A SOCIAL COGNITIVE THEORY EXPLANTION OF NURSING STUDENTS' PERCEPTIONS OF SPECIFIC NURSING COURSES VIA TWO-WAY INTERACTIVE VIDEO

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CHAPTER I

INTRODUCTION

The U.S. Bureau of Labor Statistics projects that by 2010 more than 1 million nursing positions will be unfilled (AACN, 2005b). By 2020, 44 states and the District of Columbia are projected to have nursing shortages (U.S. Department of Health and Human Services, 2002). Consequences of this nationwide nursing shortage are longer waits for patients to be admitted to hospitals, postponement of non-emergency surgeries, and emergency room closings (Jacoby, 2003). In addition, Jacoby (2003) reported that for each additional patient above four that a nurse was expected to care for, a patient's risk of death rose approximately 7%.

One reason for the nursing shortage is declining enrollments in nursing programs (Larson, 2002), and a major reason for declining enrollments is the shortage of nursing faculty (AACN, 2000). According to the American Association of Colleges of Nurses (AACN), even though applications to nursing programs are increasing, four-year colleges and universities are denying applications for both baccalaureate and graduate nursing programs (AACN, 2005a). In a 2004 survey of 29,425 entry-level baccalaureate programs, the AACN (2005a) found that 32,797 qualified applicants were not accepted at schools of nursing primarily due to a shortage of faculty and lack of funding. AACN President, Dr. Jean Bartels, says, "Given the nