nature of the research questions, supported by gaps in the current literature, guided the chosen methodology. The purpose of descriptive research is to accurately describe situations or phenomena (Polit & Beck, p. 192). Correlational research explores the relationship among variables without either an active intervention by the researcher or an environmental phenomenon resulting in a natural

experiment. In this study, the variables of social presence, satisfaction, and perceived learning were examined in Web-based nursing courses.

### 3.2 Sample and Setting

Subjects were students in an RN to BSN program at one public college in the northeastern United States. This group was selected as the sample for the study because of the research interests of the researcher and the access the researcher had to a relatively large group of potential subjects in this program with 630 students in the RN to BSN program. With the rapid growth of online education in nursing there is a need for more research on the experiences of RN to BSN students with online courses. The subjects were students in any of the Web-based nursing courses offered during the semester in which data were collected. All of the courses were 12-weeks in length and were offered fully online through the Blackboard learning platform (<http://www.blackboard.com>). Class size in the nursing program is kept to a maximum of 15 students. The range of class size for the RN-to-BSN courses during the term this study was conducted was 7 to 15 students, with an average class size of 12.3. The course format was asynchronous and text-based. The rationale for the college using this format is to keep computer requirements to a minimum so that the most students may have access to the course materials without a need for particular high-end technical requirements or expertise. The asynchronous discussion format was appropriate for this study as while there are no hard data, it is likely that a large percentage of online nursing programs still utilize the asynchronous, text-based format as the predominant online course format. Even in programs which may use other enhanced technology such as video streaming,

asynchronous discussion between and among students and instructors remains an important component of online courses. Discussion forums in the online courses in this study were used for discussion on course-assigned topics between and among students and the instructors. The requirements for discussion were that the students must post a minimum of three substantive comments on two different days during each week. While the online discussion forum was the most frequently used mode of communication in the courses, there was also the capability of e-mail communication for students and instructors. The online instructors were all off-site and had no face-to-face contact with students. While phone contact between faculty and students and among students was possible, the primary means of communication for students and faculty was the asynchronous discussion board within the courses. There are no synchronous office hours with faculty. All of the courses were organized in a similar modular format in Blackboard. Participation in the study was on a voluntary basis. Inclusion criteria were that subjects must be registered nurses in the RN-to-BSN program enrolled in a Web-based nursing course during the term the data were collected. Exclusionary criteria included students who were not enrolled in a Web-based nursing course during the term in which the study was conducted.

### 3.3 Procedures for Protection of Human Subjects

The Duquesne University Institutional Review Board (IRB) reviewed and approved the proposal prior to initiation of the study (Appendix 4). Since the college where the study was conducted was not a research university and did not have an IRB, the Dean of the School of Nursing reviewed and approved the proposal (approval letter

on file). The study was explained to all potential subjects via two e-mails sent from the researcher. The first e-mail was an advance notice e-mail sent after IRB approval was obtained, during week four of the 12 week course. This e-mail notified the potential subjects of the study and the opportunity to participate in the study survey during the tenth week of the term. The second e-mail was sent during the tenth week of the term explaining the study and subject rights and included a link to the Web-based survey. The e-mail explained that participation was voluntary and would have no impact on the course grade and that submission of the completed survey online signified informed consent. Subjects were provided with a contact phone number and e-mail address for the researcher for any questions related to the study. There were no anticipated risks with this study. Data was maintained in secure Internet and personal computer files so that only the researcher and the statistical consultant (confidentiality agreement on file), had access to this information.

### 3.4 Instruments

Two survey instruments were used in this study, the Social Presence Scale and the Satisfaction Scale (Gunawardena & Zittle, 1997). The Social Presence Scale was used to measure social presence. The Satisfaction Scale was used to measure satisfaction and perceived learning. The Social Presence Scale and Satisfaction Scale are subscales of the GlobalEd Questionnaire developed by Gunawardena and Zittle (1997) to evaluate the educational experience and assess student responses to computer-mediated communication (CMC) in a multi-university conference. The GlobalEd Questionnaire is a 61-item questionnaire that uses five-point Likert scale items to measure the following

items: social presence, active participation in the conference, attitude toward CMC, barriers to participation, confidence in mastering CMC, perception of having equal opportunity to participate in the conference, adequate training in CMC at the participant's site, technical skills and experience using CMC, and overall satisfaction with the course. The sub-scales, the Social Presence Scale and the Satisfaction Scale, were used by Gunawardena and Zittle (1997) to study of the effectiveness of social presence in predicting satisfaction in a computer-mediated conferencing environment.

### *Social Presence Scale*

The Social Presence Scale has been used in studies of online courses with undergraduate and graduate nursing and non-nursing students (Richardson & Swan, 2003; Skiba , Holloway, & Springer, 2000). The Social Presence Scale (Table 3.1) consists of fourteen items that embody the concept of “immediacy” as defined in Short, et al. (1976). A Likert scale is used with scores ranging from 1-5. A score of 1 = strongly disagree, 2=disagree, 3=uncertain, 4-agree, and 5=strongly agree. The maximum score possible is 70. Table 2 shows the Social Presence Scale used in this study. Slight modification to the wording of the scale was made as appropriate for a Web-based nursing course. The word “GlobalEd” was replaced on the scale with “online nursing course” or “course” to better reflect the online courses in which the nursing students were participating. Permission was obtained from Dr. Gunawardena to make these minor modifications and use the scale (Appendix 5). No other adjustments to the scale were made.

**Table 3.1**

Questionnaire Items in the Social Presence Scale

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Item #	Text
1.	Messages in the online nursing course were impersonal. *
2.	Computer-mediated communication (CMC) is an excellent medium for social interaction.
3.	I felt comfortable conversing through this text-based medium.
4.	I felt comfortable introducing myself in the online nursing course.
5.	The introductions enabled me to form a sense of online community.
6.	I felt comfortable participating in the course discussions.
7.	The instructor(s) created a feeling of an online community.
8.	The instructor(s) facilitated discussions in the course.
9.	Discussions using the medium of CMC tend to be more impersonal than face-to-face discussions. *
10.	CMC discussions are more impersonal than audio teleconference discussions. *
11.	CMC discussions are more impersonal than video teleconference discussions. *
12.	I felt comfortable interacting with other participants in the online course.
13.	I felt that my point of view was acknowledged by other participants in the course.
14.	I was able to form distinct individual impressions of some course participants even though we communicated only via a text-based medium.

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\* These items in questionnaire were reverse coded for analysis.

Content validity of the Social Presence Scale was assessed by Gunawardena and Zittle (1997) through a bivariate correlational analysis comparing it with six selected bi-polar social indicators used by Short et al. (1976) to measure the concept of “immediacy” in mediated communication. The positive polar ends of the social indicators were: immediate, interactive, personal, sensitive, social, and warm. Gunawardena and Zittle (1997) reported correlation coefficients of .52 – .87 between the bi-polar items and the Social Presence scale, “suggesting that the Social Presence Scale used in this study may be thought to accurately measure the intended social presence parameters” (p. 17). Reliability was reported as a Cronbach’s Alpha of .88. Polit and Beck (2004) indicate that reliability coefficients of .70 are usually adequate and coefficients of greater than .80 are

highly desirable. Carmines and Zeller (1979) indicate that a Cronbach's alpha of at least .80 should be achieved for widely used instruments.

### *Satisfaction Scale*

The Satisfaction Scale (Gunawardena & Zittle, 1997) consists of ten items scored on a Likert scale of 1-5 as in the Social Presence Scale. A score of 1 = strongly disagree, 2=disagree, 3=uncertain, 4-agree, and 5=strongly agree. Reliability was reported as .87 using Cronbach's Alpha, sufficient according to Carmines and Zeller (1979). Validity data was not presented.

Table 3.2 shows the Satisfaction Scale used in this study. For the purposes of this study, one item on the initial scale was deleted that was specific to the GlobalEd conference ("Projects like GlobalEd enhance face-to-face on-campus courses") and not relative to the Web-based nursing courses in this study. The maximum possible score for the scale in this study was 45. The word "GlobalEd" was replaced on the scale with "online" or "online nursing course" to better reflect the online courses the nursing students were participating in. Permission to use the scale with these adjustments is in Appendix 5. No other adjustments to the scale were made.

**Table 3.2**

#### Questionnaire Items in the Satisfaction Scale

Item #	Text
1.	I was able to learn through the medium of CMC.
2.	I was able to learn from the online discussions.
3.	I was stimulated to do additional reading or research on topics discussed in the online nursing course.
4.	I learned to value other points of view.
5.	As a result of my experience with the online nursing course, I would like to participate in another online course in the future.
6.	The online course was a useful learning experience.
7.	As a result of my participation in the online course, I made acquaintances electronically in other parts of the country/world.

Table 3.2 (continued)

8. The diversity of topics in the online course prompted me to participate in the discussions.
  9. I put a great deal of effort to learn the CMC system to participate in the online course.
- 

### *Demographic Questionnaire*

A demographic questionnaire (Appendix 6) was developed for the study and administered along with the Social Presence and Satisfaction Scales. This questionnaire included items on age, gender, race/ethnicity, English as second language, and prior experience with online courses. The items in the demographic questionnaire were selected based on gaps identified in the literature.

### 3.5 Procedures for Data Collection

Potential subjects were recruited via e-mails sent to all enrolled students in the RN-to-BSN program at the college. After IRB approval was obtained during week four of the twelve week online course, an advance notice e-mail (Appendix 7) from the researcher was sent to all enrolled nursing students, letting them know generally about the study and that an e-mail with detailed information and a link to a Web-survey would follow later in the term. The purpose of this initial e-mail was to give advance notice to the students so they could plan participation in the survey into their workload schedule during the course term. At the same time that the advance notice e-mail was sent out to students, instructors in the online nursing courses were notified about the study by an e-mail from the researcher (Appendix 8). This e-mail was sent as a courtesy to the instructors to inform them and gain their support of the study, as well as to provide contact information should the students or instructors have any questions. A cover e-mail

with a link to the Web survey was sent by the researcher to all enrolled students during the tenth week of the twelve week term, which was two weeks before the end of course evaluations were sent to the students. The cover e-mail (Appendix 9) contained information about the purpose of the study, procedures for data collection, confidentiality of participants and data, security of the Web site, and reporting of data. The e-mail included a link to the Web-based survey (Appendix 10). As it was possible that some subjects were taking more than one online nursing course in the term in which data were collected, an item on the demographic questionnaire asked subjects if this was the case to focus on one online nursing course which they felt was most typical of their online course experience, and to identify the course on the questionnaire. Two weeks after the initial e-mail was sent to students a second e-mail with a link to the survey was sent to those students who had not yet responded to the questionnaire (Appendix 11).

A self-administered Internet questionnaire was chosen as the data collection format for this study as self-administered questionnaires are cost-effective and provide anonymity which can enhance objective responses by participants. Interviewer bias is also avoided. Use of the Internet to administer questionnaires allows for data to be collected directly via the Web in a form amenable to analysis (Polit & Beck, 2004). E-mail and Web-based surveys are being used more frequently, including in nursing education, and are becoming a common method of choice for administering surveys (Conley, 2007; Morris, Fenton, & Mercer, 2004). Advantages of Internet surveys include cost savings since paper and postage and time for data entry are eliminated (Conley, 2007; Lakeman, 1997). Internet surveys are usually completed within one to two days, thus offering a quicker turnaround time as compared to paper surveys which may take

weeks to receive back (Duffy, 2002). Internet surveys offer anonymity and can be formatted in an attractive manner with the use of color, both of which can enhance response rate (Lakeman).

Internet surveys also pose some disadvantages. For example, one disadvantage of Internet surveys is that response rates may be lower than with mail surveys (Duffy; Lakeman). This may be due to system incompatibility and spam filters (Hartford, Carey, & Mendonca, 2007). These problems were less likely to occur with this study as the current e-mail addresses of online students were used. Another disadvantage of Internet surveys is that potential participants may be concerned about privacy and confidentiality of their responses and thus may chose not to participate. Placing the survey on a secure site, such as Zoomerang (<http://www.zoomerang.com>), and requiring a password for the investigator to log in, as was done in this study, ensures that the responses are private and secure (Morris et al., 2004). Students in this online program are familiar with the use of a Web-based format for course evaluations and other surveys. Since some students may still prefer a paper survey (Atack & Rankin, 2002) the option to request one was included in the e-mail notifications. One student requested and returned a paper survey. The Web-based survey was set up so that multiple surveys could not be submitted from the same e-mail address, to avoid duplication.

### 3.6 Procedures for Data Analysis

Data from each survey were entered into a database automatically through the Internet survey service Zoomerang (<http://www.zoomerang.com>). Data were stored in a secure database protected by password as well as database and network firewalls.

Zoomerang network operations staff perform regular security audits on the servers. Data are stored at a secure hosting facility with both physical and software-based security systems (Zoomerang, n.d.). The data were exported from Zoomerang to Excel for import into the Statistical Package for Social Sciences (SPSS) version 11.1 (<http://www.spss.com>).

Analysis proceeded in five distinct phases defined by the nature of the survey instrument and the research questions. The first phase of the study was purely descriptive. During this phase, the summary statistics, including the degree of missing data, for all survey questions were tabulated. The second phase of analysis was confirmatory. During this phase, the content validity and internal consistency of both the Social Presence and Satisfaction scales were determined. The purpose of this phase was to confirm that, in this context of this study; both scales remained valid instruments and continued to display an internal consistency similar to that of previous work (Gunawardena & Zittle, 1997). Each of the remaining three phases was defined by one of the three research questions. The analysis performed in support of each phase was exploratory and focused upon the research question under examination. All analysis was performed using the SPSS version 11.1. and, as appropriate, the R-statistical programming language.

#### *Phase 1: Descriptive Analysis*

Analysis began by determining the general characteristics of the dataset. This was done by calculating the descriptive statistics (mean, mode, median, standard deviation, etc.) of each response. Of particular interest in this analysis was the level of non-response, or degree of missingness, for each item and for the dataset as a whole. As

suggested by Rubin (1996) and Little and Rubin (1989), a series of logistic regressions were used to test if non-responses, or missing data, were occurring at random.

### *Phase 2: Confirmatory Analysis*

Carmines and Zeller (1979) stipulate that a Cronbach's alpha of at least .8 should be achieved for widely used instruments. In a previous examination, Gunawardena and Zittle (1997) showed the Social Presence Scale attained a Cronbach's alpha of .88. Prior to examining the research questions, it was determined if the dataset yielded a similar level of internal consistency. This was done in two ways. First, Cronbach's alpha was computed for both the Social Presence scale and the Satisfaction scale to test if they significantly differed from prior studies at the 5% level. Then, drawing from classical test theory (Fisher, 1941) Cronbach's alpha's relation with factor analysis was used.

### *Phases 3 – 5: Exploratory Analysis of the Research Questions*

Although the specific analytic models used to examine each research question varied in terms of the variables considered, there are several criteria that were consistent. All of the statistical tests were performed at the 5% level ( $\alpha=.05$ ). All potential confounding factors (covariates) were screened prior to final analysis. When developing the final multivariate models, if the inclusion of a covariate created unanticipated problems, appropriate adjustments such as centering around the mean or adding additional interaction terms were made. It was anticipated that the group of covariates would explain a significant proportion of variance in the dependent variable. However, the power analyses that follow in section 3.7 did not take this effect into account. As a result, these power estimates were likely to be conservative (T.J. Flottemesch, personal communication, September 23, 2007). Effect size estimates presented in section 3.7 were

calculated using the Power Analysis and Sample Size (PASS 2002) Software (Hintze, 2004).

*Research question 1: What is the relationship of social presence and satisfaction in online nursing courses?*

This question was explored through a series of bivariate comparisons that compared the items in the Social Presence scale to those of the Satisfaction scale. Rather than treating the responses as continuous variables and comparing mean response levels, each combination was treated distinctly. In other words, analysis focused upon whether higher ordinal responses in the Social Presence scale corresponded to higher ordinal responses in the Satisfaction scale. This protected against both central tendency and acquiescence bias. The statistical test used was Cohen's Weighted Kappa.

Since Likert scales are summative, analysis also explored the correlation between various composite measures of social presence and satisfaction previously developed in the literature (Gunawardena & Zittle, 1997; Richardson & Swan, 2003; Skiba, Holloway, & Springer, 2000). These analyses determined these relationships using correlation coefficients. In an attempt to identify unique domains of social presence and satisfaction, factor analysis of the Social Presence Scale and Satisfaction Scales was done. Correlation between the composite measures of social presence and satisfaction, and the identified factors was then done.

*Research question 2: What is the relationship of social presence to perceived learning in online nursing courses?*

This question required a sub-analysis of the data focusing upon the first two questions of the satisfaction scale which focus on learning. A series of bivariate

comparisons with the items of the Social Presence Scale was done followed by a correlation of the composite measures using Spearman's rho. Correlation between the composite measures of perceived learning, social presence, instructor performance, and the four social presence factors was then estimated.

Additionally, consistent with previous studies and to further explore research questions 1 and 2, a multivariate regression analysis was adjusted for demographics and used to explore the association of social presence with satisfaction and perceived learning.

*Research question 3: Are there differences in social presence, satisfaction, and perceived learning in online nursing courses related to characteristics of students such as age, gender, race/ethnicity, or experience with online education?*

The study gathered demographic information in addition to the Social Presence and Satisfaction scales. Bivariate associations were done using analysis of variance (ANOVA) to explore the relations between the demographic factors, social presence, satisfaction, and perceived learning. Additionally, a series of multivariate regression models incorporating demographic factors were used to explore the relationships.

### 3.7 Sample Size Determination and Power Analysis

In study designs such as this one, a statistical power of 80% is desirable (Graybill, 1961; Guenther, 1977; Murphy & Myers, 2004). Because there was some uncertainty surrounding expected response rates, statistical power or detectable effect sizes for various response rates are discussed.

As the analysis of categorical outcomes generally exhibits less power than continuous or ordinal outcomes, demographic analysis of the third research question is presented as a series of proposed contingency tables (Table 3.3). The rows in Table 3.3 correspond to possible response rates from the 296 students estimated to be enrolled in the undergraduate nursing courses at the college during the semester data were collected and their associated sample sizes. The columns in Table 3.3 correspond to possible degrees of association between the demographic factor and survey response under examination. The larger this value, the greater for degree of association. For instance, a level of association of .1 corresponds to only a 10% total increase in the level of agreement between the survey response and the demographic factor. For example, when comparing gender, an association of .1 indicates that males are only 10% more likely to answer “strongly agree” than females. Clearly this signifies a low level of association. In contrast, an association of .5 indicates males would be 50% more likely than females and signifies a strong association.

**Table 3.3**

Contingency Table of a Power Analysis to Detect a Significant Association between a 5-level Survey Response and a 2-level Demographic.

Response Rates	Sample Size	Overall Level of Association: $\sqrt{\chi^2/N}$		
		0.1	0.3	0.5
18%	54	7.84%	38.56%	85.23%
27%	79	9.28%	54.74%	96.19%
46%	135	12.76%	80.80%	99.90%
53%	158	14.27%	87.22%	99.98%

Table 3.3 lists the statistical power of a  $\chi^2$  test of a contingency conducted at the 5% level for various response rates and effect sizes. These are interpretable as the

probability a statistical test will detect a significant association given an association actually exists between the two factors. Table 3.3 indicates anticipated response rates of 18-53% would provide sufficient power to detect moderate (.3) to large (.5) levels of association while protecting against indicating a significant relation when the actual level of association is low (.1). In other words, a minimum sample size of 54 would provide sufficient statistical power to detect meaningful effects (Cohen, 1988) while protecting against false positives.

The focus of research questions 1 and 2 is upon determining if significant correlations exist between elements of the social presence and satisfaction scale. Thus, the primary interest is in knowing what size correlation can be detected with anticipated response rates. (Table 3.4).

**Table 3.4**

The Detectable Correlation between Social Presence and Satisfaction Scale Factors Assuming an  $\alpha=.05$  and 80% Statistical Power.

Response Rates	Sample Size	Detectable Correlation
18%	54	0.37011
27%	79	0.30885
46%	135	0.23825
53%	158	0.22061

Table 3.4 indicates that this study would be sufficiently powered to detect a significant correlation in the range of .22 to .37 depending upon the actual response rate.

### 3.8 Summary

The study used a descriptive, correlational design with self-administered questionnaires delivered via an e-mail with link to a Web-based survey housed on a secure website. Subjects were students in an RN-to-BSN program at one college who were enrolled in undergraduate online nursing courses during the term in which data were collected. Participation in the study was voluntary and had no anticipated risks. The survey instruments were the Social Presence Scale, the Satisfaction Scale (Gunawardena & Zittle, 1997) and a demographic questionnaire. Data analysis consisted of descriptive analysis, confirmatory analysis, and analysis of each of the three research questions using appropriate statistical techniques.

# Chapter 4

## Results

### 4.1 Introduction

The purpose of this chapter is to present the results of the data analysis for this study. The chapter begins with a description of the sample for the study. The variable subscales are then discussed, including reliability analysis and summary statistics. Each research question is then presented with a discussion of the statistical analysis and results.

### 4.2 Description of the sample

#### *Response rate and post-power analysis*

Of the 296 students enrolled in an online nursing course during the term that data were collected, 128 responded to the study survey, yielding a response rate of 43.24%. This response rate is within the expected range for mail and web-based questionnaires which typically achieve response rates less than 50% (Polit & Beck 2004). According to the power analysis presented in Chapter 3 and a post-power analysis, this response rate and corresponding sample size provides sufficient power (80%) to detect a .23 level of correlation between items of the social presence and satisfaction scales, and a .30 association between demographic levels (e.g. male versus female, age, number of years

experience in nursing). One of the 128 subjects requested a paper survey which was mailed to the subject, returned, and entered manually into the database.

*Descriptive characteristics of the respondents*

The sample for this study consisted of 128 students in an online RN-to-BSN program at one college in the northeastern U. S. who responded to the online survey at the end of one 12-week course term. Descriptive characteristics of the respondents are summarized in Table 4.1.

The majority of respondents were age 40 or older ( $n = 98, 77\%$ ) and female ( $n = 94\%$ ). The majority were Caucasian/white ( $n = 104, 81\%$ ), with the second most frequent ethnicity reported as African-American (10%). English was the predominant primary language ( $n = 117, 91\%$ ), with 8% ( $n=9$ ) identifying themselves as English as second language (ESL) students. The number of years of nursing experience ranged from 0 to 5 years ( $n = 24, 19\%$ ) to greater than 25 years ( $n = 28, 22\%$ ), with the majority 11 years or greater (total  $n = 89, 70\%$ ). The majority of respondents had online course experience of two or more previous courses ( $n = 85, 66\%$ ). Emoticon usage in the online courses was reported by 70% ( $n = 90$ ) of respondents. The majority reported no phone contact with the instructor during the course ( $n = 118, 92\%$ ).

**Table 4.1**

<b>Descriptive characteristics of the sample</b>		
<b>Characteristic (N = 128)</b>	<b>n</b>	<b>%</b>
<b>Age</b>		
20-29	10	8%
30-39	20	16%
40-49	54	42%
50-59	42	33%
60-69	2	2%
<b>Gender</b>		
Female	120	94%
Male	8	6%

<b>Table 4.1 (continued)</b>		
<b>Ethnicity</b>		
Caucasian/White	104	81%
African-American/Black	13	10%
Asian	3	2%
Hispanic/Latino	1	1%
Mixed Race	1	1%
Other, please specify	4	3%
Indian Born	1	1%
Irish American Latina	1	1%
Naturalized citizen/black	1	1%
<b>Primary Language</b>		
English	117	91%
ESL	9	7%
Missing data	2	2%
<b>Years in Nursing</b>		
0 to 5	24	19%
6 to 10	15	12%
11 to 15	30	23%
16 to 20	16	13%
21 to 25	15	12%
Greater than 25	28	22%
<b>Online Course Experience</b>		
First Course	21	16%
One Previous Course	22	17%
Multiple Previous Courses	85	66%
<b>Use of Emoticons</b>		
Yes	90	70%
No	37	29%
Missing data	1	1%
<b>Phone Contact with Instructor</b>		
Less than once per week	10	8%
None	118	92%

### 4.3 Variable Subscales

#### *Reliability Analysis of the Social Presence and Satisfaction Scales*

This study employed two instruments to measure social presence and satisfaction, the Social Presence Scale and the Satisfaction Scale (Gunawardena & Zittle, 1997). Both used a five-point Likert scale. Although these scales have been used in previous studies of online learning, some minor modifications to the wording of specific scale items were

made as appropriate to this study. Thus reliability for each of the scales used in this study was analyzed by calculating Cronbach's alpha. The Cronbach's alpha for the Social Presence Scale was .87 and for the Satisfaction Scales was .85. This is consistent with previous studies. Polit and Beck (2004) indicate that reliability coefficients of .70 are usually adequate and coefficients of greater than .80 are highly desirable. Carmines and Zeller (1979) indicate that a Cronbach's alpha of at least .80 should be achieved for widely used instruments.

#### *Social Presence Scale*

The mean, median, standard deviation, and degree of missingness was evaluated for each of the 14 items in the Social Presence Scale. The descriptive statistics are presented in Table 4.2. Maximum score possible for each item was five. Items 1, 9, 10, and 11 were reverse coded in data analysis. After reverse coding, the average scores ranged from 1.98 (item 9: Discussions using the medium of CMC are more impersonal than face-to-face discussions) to 4.37 (item 4: I felt comfortable introducing myself in the online nursing course), with eight items having an average score greater than four and ten having a median of four. The four highest scoring items (4, 6, 12, and 13) concerned comfort with communication. All respondents felt comfortable introducing themselves and communicating in an online environment, and no respondent indicated any level of disagreement with any of these items. The lowest scoring items (9, 10, 11) all concerned the equivalency of computer-mediated communication (CMC) to alternative forms of communication. After reverse coding, the average score for these items ranged from 1.98 to 2.36, with median values of 3. Only 9% of respondents indicated either strongly agreeing or disagreeing with any of these statements. The completion rate for the Social

Presence Scale was high. There were only five incomplete responses and no survey was missing more than one item. Since the degree of missingness was low, the missing at random assumption was maintained.

**Table 4.2**  
**Descriptive Statistics for the Social Presence Scale**

<b>Item</b>	<b>Text</b>	<b>Mean</b>	<b>Median</b>	<b>SD</b>	<b>N Missing</b>
1	Messages in the online nursing course were impersonal.*	2.19 (2.81)	2	0.92	
2	Computer-mediated communication is an excellent medium for social interaction.	3.70	4	0.88	1
3	I felt comfortable conversing through this text-based medium.	4.20	4	0.73	
4	I felt comfortable introducing myself in the online nursing course.	4.37	4	0.53	
5	The introductions enabled me to form a sense of online community.	4.16	4	0.69	
6	I felt comfortable participating in the course discussions.	4.32	4	0.69	1
7	The instructor(s) created a feeling of an online community.	4.02	4	0.91	1
8	The instructor(s) facilitated discussions in the course.	3.89	4	0.99	1
9	Discussions using the medium of CMC tend to be more impersonal than face-to-face discussions.*	3.02 (1.98)	3	1.12	1
10	CMC discussions are more impersonal than audio teleconference discussions.*	2.64 (2.36)	3	0.85	
11	CMC discussions are more impersonal than video teleconference discussions.*	2.84 (2.16)	3	0.86	
12	I felt comfortable interacting with other participants in the online course.	4.33	4	0.53	
13	I felt that my point of view was acknowledged by other participants in the course.	4.29	4	0.58	
14	I was able to form distinct individual impressions of some course participants even though we communicated only via a text-based medium.	4.10	4	0.73	

\*Items were reverse coded during analysis and construction of factors (reverse-coded value in parentheses)

### *Factor Analysis of the Social Presence Scale*

Factor analysis of the Social Presence Scale was conducted in attempt to identify unique domains of social presence. Factor analysis is a statistical technique with the purposes of reducing the number of variables, to detect underlying interrelationships among variables, and to identify variables that can be grouped together as unified concepts (Polit & Beck, 2004). For an item to be retained for a given factor, it needed to have a loading with an absolute value of .25 or greater. Four factors were identified that explained 58% of the total variation in the data.

Items 4, 5, 6, and 12 loaded most heavily upon the first factor which explained 19% of the total variance. All of these items concerned the individual's comfort with communicating and sharing in an online environment. Consequently, this factor was interpreted as a measure of the respondents' comfort with communication opportunities provided by the CMC classroom and was entitled "Overall Comfort with Online CMC Communication".

The second factor explained 16% of the total variation and loading most heavily upon this factor were items 10, 11, and 9. These items contrasted CMC with an alternative form of communication. Item 10 contrasted CMC with audio teleconferences. Item 11 contrasted CMC to video teleconferencing, and item 9 contrasted CMC with face-to-face communication. This factor was interpreted as a comparison of CMC to alternative mediums of distance education and was entitled "Communication with CMC and Online Environment".

The third factor, "Comfort and Community of CMC/Online Environment", explained 13% of the variance. Loading most heavily upon this factor were the two questions concerning the instructor and his/her facilitation of the course (items 7 and 8)

and acknowledgement of points of view (item 13), comfort with participation (item 6) and community (item 5).

The fourth and final significant factor explained 10% of the total variance. Five items (2, 3, 6, 12, and 9) significantly loaded upon this factor. Item 2 had the largest loading and asked the respondents' opinion regarding CMC as a medium for communication. The remaining items asked questions regarding comfort with communication and interaction. This factor was thus interpreted as the respondents' attitudes regarding CMC communication and was entitled "Attitudes toward CMC/Online Communication".

#### *Composite and Combined Outcomes of the Social Presence Scale*

Based on earlier studies employing the Social Presence Scale and the literature, two composite measures, "Overall Social Presence in Course" and "Instructor Performance", were developed for further analysis in this study. The four domains identified in the factor analysis were also explored. The descriptive statistics for each are presented in Table 4.3. Overall Social Presence is a summation of all 14 items in the Social Presence Scale with a maximum possible score of 70. Instructor Performance is a summation of items 7 and 8 with a maximum possible score of 20. Scores for Overall Social Presence in the course ranged from 36 to 70, with a mean of 54.69 (maximum possible score of 70), indicating a moderately high level of social presence. Scores for Instructor Performance ranged from 2 to 10 with a mean of 7.91 (maximum possible score of 10), indicating a moderately high level of instructor performance in the area of social presence.

**Table 4.3**

<b>Composite Social Presence Measures</b>					
	<b>Mean</b>	<b>Median</b>	<b>SD</b>	<b>Max</b>	<b>Min</b>
<b>Composite Measures</b>					
Overall Social Presence in Course	54.69	54	6.75	70	36
Instructor Performance	7.91	8	1.74	10	2
<b>Table 4.3 (continued)</b>					
<b>Identified Factors</b>					
Overall Comfort with Online and CMC Communication	21.49	20.92	2.42	26.14	15.15
Communication with CMC and Online Environment	14.85	14.76	2.44	20.72	7.38
Comfort and Community of CMC/Online Environment	13.86	13.78	2.02	17.29	7.35
Attitudes toward CMC/Online Communication	14.42	14.25	1.87	18.12	8.11

*Satisfaction Scale*

The mean, median, standard deviation, and degree of missing data was evaluated for each of the 9 items in the Satisfaction Scale. The descriptive statistics are presented in Table 4.4. The maximum possible score for each item was five. Average scores ranged from 3.93 to 4.43 with six items having an average score greater than 4 and two having a median of 5. The two highest scoring items (5 and 6) had median scores of 5. These questions concerned willingness to participate in another online course and indication of the usefulness of the online learning experience. The two lowest scoring items were items 7 and 9. Item 7 asked about making acquaintances with other parts of the world/country. This lower average response may reflect the demographic homogeneity of the sample. Item 9 concerns effort with learning the CMC system and likely reflects the subjects' experience with online courses.

The degree of missing data was evaluated. The completion rate for the Satisfaction Scale was high with only four incomplete responses and no survey missing

more than one item. Since the degree of missing data was low, the missing-at-random assumption was maintained.

**Table 4.4**

**Descriptive Statistics for the Satisfaction Scale**

<b>Item</b>	<b>Text</b>	<b>Mean</b>	<b>Median</b>	<b>SD</b>	<b>N Missing</b>
1	I was able to learn through the medium of CMC.	4.43	4	0.60	
2	I was able to learn from the online discussions.	4.45	4	0.59	1
3	I was stimulated to do additional reading or research on topics discussed in the online nursing course.	4.09	4	0.79	1
4	I learned to value other points of view.	4.32	4	0.59	
5	As a result of my experience with the online nursing course, I would like to participate in another online course in the future.	4.55	5	0.61	
6	The online course was a useful learning experience.	4.54	5	0.61	1
7	As a result of my participation in the online course, I made acquaintances electronically in other parts of the country/world.	3.71	4	0.97	
8	The diversity of topics in the online course prompted me to participate in the discussions.	4.11	4	0.78	
9	I put a great deal of effort to learn the CMC system to participate in the online course.	3.93	4	1.03	1

*Factor Analysis of the Satisfaction Scale*

Similar to analysis of the Social Presence Scale, factor analysis of the Satisfaction Scale was done in attempt to identify unique domains of satisfaction. For an item to be retained for a given factor it needed to have a loading with an absolute value of .25 or greater. Four factors explaining 64% of the total variation in the data were identified.

The first factor explained 19% of the total variance. All ten of the satisfaction items had a factor loading of greater than .25 for this factor and it was interpreted as a “General Satisfaction” factor.

The second factor explained 17% of the total variation. Loading most heavily upon this factor were items 6 and 5, which concerned usefulness and future interest in CMC. In addition, items 1, 8 and 9 that concerned learning and participation also significantly loaded upon this factor. This combination of utility, interest and participation led this factor to be interpreted as “Overall Usefulness”.

Item 1 asked about learning through CMC and loaded most heavily upon the third factor. Items 2, 4, and 6 also loaded upon this factor. As all four items concerned learning, this factor was interpreted as a measure of Learning from the Course. It explained 14% of the total variance.

The fourth and final significant factor explained 14% of the total variance. Five items (3, 2, 4, 6, and 8) significantly loaded upon this factor. The loading of item 3 dominated the others and led to the final interpretation as a measure of intellectual “Stimulation and Ongoing Learning”.

#### *Composite and Combined Outcomes of the Satisfaction Scale*

Based on the literature, previous studies, and the research questions for this study, composite satisfaction measures were developed for Overall Satisfaction with the course and for Perceived Learning. Overall Satisfaction with the course is a summation of all 9 items on the Satisfaction Scale and the maximum possible score is 45. Perceived Learning is a summation of items 1 and 2 on the Satisfaction Scale and the maximum possible score is 10. These two measures were used in the data analysis along with the

four domains identified in the factor analysis. The range for Overall Satisfaction with the course was from 20 to 45 with a mean score of 38.13 out of a maximum possible score of 50, indicating a moderately high level of overall satisfaction with the online course. The range for Perceived Learning was from 5 to 10 with a mean score of 8.52 out of a possible maximum score of 10, indicating a high level of perceived learning. For each of the four factors that were identified, a factor score for each respondent was computed as a weighted sum of items significantly loading on that factor. The summary statistics for the composite measure and factors are presented in Table 4.5.

**Table 4.5**

<b>Composite Satisfaction Measures</b>					
	<b>Mean</b>	<b>Median</b>	<b>SD</b>	<b>Max</b>	<b>Min</b>
<b>Composite Measures</b>					
Overall Satisfaction with course	38.13	38	4.53	45	20
Perceived Learning	8.52	8	1.20	10	5
<b>Identified Factors</b>					
General Satisfaction	15.87	15.86	1.88	18.63	8.08
Usefulness of Course	13.86	14.14	1.63	15.94	5.85
Learning From Course	11.74	11.78	1.36	13.48	5.70
Stimulation and Ongoing Learning	11.00	10.87	1.43	12.98	6.49

#### 4.4 Research Question 1: What is the relationship of social presence and satisfaction in online nursing courses?

Bivariate comparison of the items in the Social Presence Scale (SPS) to the items in the Satisfaction Scale (SS) was done to explore whether higher ordinal responses in the SPS correspond to higher ordinal responses in the SS. Cohen's Weighted Kappa was used to assess the level of agreement between the responses. There was a moderate (.25 or

higher) to strong correspondence (greater than .5) between responses to many of the items of the two scales.

Item 6 of the SPS “I felt comfortable participating in the course discussions” had the highest level of agreement (greater than .5) with three items of the SS – item 1 “I was able to learn through the medium of CMC”, item 2, “I was able to learn from the online discussions”, and item 8 “The diversity of the topics in the online course prompted me to participate in the discussions”.

The composite measure of Instructor Performance consists of items 7 and 8 of the Social Presence Scale. Item 8 (The instructor facilitated discussions in the course) did not associate strongly with any of items on the Satisfaction Scale; while item 7 (The instructor created a feeling of an online community) demonstrated only a moderate correspondence with five of the ten items.

A similar lack of association is seen between the items 9, 10, and 11 of the SPS scale and the SS. As these three items (Discussions using the medium of CMC tend to be more impersonal than face-to-face discussions; audio teleconference discussions; and video teleconference discussions) constitute the core of the “Communication with CMC and Online Environment” factor, this finding suggests that the communication factor was not a key determinate of online course satisfaction. This conjecture is further supported in analysis of the composite and combined scores.

Items 5 and 6 of the Satisfaction Scale, which relate to likelihood of participating in an online course in the future and whether the online course was a useful learning experience, show a low level of correspondence to the items of the Social Presence Scale. When compared with other satisfaction factors and composite measures, the factor

labeled “Usefulness of Course” also has a significantly lower correlation to Overall Social Presence. It is possible that subjects felt well connected in the online course yet the connection was not related to the perception of value of the course content.

Item 7 of the SS, “As a result of my participation in the online course, I made acquaintances electronically in other parts of the country or world,” had a low level of agreement with all items in the SPS except for item 14, “I was able to form distinct individual impressions of some course participants even though we communicated only via a text-based medium,” where the agreement level was .31.

#### *Correlation of Composite Measures*

Based on the literature, previous studies, and the research question, correlation between composite measures of social presence and satisfaction was computed using Spearman’s rho (Table 4.6). Results are displayed in Table 4.6 Overall Social Presence is highly correlated with Overall Satisfaction ( $r_s = .63$ ); however, this level of correlation is not consistent across all sub-domains of satisfaction. While General Satisfaction, Learning, and Stimulation are correlated at a similar level as indicated by their overlapping confidence intervals, Overall Social Presence is correlated at a significantly lower level with Usefulness of the Course ( $r_s=.41$ ). Again, this may suggest that value of course content is less important to perceptions of social presence and satisfaction. While students may feel connected and overall satisfied with the online course experience, these perceptions may be related less to the value of the course content than to other aspects of the course.

Table 4.6 also reports the correlation of the composite variable of Instructor Performance from the SPS with Overall Satisfaction and the four satisfaction factors. Instructor Performance is highly correlated with all aspects of Overall Satisfaction in a consistent manner with correlation coefficients ranging from .44 to .5.

**Table 4.6**

**Correlation between Social Presence, Instructor Performance, and Satisfaction**

	Correlation Coefficient	(95% Confidence Interval)*
<b>Overall Social Presence</b>		
<b>with Overall Satisfaction</b>	<b>0.63</b>	<b>(0.52, 0.73)</b>
with General Satisfaction	0.69	(0.59, 0.77)
with Usefulness of Course	0.41	(0.26, 0.55)
with Learning From Course	0.62	(0.5, 0.72)
with Stimulation and Ongoing Learning	0.64	(0.52, 0.73)
<b>Instructor Performance</b>		
<b>with Overall Satisfaction</b>	<b>0.46</b>	<b>(0.31, 0.58)</b>
<b>Table 4.6 continued</b>		
with General Satisfaction	0.46	(0.31, 0.58)
with Usefulness of Course	0.46	(0.31, 0.58)
with Learning From Course	0.44	(0.29, 0.57)
with Stimulation and Ongoing Learning	0.50	(0.35, 0.62)

\* All  $p < .001$  Testing a Null of correlation = 0

Table 4.7 reports correlations between the sub-domains of the Social Presence and Satisfaction Scales. All of the factors of the Social Presence Scale show strong correlations with those of the satisfaction scale (.61-.71) except for Communication with CMC and Online Environment. Reflecting the results of bivariate analysis, the Communication with CMC and Online Environment shows a significantly lower level of correlation (.39-.45) with domains of the Satisfaction Scale.

**Table 4.7**

**Correlation between Social Presence and Satisfaction Scale Factors**

<u>Social Presence Factors</u>	<u>Satisfaction Factors</u>			
	<b>General Satisfaction</b>	<b>Usefulness of Course</b>	<b>Learning From Course</b>	<b>Stimulation and Ongoing Learning</b>
<b>Overall Comfort with Online and CMC Communication</b> (95% Confidence Interval)	0.72 (0.62, 0.79)	0.68 (0.57, 0.76)	0.71 (0.61, 0.78)	0.69 (0.59, 0.77)
<b>Communication with CMC and Online Environment</b> (95% Confidence Interval)	0.44 (0.28, 0.56)	0.41 (0.25, 0.54)	0.45 (0.30, 0.58)	0.39 (0.23, 0.53)
<b>Comfort and Community of CMC/Online Environment</b> (95% Confidence Interval)	0.63 (0.51, 0.72)	0.61 (0.48, 0.70)	0.61 (0.49, 0.71)	0.65 (0.54, 0.74)
<b>Attitudes toward CMC/Online Communication</b> (95% Confidence Interval)	0.67 (0.55, 0.75)	0.64 (0.52, 0.73)	0.67 (0.56, 0.75)	0.64 (0.52, 0.73)

For all correlations  $p < .001$  Testing a Null of correlation = 0

#### 4.5 Research Question 2: What is the relationship of social presence to perceived learning in online nursing courses?

Exploration of the relationship of social presence to perceived learning began with a sub-analysis of the data focusing on the first two items of the satisfaction scale as the composite variable for perceived learning. Bivariate correlations of the composite variable Perceived Learning with the items of the Social Presence Scale were calculated using Spearman’s rho. All items on the SPS correlated significantly with perceived learning at  $p < .05$  except item 10 “CMC discussions are more impersonal than audio

teleconference discussions”. The highest significant correlations with perceived learning were SPS item 6 “I felt comfortable participating in the course discussions” ( $r_2=.65$ ,  $p<.001$ ), and item 13 “I felt that my point of view was acknowledged ( $r_2=.501$ ,  $p<.05$ ).

Further examination of the relationship between social presence and perceived learning was done by exploring the correlation between the composite measures of Perceived Learning, Overall Social Presence, Instructor Performance, and the four social presence factors (Table 4.8). Perceived Learning is highly correlated with Overall Social Presence and three of the four sub-domains (Overall Comfort with Online and CMC Communication, Comfort and Community of CMC/Online Environment, Attitudes toward CMC/Online Environment). Perceived Learning’s correlation with Instructor Performance is markedly lower than its correlation with Overall Social Presence (.45 versus .61); however this difference is not significant at the 5% level as indicated by the overlapping confidence intervals. Communication with CMC and Online Environment has a significantly lower correlation with Perceived Learning compared to the other sub-domains of Social Presence.

**Table 4.8**

<b>Correlation between Social Presence and Perceived Learning</b>		
	Correlation Coefficient	(95% Confidence Interval)*
Overall Social Presence	0.61	(0.49, 0.71)
Instructor Performance	0.45	(0.3, 0.58)
Overall Comfort with Online and CMC Communication	0.66	(0.55, 0.75)
Communication with CMC and Online Environment	0.41	(0.25, 0.54)
Comfort and Community of CMC/Online Environment	0.60	(0.48, 0.7)
Attitudes toward CMC/Online Communication	0.63	(0.51, 0.72)

\* For all correlations  $p < .001$  Testing a Null of correlation = 0

## 4.6 Regression Analysis for Social Presence, Satisfaction, and Perceived Learning

To further explore research questions 1 and 2, a multivariate regression analysis was done to develop a model to predict the percentage of satisfaction and perceived learning that is explained by social presence (Table 4.9). Adjustments were made for age, ethnicity, years of nursing experience, online course experience, and use of emoticons. Gender was excluded due to a disproportionate number of respondents.

All composite variables and identified factors predicted a significant amount of variance in total satisfaction and perceived learning at  $p < .001$ . Social Presence predicted a higher amount of variation in Overall Satisfaction than in Perceived Learning. The factor Overall Comfort with Online and CMC Communication predicted the highest amount of variation in Overall Satisfaction (.50) and in Perceived Learning (.42). The lowest associations were with Communication with CMC and Online Environment.

**Table 4.9**

<b>Multivariate Regression Models Predicting Satisfaction and Perceived Learning<sup>+</sup></b>					
		<b>Estimate</b>	<b>Std. Error</b>	<b>p value</b>	<b>Adj R-Square</b>
<b>Overall Satisfaction<sup>+</sup></b>	Overall Social Presence in Course	0.43	0.05	<.001	<b>0.44</b>
	Instructor Performance	1.23	0.21	<.001	<b>0.25</b>
	Overall Comfort with Online and CMC Communication	1.26	0.12	<.001	<b>0.50</b>
	Communication with CMC and Online Environment	0.79	0.16	<.001	<b>0.20</b>
	Comfort and Continuity of CMC/Online Environment	1.41	0.16	<.001	<b>0.43</b>
	Overall Comfort with Online and CMC Communication	1.56	0.17	<.001	<b>0.44</b>
<b>Perceived Learning<sup>+</sup></b>	Overall Social Presence in Course	0.11	0.01	<.001	<b>0.36</b>
	Instructor Performance	0.32	0.06	<.001	<b>0.18</b>

**Table 4.9 continued**

	Overall Comfort with Online and CMC Communication	0.33	0.03	<.001	<b>0.42</b>
	Communication with CMC and Online Environment	0.21	0.04	<.001	<b>0.14</b>
	Comfort and Continuity of /Online Environment	0.37	0.04	<.001	<b>0.32</b>
	Attitudes toward CMC/Online Communication	0.41	0.05	<.001	<b>0.37</b>
<i>+Adjusted For: Age, Ethnicity, Years of Nursing Experience, Online Course Experience, and Use of Emoticons</i>					

4.7 Research Question 3: Are there differences in social presence, satisfaction, and perceived learning in online nursing courses related to the characteristics of students such as age, gender, race/ethnicity, or experience with online education?

Bivariate associations were done using ANOVA to explore the relations between the demographic factors, social presence, satisfaction and perceived learning. No significant relationships were identified between the demographic factors and Overall Social Presence. Gender was found to be significantly related to the factor Communication with CMC and Online Environment, with females having a higher mean score on this factor ( $p=.02$ ). Online course experience was found to be significantly related to the factor Usefulness of Course ( $p=.04$ ). Respondents with more than one previous online course had the highest mean score, followed by those in their first online course. Respondents with one online course prior to the current one had the lowest mean score. Significant findings are shown in Table 4.10. No significant relationships were found between the demographic factors, Perceived Learning, and Overall Satisfaction.

**Table 4.10**

<b>Significant Associations of Demographic Factors</b>		
	Mean	<i>p</i> -value
Gender with Communication Factor		
Male	12.97	0.02
Female	14.98	
Online Course Experience with Usefulness Factor		
More than one course prior	14.09	0.04
One course prior	13.13	
First course	13.68	

Further analysis of the impact of the demographic factors was done using a multivariate regression model. Of the demographic factors, only online course experience was found to be significantly related to overall satisfaction ( $p = .05$ ). Those subjects with one course prior had significantly lower overall satisfaction than those subjects with more than one course prior. No demographic variables were found to be significantly related to Perceived Learning.

**Table 4.11**

<b>Regression Analysis of Demographic Factors and Overall Satisfaction</b>			
	Estimate	Std Error	
(Intercept)	37.73	1.84	
30-39	-1.35	1.86	
40-49	-0.30	1.80	
50-59	1.46	1.87	
60-69	3.40	3.97	
Caucasian vs Other	0.47	1.18	
11 to 15 years	1.51	1.38	
16 to 20 years	-0.03	1.64	
21 to 25 years	1.30	1.70	
6 to 10 years	-1.24	1.56	
Greater than 25 years	-1.57	1.51	
One Course Prior	-2.56	1.15	*
First Course	-0.59	1.14	
Uses Emoticons	1.17	0.90	
Adj R-Square	0.03		

\*  $p < .05$

## 4.8 Summary

The purpose of this research study was to explore social presence in online nursing courses and its relationship to student satisfaction and perceived learning. One-hundred and twenty-eight students taking an online nursing course during one term at a college in the northeastern U. S. returned Internet surveys consisting of 34 questions. The study instrument consisted of the Social Presence Scale, the Satisfaction Scale, and demographic items. Reliability analysis of the variable subscales for this study was consistent with previous work by Gunawardena and Zittle (1997) and was at the level that should be achieved for widely used instruments. There was a high degree of completion of the study instrument with little missing data. In addition to descriptive statistics for each of the subscales, composite measures were examined for Overall Social Presence, Instructor Performance, and Overall Satisfaction. Factor analysis was done to attempt to identify unique domains of social presence and satisfaction. Four social presence domains were identified that explained 58% of the variation in the data: Overall Comfort with Online and CMC Communication, Communication with CMC and Online Environment, Comfort and Community of CMC/Online Environment, and Attitudes toward CMC/Online Communication. Four satisfaction domains were identified that explained 64% of the variation in the data: General Satisfaction, Usefulness of Course, Learning from Course, and Stimulation and Ongoing Learning.

The relationship of social presence and satisfaction in online nursing courses was explored first by bivariate comparisons of the items in the Social Presence Scale to the items in the Satisfaction Scale. A moderate to strong correspondence between responses to many of the items was found. A low level of correspondence between the items

comprising the core of the social presence domain Communication with CMC and Online Environment suggests that this factor may not be a key determinate of online course satisfaction. Correlation between composite measures of social presence and satisfaction was then analyzed. Overall Social Presence and Instructor Performance highly correlate with Overall Satisfaction. Correlations of the sub-domains of social presence and satisfaction revealed that all of the social presence factors correlate strongly with each of the satisfaction factors except communication.

The relationship of social presence to perceived learning in online courses was explored first by bivariate correlations of the composite variable Perceived Learning with the items of the Social Presence Scale. This was followed by correlations between the composite measures Perceived Learning, Instructor Performance, and the four social presence domains. Perceived learning is highly correlated with Overall Social Presence and with comfort. Communication has a lower correlation with Perceived Learning.

Multivariate regression was done to further explore the relationship of social presence, satisfaction, and perceived learning. Findings were consistent with the bivariate correlations. All composite variables and factors predicted a significant amount of total variance in Overall Satisfaction and Perceived Learning. An additional finding was that social presence predicted a higher amount of variation in overall satisfaction than in perceived learning.

Finally, ANOVA was used to examine demographic factors in relation to social presence, satisfaction, and perceived learning in online nursing courses. No significant relationships were identified between the demographic factors and Overall Social Presence or Perceived Learning. Two demographic factors were found to be significantly

related to two of the sub-domains. Females had a higher mean score on the communication factor and subjects with more online course experience identified higher usefulness of the course. Further analysis with a multivariate regression model found that those subjects with more online course experience had significantly higher overall satisfaction.

# Chapter 5

## Discussion

### 5.1 Introduction

The purpose of this chapter is to discuss the findings of this research on the relationship of social presence, satisfaction, and perceived learning in online nursing courses. Discussion of the research findings is organized according to the research questions. A summary of the key findings will be presented along with reflection on the literature including previous research studies. The theoretical framework used for this study is the Framework for Assessing Outcomes and Practices in Web-based Courses (Billings, 2000). Key outcome variables from this framework include learning, connectedness, and satisfaction. Findings of this study will be related to the Billings framework within the discussion.

### 5.2 Relationship of Social Presence to Satisfaction in Online Nursing Courses

Exploration of the first research question began with an item analysis of the social presence scale. The four highest scoring items all concerned comfort within the online

course. All respondents felt comfortable introducing themselves and communicating in the online environment and felt that their points of view were acknowledged. In this study, as well as two previous studies (Gunawardena & Zittle; Skiba et al., 2000), item 4 of the Social Presence Scale that related to comfort introducing oneself in the online course was one of the three items with the highest average score. Item 12, that related to comfort interacting with other participants, was also one of the three items with the highest mean scores in this study and in the study by Skiba et al. This suggests that participants in online courses feel comfortable relating and interacting in the online environment. These findings support inclusion of the outcome variables, connectedness and interaction and collaboration with peers, in the Billings' framework. They also support the findings of the EEUWIN Benchmarking study that the issue of isolation or lack of connectedness in Web-based nursing courses is dissipating (Billings, 2005).

The mean Overall Social Presence score was higher in this study ( $M = 54.69$ ,  $SD = 6.75$ ) than in the Gunawardena and Zittle (1997) study ( $M = 49.49$ ,  $SD = 8.81$ ). This could be due to differences in the characteristics of the course and/or subjects in the two studies, or reflect increased social presence in online nursing courses. The subjects in the Gunawardena and Zittle study were graduate students in distance education. The difference could also reflect changing attitudes about online courses and social presence as the use of technology for learning and communication has become more ubiquitous in society.

Descriptive statistics for the Satisfaction Scale reveal that the items with the highest means in this study were likeliness to participate in future online courses, usefulness of the online learning experience, and ability to learn through the medium of

CMC and online discussions. These findings are consistent with Gunawardena and Zittle. Despite the deletion of one item, the mean Overall Satisfaction score in this study was higher ( $M = 38.13$ ,  $SD = 4.53$ ) than in Gunawardena and Zittle's study ( $M = 33.02$ ,  $SD = 6.66$ ) which could suggest that students are satisfied with online courses and this satisfaction may be increasing as online education is becoming more prevalent. This supports the inclusion of satisfaction as a key outcome variable for Web-based nursing courses in the Billings' Framework,

The literature supports the pivotal role of the instructor in promoting connectedness, the development of community, and student satisfaction in online courses. Few studies have specifically examined or measured instructor performance in relation to social presence and satisfaction in online courses. This study used a composite variable of Instructor Performance and had some mixed findings. In the bivariate comparison of the items of the Social Presence Scale with the items of the Satisfaction Scale, the two SPS items that constitute the composite variable of Instructor Performance had different levels of association with the items of the Satisfaction Scale. Item 8 which concerned the instructor facilitating discussions in the course did not associate strongly with any of the items in the satisfaction scale. Item 7 which concerned the instructor creating a feeling of online community only corresponded moderately with some of the satisfaction items. When correlation of the composite Instructor Performance variable was looked at in relation to Overall Satisfaction and the four sub-domains of satisfaction, Instructor Performance correlated highly with all aspects of Overall Satisfaction. This suggests a need for further study of the educational practices of the instructor and student-faculty interaction as presented in the Billings' Framework. The only other study that specifically

looked at the instructor in relation to social presence, perceived learning, and satisfaction was done by Richardson and Shea (2003). The study measured students overall satisfaction with the instructor, but did not specify how this was measured. Therefore, while comparison with this study is limited, Richardson and Shea reported that students' perception of social presence was highly correlated to students' satisfaction with the instructor. Instructor performance in relation to social presence and satisfaction is an area in need of further study.

The analyses of the sub-domains of the Social Presence Scale and the Satisfaction Scales revealed high correlations between all domains of social presence with satisfaction with one important exception - the communication sub-domain. The individual items of the Social Presence Scale in this sub-domain relate to the medium of CMC. This suggests that the domains of comfort, community, and attitude are more important than the medium to satisfaction with online learning. This is of interest in particular in light of the early social presence theory literature (Short, Williams, & Christie, 1976) which viewed social presence as a quality of the communication medium itself and impacted the way individuals interact within that medium. The findings of this study suggest that the communication medium itself (e.g. asynchronous, text-based online discussion format) now may be less important to the quality of and satisfaction with the online learning experience than the relationships, comfort, and community fostered and developed within that environment. This is an area in need of further study.

### 5.3 Relationship of Social Presence to Perceived Learning in Online Nursing Courses

The results of this study corroborated discussions in the literature and findings in a previous study that social presence is highly correlated to perceived learning in online courses. Richardson and Swan (2003) reported that students' overall perceived learning yielded a correlation of .68 with students' overall social presence scores ( $p < .05$ ), this study found a correlation .61 ( $p < .001$ ). Keeping in mind that perceived learning was measured differently in the two studies, Richardson and Swan's regression analysis established that social presence predicted 46% of the variation in perceived learning and this study found that social presence predicted 36% of the variation in perceived learning. Perceived learning in this study was highly correlated with comfort and community in the online environment. Instructor Performance and Communication were correlated to a lesser degree with Perceived Learning. This was supported by the multivariate regression model. These findings suggest that establishing comfort and a sense of community in the online course is more important to perceived learning than instructor performance and communication within the medium. As learning remains a key outcomes variable in the Billings Framework, further research to identify how learning is impacted by other variables such as educational practices of the instructor, connectedness, and interaction and collaboration with peers is indicated.

## 5.4 Social Presence, Satisfaction, and Perceived Learning in Online Nursing Courses Related to Descriptive Characteristics of Learners

Few studies to date have examined whether there are differences in the online learning experience in relation to descriptive characteristics of the learners. This study found that there were no differences in Overall Social Presence or Perceived Learning based on demographics of the sample. However, by delving into the sub-domains of social presence and satisfaction through the factor analyses and ANOVA, some differences were found related to gender and online course experience. Gender was found to be significantly related to the sub-domain of social presence, Communication with CMC and Online Environment. This communication factor was found to be more important to females than to males in online nursing courses. Previous studies have shown mixed results in the area of gender and online learning experiences. One study found no differences in perceptions of online learning based on gender (Wu & Hiltz, 2003) and another found that females had higher overall social presence scores (Richardson & Swan, 2003). Young & Norgard (2006) found that females have a stronger need for interaction in online courses and are more satisfied with online course discussions. These findings support that there are gender differences in online course experiences that may relate primarily to increased importance of communication, interaction, and social presence to female students. This is an area in need of further study.

This study also found that online course experience was significantly related to Overall Satisfaction and the sub-domain Usefulness of Course. Those subjects with more than one online course prior had the highest overall satisfaction and perception of

usefulness of the course. While few other studies to date have explored the relation of amount of online course experience to perspectives of online learning some work in this area is starting to appear. Young and Norgard (2006) found that preference for online courses and comfort with online course discussions increased with multiple course experience (seven or more previous online courses). Arbaugh (2004) found that nearly all of the significant gains in perceived interaction, usefulness of the technology, and flexibility of and satisfaction with online courses occurred between students' first and second online courses. These findings suggest that satisfaction, perception of usefulness of online courses, and other perspectives of the online learning experience may increase as students gain experience and become more comfortable with this learning format.

In light of Gunawardena and Zittle's (1997) finding that there is a relationship between emoticon use, social presence, and satisfaction in a CMC learning environment, this study asked subjects about emoticon usage. No significant relationship of emoticon usage to social presence, satisfaction, or perceived learning was detected. The lack of a significant finding is likely due to a lack of variation in the study responses as a large percentage of subjects reported use of emoticons. Emoticon usage is likely much more common-place now than when the Gunawardena and Zittle study was conducted.

## 5.5 Summary

The purpose of this chapter was to discuss the findings of this research on the relationship of social presence, satisfaction, and perceived learning in online nursing courses. In examining the relationship of social presence to satisfaction in online nursing courses, comfort within the online course was identified as a key element. Overall social

presence and satisfaction with the online course experience was higher in this study than in the landmark Gunawardena and Zittle (1997) study. The analyses of the sub-domains of the Social Presence Scale and the Satisfaction Scales revealed high correlations between all domains of social presence with satisfaction with one important exception - the communication sub-domain.

In exploring the relationship of social presence to perceived learning in online nursing courses the results of this study corroborated discussions in the literature and findings in a previous study that social presence is highly correlated to perceived learning in online courses. Perceived learning is also highly correlated with comfort and community in the online environment.

While few significant differences in the overall online learning experience related to descriptive characteristics were found in this study, the communication factor in online nursing courses is more important to female students. Online course experience is also significantly related to overall satisfaction and perceived usefulness of the course.

# Chapter 6

## Summary and Recommendations

### 6.1 Summary

As online education becomes more ubiquitous, the need for theory-based research on outcomes in this area is paramount. The primary purpose of this research study was to examine the relationship of social presence, satisfaction, and perceived learning in online nursing courses. Secondly the study explored whether there were any differences in the online learning experience related to demographic characteristics of learners. The theoretical framework for the study was the Framework for Assessing Outcomes and Practices in Web-based Courses in Nursing (Billings, 2000). The study used a descriptive, correlational design with an Internet survey. The study sample consisted of 128 RN-to-BSN students taking online nursing courses during one term at one college in the northeastern United States. The study instrument consisted of 34 items incorporating the Social Presence Scale and Satisfaction Scale (Gunawardena & Zittle, 1997) and demographic items. Descriptive statistics for each of the study sub-scales were reported as well as composite measures for overall social presence, instructor performance, and overall satisfaction. The study findings support the continued reliability and validity of the Social Presence and Satisfaction Scales. Factor analysis was done to identify sub-

domains of social presence and satisfaction. The sub-domains for social presence identified in this study are Overall Comfort with Online and CMC Communication; Communication with CMC and Online Environment, Comfort and Community of CMC/Online Environment, and Attitudes towards CMC/Online Communication. The sub-domains for satisfaction are General Satisfaction, Usefulness of Course, Learning from Course, and Stimulation and Ongoing Learning. Key findings of the study were that social presence and instructor performance in enhancing social presence and building a community of learning are strongly related to student satisfaction with online learning. The social presence sub-domains correlate highly with all sub-domains of satisfaction except the communication factor. Perceived learning is highly correlated with overall social presence and with the comfort sub-domain, and to a lesser degree to the communication factor. Multivariate regression findings were consistent with the findings of the correlational analysis with an additional finding that social presence predicts a higher amount of variance in overall satisfaction than in perceived learning. Analysis of the demographic characteristics of the sample revealed few significant relationships except that communication in online courses appears to be more important to female students and students with more online course experience report higher overall satisfaction.

## 6.2 Limitations of the Study

A limitation of this study is the self-selection of subjects. Subjects decided themselves whether or not to return an Internet survey. The self-report nature of the study instrument may lead to subjectivity. The subjects were students in one RN-to-BSN

program, therefore generalizability of study results is limited. While the response rate of 43.24% is within the expected range for Web-based surveys and achieved sufficient power, there were still a good number of potential subjects who did not respond to the survey and this could have influenced the results. Subjects may have participated in more than one online nursing course during the term the study was conducted and may have been exposed to various instructors, which could influence their self-reports. As the study was not limited to one particular undergraduate nursing online course, the nature of the course could have influenced the results.

### 6.3 Implications for Nursing Education

In order to provide the best possible learning experience for nurses in online courses, nurse educators need to know what factors influence the quality and outcomes of this learning format. Nursing education administrators need to recognize the importance of providing education regarding best practices in online education to nurse educators and orientation to the online framework used in their particular setting to new faculty. The results of this study underscore the importance of creating a sense of social presence in online nursing courses in order to increase student satisfaction and perceived learning. The role of the instructor in the quality of the online learning experience has been recognized in the literature and the findings of this study support this. Instructor performance in facilitating online course discussions and building a feeling of community in the online course is key to the development of social presence, student satisfaction, and learning. Nurse educators should develop guidelines for faculty regarding expectations for quantity and quality of faculty participation in online discussion boards within

courses, as well as rubrics to assist faculty in evaluating discussion board participation by students. Monitoring of course interactions and providing feedback, particularly to new online instructors, could be very helpful in enhancing the ability of faculty to develop an effective community of learning in their online classroom. As online learning becomes more prevalent, the communication medium itself (e.g. asynchronous, text-based discussion format) is becoming less important than the relationships fostered within the online course environment. Creating a sense of comfort for students within the online course is an important component of quality in online nursing courses. Instructors can facilitate the comfort level within the online course by providing discussion forums for introductions of the instructor and the students; for student discussions off-topic from the course content; and for students to ask the instructor any course-related questions. Nurse educators need to recognize that there may be differences in the needs, expectations, and perceptions of students in online courses based on individual differences such as gender. Female students may find social presence, interaction, and communication to be more important to satisfaction and perceived learning than male students. Instructors should keep in mind that male students may be less participative in online discussions and/or more focused on course content and assignments rather than online discussion. Consideration could be given to including demographic questions on course evaluations so faculty might have more information on this important area. Nurse educators also need to remain cognizant that perceptions of online courses may change as students gain experience with this learning format. Students in their first and second online courses may need more support and more effort from the instructor in order to enhance social presence and build a sense of community than students with more course experience.

## 6.4 Recommendations for Nursing Research

The results of this study emphasize the continued importance of examining satisfaction and perceived learning as key outcomes in online courses. Social presence remains a key influential component of the quality of the online learning experience from the student perspective. The Social Presence Scale developed by Gunawardena and Zittle in the late 1990's remains a highly reliable research instrument and should continue to be used in nursing research studies. Additionally, the Satisfaction Scale is a reliable means of measuring satisfaction in online courses. Rather than constantly developing unique ways to measure satisfaction, nurse researchers could use this scale more so that study findings can more easily be compared. While the scales have been shown to be reliable in CMC and asynchronous course environments, further study of their reliability in other types of online learning environments, such as blended or hybrid courses, would be beneficial. The scales could also be used to examine the impact of emerging technologies such as video streaming and multimedia learning environments, e.g., voice tools, on social presence, an area in need of further study (Homer, et al. 2008). In addition, the composite variables of instructor performance and perceived learning as used in this study can be used in future studies. The study findings also suggest a need for more research into the sub-domains of social presence and satisfaction with the online learning experience, in particular the area of comfort with online learning. This study looked at the RN-to-BSN student, comparative studies with different levels of nursing students such as generic BSN students as well as MSN and doctoral levels are needed.

An area for further study is to explore the effectiveness of various instructor communication styles and online pedagogies on social presence, satisfaction, and

perceived learning in online nursing courses. More nursing research is needed regarding the relationship of demographic characteristics of learners to the online course experience. Gender differences as well as differences related to prior online course experience and ethnicity are areas that merit further study. International students and assessment of cultural implications could also be explored. There is a need to add to the growing body of work regarding how individual learner characteristics interact with the characteristics of learning materials, such as different types of online learning environments, to affect the learning experience (Homer, et al., 2008). Finally, an interesting area of future study might be whether there are any differences in instructor performance or student perceptions of online learning related to instructor characteristics such as gender, age, or ethnicity.

## 6.5 Conclusion

The purpose of this research study was to examine social presence in online nursing courses and the relationship to satisfaction and perceived learning. Additionally, demographic characteristics of the subjects were explored in relation to the study variables. The theoretical framework for the study was Billings' Framework for Assessing Outcomes in Web-based Nursing Courses. The study findings corroborate the continued importance of social presence to satisfaction and perceived learning in online nursing courses. Additionally, the study contributes to the body of knowledge in this area by identifying several sub-domains of social presence and satisfaction. Comfort with the online environment and course is a key area of importance. The role of the instructor in enhancing social presence, comfort, and a sense of community is pivotal to student

satisfaction and perceived learning in nursing courses. Continued use of the Social Presence and Satisfaction Scales as well as examination of instructor performance and the sub-domains are recommended areas for future nursing research.

## REFERENCES

- Aiken, L. H., Clarke, S., Cheung, R. B., Sloane, D. M., Silber, J. H. (2003). Educational levels of hospital nurses and surgical patient mortality. *JAMA*, 290(12), 1617-1623.
- Ali, N. S., Hodson-Carlton, K., & Ryan, M. (2004). Students' perceptions of online learning: implications for teaching. *Nurse Educator*, 29(3), 111-115.
- Allen, I. E., & Seaman, J. (2006). *Making the grade: Online education in the United States, 2006*. Needham, MA: The Sloan Consortium.
- Allen, I. E., & Seaman, J. (2007). *Online nation: Five years of growth in online education*. Needham, MA: The Sloan Consortium.
- American Association of Colleges of Nursing. (2000). Distance technology in nursing education: assessing a new frontier. *Journal of Professional Nursing*, 16(2), 116-122.
- American Association of Colleges of Nursing. (2005). Faculty shortages in baccalaureate and graduate nursing programs: Scope of the problem and strategies for expanding the supply. Retrieved April 12, 2008, from <http://www.aacn.nche.edu/Publications/WhitePapers/FacultyShortages.htm>
- Anderson, S., & Miller, A. (2007). Implementing transformational leadership as a model for service learning activities in an online RN to BSN leadership course. *Online Journal of Nursing Informatics (OJNI)*, 11(1).
- Arbaugh, J. B. (2004). Learning to learn online: A study of perceptual changes between multiple online course experiences. *Internet and Higher Education*, 7, 169-182.
- Argyle, M., & Dean, J. (1965). Eye contact and distance affiliation. *Sociometry*, 28(3), 289-304.
- Atack, L. (2003). Becoming a web-based learner: Registered nurses' experiences. *Journal of Advanced Nursing*, 44(3), 289-297.
- Atack, L., & Rankin, J. (2002). A descriptive study of registered nurses' experiences with web-based learning. *Journal of Advanced Nursing*, 40(4), 457-465.
- Bata-Jones, B., & Avery, M. D. (2004). Teaching pharmacology to graduate nursing students: evaluation and comparison of Web-based and face-to-face methods. *J Nurse Educator*, 43(4), 185-189.
- Bentley, G. W., Cook, P. P., Davis, K., Murphy, M. J., & Berding, C. B. (2003). RN to BSN program: Transition from traditional to online delivery. *Nurse Educator*, 28(3), 121-126.

- Billings, D. M. (2000). A framework for assessing outcomes and practices in Web-based courses in nursing. *Journal of Nursing Education, 39*(2), 60-67.
- Billings, D. M. (2005). The EEUWIN Benchmarking Model: What we have learned about the use of the Web in nursing education [Webcast]: The TLT Group.
- Billings, D. M. (2007). Distance education in nursing: 25 years and going strong. *CIN: Computer, Informatics, Nursing, 25*(3), 121-123.
- Billings, D. M., Connors, H. R., & Skiba, D. J. (2001). Benchmarking best practices in Web-based nursing courses. *Advances in Nursing Science, 23*(3), 41-52.
- Billings, D. M., Skiba, D. J., & Connors, H. R. (2005). Best practices in Web-based courses: generational differences across undergraduate and graduate nursing students. *Journal of Professional Nursing, 21*(2), 126-133.
- Bloom, K. C., & Hough, M. C. (2003). Student satisfaction with technology-enhanced learning. *CIN: Computer, Informatics, Nursing, 21*(5), 241-246; quiz 247-248.
- Brown, S. T., Kirkpatrick, M. K., & Wrisley, C. D. (2003). Evaluative parameters of a Web-based nursing leadership course from the learners' perspectives. *Journal of Nursing Education, 42*(3), 134-137.
- Buckley, K. M. (2003). Evaluation of classroom-based, Web-enhanced, and Web-based distance learning nutrition courses for undergraduate nursing. *Journal of Nursing Education, 42*(8), 367-370.
- Carmines, E. G., & Zeller, R. A. (1979). *Reliability and validity assessment*. Beverly Hills, CA: Sage Publications.
- Chickering, A. W., & Ehrman, S. (1996). Implementing the seven principles: Technology as lever. Retrieved June 6, 2005, from <http://www.tltgroup.org/LTAs/SEVEN%20PRINCIPLES1pager.htm>.
- Chickering, A. W., & Gamson, Z. F. (1987). Seven principles for good practice in undergraduate education. *AAHE Bulletin, 39*(7), 3-6.
- Choi, H. (2003). A problem-based learning trial on the Internet involving undergraduate nursing students. *Journal of Nursing Education, 42*(8), 359-363.
- Chumley-Jones, H. S., Dobbie, A., & Alford, C. L. (2002). Web-based learning: Sound educational method or hype? A review of the evaluation literature. *Academic Medicine, 77*(10), 586-593.
- Clarke, C. T. (1991). Rationale and development of a scale to measure computer-mediated communication apprehension. Unpublished doctoral dissertation, Kent State University.

- Cohen, J. (1988). *Statistical power analysis for the behavioral sciences*. Hillsdale, NJ: Lawrence Erlbaum Associates.
- Conley, S. (2007). Online surveys. *NASN Newsletter*, 22(3), 27.
- Council of Regional Accrediting Commissions. (2001). *Best practices for electronically offered degree and certificate programs*. Retrieved July 6, 2007, from [http://www.wcet.info/services/publications/accreditation/Accrediting\\_BestPractices.pdf](http://www.wcet.info/services/publications/accreditation/Accrediting_BestPractices.pdf)
- Cragg, C. E. (1994). Nurses' experiences of a post-RN course by computer mediated conferencing: Friendly users. *Computers in Nursing*, 12(3), 221-226.
- Creedon, S. A. (2007). Preparing nurses on-line to work off-line. *Online Journal of Nursing Informatics (OJNI)*, 11(1).
- Crotty, M. (2004, October). As nursing crisis continues, hospitals turn to Magnet program. Massachusetts Nurses Association News. Retrieved September 6, 2007, from <http://www.massnurses.org/news/2004/10/magnet.htm>
- Duffy, M. E. (2002). Methodological issues in Web-based research. *Journal of Nursing Scholarship*, 34(1), 83-88.
- Fisher, R. A. (1941). *Statistical methods for research workers*. New York: G. E. Stechert & Co.
- Fredericksen, E., Pickett, A., Shea, P., Pelz, W., & Swan, K. (2000). Student satisfaction and perceived learning with on-line courses: Principles and examples from the SUNY learning network. *Journal of Asynchronous Learning Networks*, 4(2).
- Frith, K. H., & Kee, C. C. (2003). The effect of communication on nursing student outcomes in a Web-based course. *Journal of Nursing Education*, 42(8), 350-358.
- Garrison, D. R., Anderson, T., & Archer, W. (2000). Critical inquiry in a text-based environment: Computer conferencing in higher education. *The Internet and Higher Education*, 2(2-3), 87-105.
- Graybill, F. (1961). *An introduction to linear statistical models*. Mahwah, NJ: Lawrence Erlbaum.
- Guenther, W. C. (1977). Desk calculation of probabilities for the distribution of the sample correlation coefficient. *The American Statistician*, 31(1), 45-58.
- Gunawardena, C. N. (1995). Social presence theory and implications for interaction and collaborative learning in computer conferences. *International Journal of Educational Telecommunications*, 1(2/3), 147-166.

- Gunawardena, C. N., & Zittle, F. J. (1997). Social presence as a predictor of satisfaction with a computer-mediated conferencing environment. *American Journal of Distance Education, 11*, 8-26.
- Halstead, J. A., & Coudret, N. A. (2000). Implementing Web-based instruction in a school of nursing: implications for faculty and students. *Journal of Professional Nursing, 16*(5), 273-281.
- Halter, M. J., Kleiner, C., & Hess, R. (2006). The experience of nursing students in an online doctoral program in nursing: A phenomenological study. *International Journal of Nursing Studies, 43*, 99-105.
- Hartford, K., Carey, R., & Mendonca, J. (2007). Sampling bias in an international Internet survey of diversion programs in the criminal justice system. *Evaluation & the Health Professions, 30*(1), 35-46.
- Hintze, J. Power analysis and sample size (PASS 2002) software. *Journal of Occupational Psychology, Employment and Disability, 6*(1), 29-30.
- Homer, B. D., Plass, J. L., & Blake, L. The effects of video on cognitive load and social presence in multimedia-learning. *Computers in Human Behavior, 24*(3), 786-797.
- Human Resources and Service Administration. (2000). The Registered Nurse population: Findings from the National Sample Survey of Registered Nurses. Retrieved February 10, 2005, from <http://bhpr.hrsa.gov/healthworkforce/reports/rnsurvey/mssl.htm>
- Jolivette, B. J. (2006). *Social presence and its relevancy to cognitive and affective learning in an asynchronous distance-learning environment: A preliminary literature review*. Paper presented at the Academy of Human Resource Development International Conference, Columbus, OH.
- Jung, I., Choi, S., Lim, C., & Leem, J. (2002). Effects of different types of interaction on learning achievement, satisfaction and participation in Web-based instruction. *Innovations in Education and Teaching International, 39*(2), 153-162.
- Kearns, L. E., Shoaf, J. R., & Summey, M. B. (2004). Performance and satisfaction of second-degree BSN students in Web-based and traditional course delivery environments. *Journal of Nursing Education, 43*(6), 280-284.
- Kozlowski, D. (2002). Using online learning in a traditional face-to-face environment. *Computers in Nursing, 20*(1), 23-30.
- Kozlowski, D. (2004). Factors for consideration in the development and implementation of an online RN-BSN course. Faculty and student perceptions. *Computer Informatics in Nursing, 22*(1), 34-43.

- Lahaie, U. (2007). Strategies for creating social presence online. *Nurse Educator*, 32(3), 100-101.
- Lakeman, R. (1997). Using the Internet for data collection in nursing research. *Computers in Nursing*, 15(5), 269-275.
- Lakin, R. B. (2008). Social presence: The secret behind online collaboration. Retrieved April 20, 2008, from <http://www.acenet.edu/AM/PrinterTemplate.cfm?Section=Home&CONTENTID=CM/ContentDisplay.dfm>
- Lawton, S. (1997). Supportive learning in distance education. *Journal of Advanced Nursing*, 25(5), 1076-1083.
- Leasure, A. R., Davis, L., & Thievon, S. L. (2000). Comparison of student outcomes and preferences in a traditional vs. World Wide Web-based baccalaureate nursing research course. *Journal of Nursing Education*, 39(4), 149-154.
- Leners, D. W., & Sitzman, K. (2006). Graduate student perceptions: Feeling the passion of caring online. *Nursing Education Perspectives*, 27(6), 315-319.
- Leners, D. W., Wilson, V. W., & Sitzman, K. L. (2007) Twenty-first century doctoral education: Online with a focus on nursing education. *Nursing Education Perspectives*, 28(6), 332-334.
- Liegler, R. M. (1997). Predicting student satisfaction in baccalaureate nursing programs: testing a causal model. *Journal of Nursing Education*, 36(8), 357-364.
- Lin, G.-Y. (2004). *Social presence questionnaire of online collaborative learning: Development and validity*. Paper presented at the Association for Educational Communications and Technology 27th, Chicago, IL.
- Lin, J. S., Lin, K. C., Jiang, W. W., & Lee, T. T. (2007). An exploration of nursing informatics competency and satisfaction related to network education. *Journal of Nursing Research*, 15(1), 54-65.
- Little, R., & Rubin, D. (1989). The analysis of social science data with missing values. *Social Methods Research*, 18, 292-326.
- Mancuso-Murphy, J. (2007). Distance education in nursing: An integrated review of online nursing students' experiences with technology-delivered instruction. *Journal of Nursing Education*, 46(6), 252-260.
- Morris, D. L., Fenton, M. V., & Mercer, Z. B. (2004). Identification of national trends in nursing education through the use of an online survey. *Nursing Outlook*, 52, 248-254.

- Morris, N., Buck-Rolland, C., & Gagne, M. (2002). From bricks to bytes: Faculty and student perspectives of online graduate nursing courses. *CIN: Computers, Informatics, Nursing*, 20(3), 108-114.
- Motiwalla, L., & Tello, S. (2000). Distance learning on the Internet: An exploratory study. *The Internet and Higher Education*, 2(4), 253-264.
- Murphy, K. R., & Myers, B. (2004). *Statistical power analysis: A simple and general model for traditional and modern hypothesis*. Mahwah, NJ: Lawrence Erlbaum Associates.
- National League for Nursing. (2005). *Transforming nursing education*. New York: National League for Nursing.
- New Jersey State Nurses Association. (2007). *NJSNA supports legislation requiring future registered professional nurses to earn a bachelors in nursing degree*. Retrieved August 23, 2007, from <http://www.njsna.org/associations/6274/files/BSN10.pdf>
- Northrup, P., Lee, R., & Burgess, V. (2002). *Learner perceptions of online interaction*. Paper presented at the ED-MEDIA 2002 World Conference on Educational Multimedia, Hypermedia & Telecommunications, Denver, Colorado.
- Palloff, R. M., & Pratt, K. (1999). *Building learning communities in cyberspace*. San Francisco: Jossey-Bass Publishers.
- Polit, D. E., & Beck, C. T. (2004). *Nursing research: Principles and Methods*. Philadelphia: PA: Lippincott, Williams & Wilkins.
- Reio, T. G., & Crim, S. J. (2006). *The emergence of social presence as an overlooked factor in asynchronous online learning*. Paper presented at the Academy of Human Resource Development International Conference, Columbus, OH.
- Richardson, J. C., & Swan, K. (2003). Examining social presence in online courses in relation to students' perceived learning and satisfaction. *Journal of Asynchronous learning networks*, 7(1), 68-88.
- Robley, L. R., Fransworth, B. J., Flynn, J. B., & Horne, C. D. (2004). This new house: Building knowledge through online learning. *Journal of Professional Nursing*, 20(5), 333-343.
- Rourke, L., Anderson, T., Garrison, D. R., & Archer, W. (1999). Assessing social presence in asynchronous text-based computer conferencing. *Journal of Distance Education*, 14(2), 50-71.
- Rubin, D. B. (1996). Multiple imputation after 18+ years. *Journal of the American Statistical Association*, 91, 473-489.

- Ryan, M., Carlton, K. H., & Ali, N. S. (1999). Evaluation of traditional classroom teaching methods versus course delivery via the World Wide Web. *Journal of Nursing Education, 38*(6), 272-277.
- Ryan, M., Carlton, K. H., & Ali, N. S. (2004). Reflections on the role of faculty in distance learning and changing pedagogies. *Nursing Education Perspectives, 25*(2), 73-80.
- Seiler, K., & Billings, D. M. (2004). Student experiences in Web-based nursing courses: Benchmarking best practices. *International Journal of Nursing Education Scholarship, 1*(1), 1-12.
- Short, J., Williams, E., & Christie, B. (1976). *The social psychology of telecommunications*. London: John Wiley & Sons.
- Sit, J.W.H., Chung, J. W. Y., Chow, M. C. M., & Wong, T. K. S. (2005). Experiences of online learning: Students' perspective. *Nurse Education Today, 25*, 140-147.
- Skiba, D. J., Holloway, N. K., & Springer, H. (2000). Measurement of best practices and social presence in web-based international nursing informatics pilot course. *Nursing Informatics 2000: Proceedings of the 7th IMIA International Conference on Nursing, 650-657*.
- Soon, K. H., Sook, K. I., Jung, C. W., & Im, K. M. (2000). The effects of Internet-based distance learning in nursing. *Computers in Nursing, 18*(1), 19-25.
- Speziale, H. J. S., & Jacobson, L. (2005). *Trends in RN education: 1998-2008*. New York: National League for Nursing.
- Thiele, J. E. (2003). Learning patterns of online students. *Journal of Nursing Education, 42*(8), 364-366.
- Thurmond, V., & Wambach, K. (2004). Towards an understanding of interactions in distance education. *Online Journal of Nursing Informatics (OJNI), 8*(4).
- Thurmond, V. A. (2002). Considering theory in assessing quality of web-based courses. *Nurse Educator, 27*(1), 20-24.
- Tu, C. H., & McIsaac, M. (2002). The relationship of social presence and interaction in online classes. *The American Journal of Distance Education, 16*(3), 131-150.
- Vonderwell, S. (2003). An examination of asynchronous communication experiences and perspectives of students in an online course: A case study. *Internet and Higher Education, 6*, 77-90.
- Whiteman, J. A. M. (2002). *Interpersonal communication in computer mediated learning*. Unpublished manuscript.

- Wiener, M., & Mehrabian, A. (1968). *Language within language: Immediacy, a channel in verbal communication*. New York: Appleton-Century-Crofts.
- Wilhelm, S., Rodehorst, T. K., Young, S., Jensen, L., & Stepan, M. B. (2003). Students' perspective of the effectiveness of an asynchronous on-line seminar. *Journal of Professional Nursing, 19*(5), 313-319.
- Wills, C. E., & Stommel, M. (2002). Graduate nursing students' precourse and postcourse perceptions and preferences concerning completely Web-based courses. *Journal of Nursing Education, 41*(5), 193-201.
- Woo, M. A., & Kimmick, J. V. (2000). Comparison of Internet versus lecture instructional methods for teaching nursing research. *Journal of Professional Nursing, 16*(3), 132-139.
- Woods, R. H., & Baker, J. D. (2004). *Interaction and immediacy in online learning*. Retrieved September 24, 2004, from <http://www.irrodl.org/content/v5.2/woods-baker.html>
- Wu, D., & Hiltz, S. R. (2003). *Online discussions and perceived learning*. Paper presented at the Ninth Americas Conference on Information Systems.
- Young, A., & Norgard, C. (2006). Assessing the quality of online courses from the students' perspective. *Internet and Higher Education, 9*, 107-115.
- Zoomerang. (n.d.). *How does Zoomerang insure the security and privacy of my survey data?* Retrieved July 1, 2007, from <http://zoomerang.custhelp.com>

## APPENDIX 1

### Framework for Assessing Outcomes and Practices in Web-based Courses in Nursing

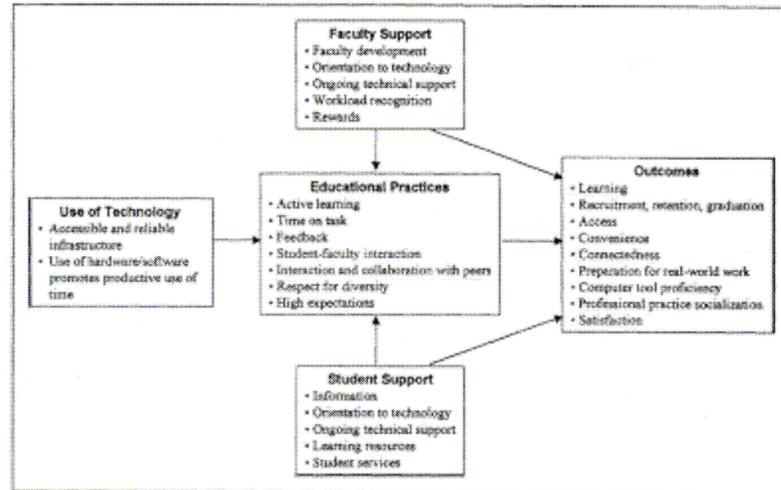


Figure. Framework for assessing outcomes and practices in Web-based courses in nursing.

From “A framework for assessing outcomes and practices in Web-based courses in nursing” by D. M. Billings, 2000, *Journal of Nursing Education*, 39(2), 60-67. Reprinted with permission by SLACK Incorporated.

APPENDIX 2

Permission to Use Figure of Billings' Framework



June 29, 2007

Susan Cobb  
Duquesne University  
sccobb@comcast.net

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**Signature:** Susan Cobb

**Date:** 7/2/07

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## APPENDIX 3

### Addendum to Permission to Use Figure of Billings' Framework

E-mail received 1/11/08:

Susan,

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## APPENDIX 4

### Duquesne University Institutional Review Board Approval Letter



# DUQUESNE UNIVERSITY

Office of Research

424 RANGOS BUILDING ♦ PITTSBURGH, PA 15282-0202

Dr. Paul Richer  
Chair, IRB-Human Subjects  
Human Protections Administrator  
Office of Research  
Phone (412) 396-6326 Fax (412) 396-5176  
e-mail: richer@duq.edu

October 15, 2007

Ms. Susan Cobb  
615 Kings Highway  
Moorestown NJ 08057

**Re: Social presence, satisfaction, and perceived learning of RN-to -BSN students in web-based nursing courses (Protocol # 07-90)**

Dear Ms. Cobb:

Thank you for submitting your research proposal to the IRB.

Based on the review of IRB representative, Dr. Linda Goodfellow, and my own review, your study is approved as **Exempt** based on 45-Code of Federal Regulations-46.101.b.1 regarding research involving standard educational practices.

The approval is based on the submitted protocol. If in the future you intend to change any aspect of procedures, you must first submit an amendment and receive approval from this office. In addition, if any unanticipated problems arise in reference to human subjects, you should notify the IRB chair immediately before proceeding. In all correspondence, please refer to the protocol number shown after the title above.

Once the study is complete, please provide our office with a short summary (one page) of your results for our records.

Thank you for contributing to Duquesne's research endeavors.

Sincerely yours,

Paul Richer, Ph.D.

C: Dr. Linda Goodfellow  
Dr. Joan Lockhart  
IRB Records

## APPENDIX 5

### Permission to Use the Social Presence Scale and the Satisfaction Scale

From: Lani Gunawardena <lani@unm.edu>  
To: sccobb@comcast.net  
Subject: Re: Permission  
Date: Sunday, May 20, 2007 7:35:00 AM

Dear Susan,

You have my permission to use it.

Charlotte Gunawardena

--- [sccobb@comcast.net](mailto:sccobb@comcast.net) wrote:

> Dear Dr. Gunawardena,  
>  
> I am writing to ask your permission to use the Social Presence Scale and the  
Satisfaction Scale from the GlobalEd Questionnaire in my dissertation.  
>  
> Thank you,> Susan Cobb

From: Lani Gunawardena <lani@unm.edu>  
To: sccobb@comcast.net  
Subject: Re: Permission  
Date: Wednesday, June 27, 2007 2:24:19 PM

Yes, you can go ahead and make the changes below.

Lani Gunawardena

--- [sccobb@comcast.net](mailto:sccobb@comcast.net) wrote:

> Dear Dr. Gunawardena,  
>  
> I had previously received permission from you to use the Social Presence  
Scale and Satisfaction Scale in my dissertation study. I am writing now to ask  
your permission to use these subscales of the GlobalEd Questionnaire in my  
study and make minor modification to the wording of the two scales to be  
> suitable to the online nursing courses that I am studying. I would replace  
"GlobalEd" with "online nursing course" or "course" on the Social Presence  
> scale and "GlobalEd" with "online nursing course" or "online" and  
"computer conference" with "online course" on the Satisfaction Scale. I also  
plan to delete item number 7 on the Satisfaction Scale as it is not relative to  
the Web-based nursing courses I am studying.  
>  
> Thank you for your assistance.  
>  
> Susan Cobb

APPENDIX 6

Demographic Questionnaire

Age (years)

- 20-29
- 30-39
- 40 – 49
- 50 – 59
- 60 – 69
- 70 or over

Gender  Female  Male

Race/Ethnicity:

- American Indian/Alaskan Native
- African-American /Black
- Asian
- Caucasian/White
- Hispanic/Latino
- Mixed Race
- Native Hawaiian/Pacific Islander
- Other Race (those not listed)

Are you an English as Second Language student?  Yes  No

Number of years experience in nursing:

- 0 to 5
- 6 to 10
- 11 to 15
- 16 to 20
- 21 to 25
- Greater than 25

Are you taking an online nursing course in the current term?  Yes  No

If you are taking **only one** online nursing course this term please indicate the name of the course:

- Nursing Informatics
- Health Assessment
- Health Policy
- Leadership and Management in Nursing
- Research in Nursing
- Emerging Trends in Healthcare Technology
- Community Health Nursing
- Seminar in Clinical Competence

APPENDIX 6 (continued)

Demographic Questionnaire

If you are taking **more than one** online nursing course this term please select one course from the list below which you feel is most representative of your online course experience and which you will target your survey responses to:

- Nursing Informatics
- Health Assessment
- Health Policy
- Leadership and Management in Nursing
- Research in Nursing
- Emerging Trends in Healthcare Technology
- Community Health Nursing
- Seminar in Clinical Competence

Online Course Experience:

- This is my first online course.
- I have taken one online course prior to this course.
- I have taken more than one online course prior this course.

Did you intentionally use emoticons (symbols expressing emotions, e.g. smiley faces) or acronyms (e.g. LOL for laughing out loud) in the online course to communicate feelings?

- Yes                       No

Please indicate whether you had any phone contact with the nursing mentor (instructor) during the course term:

- None
- Less than once per week
- Once per week
- More than once per week

## APPENDIX 7

### Advance Notice E-mail to Potential Subjects

Dear Student:

I am a doctoral candidate in the Ph.D. program in Nursing at Duquesne University and I am conducting my dissertation study on the experiences of nursing students with online nursing courses. During the tenth week of this term I will be sending an e-mail with a link to a brief web survey to all enrolled RN-to-BSN nursing students. If you are taking an online course this term I am inviting you to participate in this research project. The study has been approved by the Institutional Review Board at Duquesne University and the Dean of the School of Nursing at the College.

I am very interested in the experiences of nursing students with online education and hope you will participate in this study that will add to the body of knowledge in nursing education. When you receive the follow-up e-mail, if you are taking an online course this term I would greatly appreciate you taking approximately five minutes of your time to complete the questionnaire. Your participation is voluntary and will have no impact on your course grade. Completion of the questionnaire will constitute your consent. No identity will be associated with your responses and data will only be reported in statistical summaries.

Thank you in advance for your assistance.

Sincerely,  
Susan C. Cobb  
Doctoral Candidate  
School of Nursing  
Duquesne University  
E-mail: cobb\_phdc@comcast.net  
Phone: 609-633-6460 (W)

## APPENDIX 8

### E-mail Correspondence to Instructors (Nursing Mentors)

Dear Nursing Mentor:

I am writing to let you know that as part of my doctoral dissertation study for Duquesne University School of Nursing I will be sending an e-mail with a link to a brief survey to all enrolled RN-to-BSN nursing students during the tenth week of this term. The purpose of the study is to explore the experiences of nursing students with online nursing courses. The study has been approved by the Institutional Review Board at Duquesne University and the Dean of the School of Nursing at the College. The e-mail to the students will explain the purpose of the study and that participation is voluntary and will have no impact on their course grade. Students will be informed that submission of the survey will imply consent. The survey is conducted online and should take students about five minutes to complete. Data will be collected on a secure website. Confidentiality of the participants will be maintained and data will only be reported in the aggregate. My contact information below will be included for any questions regarding the study.

Thank you in advance for your support of my study. I welcome any further discussion on my research study and would be happy to answer any questions you may have about the study.

Thank you.

Sincerely,  
Susan C. Cobb  
Doctoral Candidate  
Duquesne University School of Nursing  
E-mail: cobb\_phdc@comcast.net  
609-633-6460 x3265 (W)

## APPENDIX 9

### Cover E-mail to Potential Subjects

Dear Student:

I am a doctoral candidate in the Ph. D. program in Nursing at Duquesne University and request your participation in my dissertation study that seeks to investigate *Social Presence, Satisfaction, and Perceived Learning of RN-to-BSN Students in Web-based Nursing Courses*. **If you are enrolled in an online nursing course this term, I would greatly appreciate your taking the time to complete a brief Web survey via the link below.** The survey is conducted online on a secure site and should only take about five minutes of your time.

Your participation is voluntary and will have no impact on your course grade. You will receive no compensation for participating in the study and participation will require no monetary cost to you. Your name will never appear on any survey or research instruments. No identity will be made in the data analysis. All materials and data will be kept secure. Your responses will only appear in statistical summaries. All materials will be destroyed at the completion of the research. Your submission of the survey implies your consent. You are under no obligation to participate in this study and are free to withdraw your consent to participate at any time. There are no risks of participating in this study greater than those encountered in everyday life. A summary of the results of this research will be supplied to you, at no cost, upon request.

**Below is a link to the Web-based survey. Please complete only if you are enrolled in an online nursing course this term.  
The survey link will remain active until December 22, 2007.**

If you have any questions about participation in this study please contact me, my Advisor, Dr. Joan, Lockhart, Duquesne University School of Nursing (412-396-6540), or Dr. Paul Richer, Chair of the Duquesne University Institutional Review Board (412-396-6326).

*If you prefer to complete a paper questionnaire, please e-mail me with your request and mailing address and one will be sent to you promptly.*

Thank you for your assistance.

Sincerely,  
Susan C. Cobb  
Doctoral Candidate, School of Nursing  
Duquesne University  
E-mail: cobb\_phdc@comcast.net  
Phone: 609-633-6460 (W)

## APPENDIX 10

### Web Survey (Study Instrument)

#### Social Presence and Satisfaction Survey

##### Instructions:

- For this survey the term CMC (computer-mediated communication) refers to the text-based discussions within the discussion board in the online nursing course.
- If you are taking more than one online nursing course this term please choose one course to focus your survey responses on.
- **When indicating your response please click slowly and carefully to ensure your response is recorded. Your selection should be indicated by the bullet becoming darker and recessed.**

##### Thank you.

1. If you are taking **only one** online nursing course this term please indicate the name of the course:
  - Nursing Informatics
  - Health Assessment
  - Health Policy
  - Leadership and Management in Nursing
  - Research in Nursing
  - Emerging Trends in Healthcare Technology
  - Community Health Nursing
  - Seminar in Clinical Competence
  - Other, please specify\_\_\_\_\_
2. If you are taking **more than one** online nursing course this term please select one course from the list below which you feel is most representative of your online course experience and which you will target your survey responses to:
  - Nursing Informatics
  - Health Assessment
  - Health Policy
  - Leadership and Management in Nursing
  - Research in Nursing
  - Emerging Trends in Healthcare Technology
  - Community Health Nursing
  - Seminar in Clinical Competence
  - Other, please specify\_\_\_\_\_
3. Messages in the online nursing course were impersonal.
  - Strongly Disagree   ■ Disagree   ■ Uncertain   ■ Agree   ■ Strongly Agree

4. Computer-mediated communication (CMC) is an excellent medium for social interaction.
- Strongly Disagree ■ Disagree ■ Uncertain ■ Agree ■ Strongly Agree
5. I felt comfortable conversing through this text-based medium.
- Strongly Disagree ■ Disagree ■ Uncertain ■ Agree ■ Strongly Agree
6. I felt comfortable introducing myself in the online nursing course.
- Strongly Disagree ■ Disagree ■ Uncertain ■ Agree ■ Strongly Agree
7. The introductions enabled me to form a sense of online community.
- Strongly Disagree ■ Disagree ■ Uncertain ■ Agree ■ Strongly Agree
8. I felt comfortable participating in the course discussions.
- Strongly Disagree ■ Disagree ■ Uncertain ■ Agree ■ Strongly Agree
9. The instructor(s) created a feeling of an online community.
- Strongly Disagree ■ Disagree ■ Uncertain ■ Agree ■ Strongly Agree
10. The instructor(s) facilitated discussions in the course.
- Strongly Disagree ■ Disagree ■ Uncertain ■ Agree ■ Strongly Agree
11. Discussions using the medium of CMC tend to be more impersonal than face-to-face discussions.
- Strongly Disagree ■ Disagree ■ Uncertain ■ Agree ■ Strongly Agree
12. CMC discussions are more impersonal than audio teleconference discussions.
- Strongly Disagree ■ Disagree ■ Uncertain ■ Agree ■ Strongly Agree
13. CMC discussions are more impersonal than video teleconference discussions.
- Strongly Disagree ■ Disagree ■ Uncertain ■ Agree ■ Strongly Agree
14. I felt comfortable interacting with other participants in the online course.
- Strongly Disagree ■ Disagree ■ Uncertain ■ Agree ■ Strongly Agree
15. I felt that my point of view was acknowledged by other participants in the course.
- Strongly Disagree ■ Disagree ■ Uncertain ■ Agree ■ Strongly Agree
16. I was able to form distinct individual impressions of some course participants even though we communicated only via a text-based medium.
- Strongly Disagree ■ Disagree ■ Uncertain ■ Agree ■ Strongly Agree
17. I was able to learn through the medium of CMC.
- Strongly Disagree ■ Disagree ■ Uncertain ■ Agree ■ Strongly Agree

18. I was able to learn from the online discussions.

Strongly Disagree  Disagree  Uncertain  Agree  Strongly Agree

19. I was stimulated to do additional reading or research on topics discussed in the online nursing course.

Strongly Disagree  Disagree  Uncertain  Agree  Strongly Agree

20. I learned to value other points of view.

Strongly Disagree  Disagree  Uncertain  Agree  Strongly Agree

21. As a result of my experience with the online nursing course, I would like to participate in another online course in the future.

Strongly Disagree  Disagree  Uncertain  Agree  Strongly Agree

22. The online course was a useful learning experience.

Strongly Disagree  Disagree  Uncertain  Agree  Strongly Agree

23. As a result of my participation in the online course, I made acquaintances electronically in other parts of the country/world.

Strongly Disagree  Disagree  Uncertain  Agree  Strongly Agree

24. The diversity of topics in the online course prompted me to participate in the discussions.

Strongly Disagree  Disagree  Uncertain  Agree  Strongly Agree

25. I put a great deal of effort to learn the CMC system to participate in the online course.

Strongly Disagree  Disagree  Uncertain  Agree  Strongly Agree

26. Age (years)

- 20-29
- 30-39
- 40 – 49
- 50 – 59
- 60 – 69
- 70 or over

27. Gender

- Female
- Male

28. Race/Ethnicity:

- American Indian/Alaskan Native
- African-American /Black
- Asian

- Caucasian/White
- Hispanic/Latino
- Mixed Race
- Native Hawaiian/Pacific Islander
- Other Race (those not listed)

29. Are you an English as Second Language student?

- Yes ■ No

30. Number of years experience in nursing:

- 0 to 5
- 6 to 10
- 11 to 15
- 16 to 20
- 21 to 25
- Greater than 25

31. Are you taking an online nursing course in the current term?

- Yes ■ No

32. Online Course Experience:

- This is my first online course.
- I have taken one online course prior to this course.
- I have taken more than one online course prior this course.

33. Did you intentionally use emoticons (symbols expressing emotions, e.g. smiley faces) or acronyms (e.g. LOL for laughing out loud) in the online course to communicate feelings?

- Yes ■ No

34. Please indicate whether you had any phone contact with the nursing mentor (instructor) during the course term:

- None
- Less than once per week
- Once per week
- More than once per week

## APPENDIX 11

### Second E-mail Notice to Potential Subjects

Dear Student:

Two weeks ago I sent an e-mail to you requesting your participation in my doctoral dissertation study *Social Presence, Satisfaction, and Perceived Learning of RN-to-BSN Students in Web-based Nursing Courses*, along with a link to a Web-based survey. **If you are enrolled in an online nursing course this term, I would greatly appreciate your taking a few minutes of your time to complete the brief Web survey via the link below.** If you have already completed the survey, please accept my sincere thanks.

Your participation is voluntary and will have no impact on your course grade. You will receive no compensation for participating in the study and participation will require no monetary cost to you. Your name will never appear on any survey or research instruments. No identity will be made in the data analysis. All materials and data will be kept secure. Your responses will only appear in statistical summaries. All materials will be destroyed at the completion of the research. Your submission of the survey implies your consent. You are under no obligation to participate in this study and are free to withdraw your consent to participate at any time. There are no risks of participating in this study greater than those encountered in everyday life. A summary of the results of this research will be supplied to you, at no cost, upon request.

**Below is a link to the Web-based survey. Please complete only if you are enrolled in an online nursing course this term and have not already completed the survey. The survey link will remain active until December 22, 2007.**

If you have any questions about participation in this study please contact me, my Advisor, Dr. Joan, Lockhart, Duquesne University School of Nursing (412-396-6540), or Dr. Paul Richer, Chair of the Duquesne University Institutional Review Board (412-396-6326).

*If you prefer to complete a paper questionnaire, please e-mail me with your request and mailing address and one will be sent to you promptly.*

Thank you for your assistance.

Sincerely,

Susan C. Cobb  
Doctoral Candidate  
Duquesne University, School of Nursing  
E-mail: [cobb\\_phdc@comcast.net](mailto:cobb_phdc@comcast.net)  
609-633-6460 (W)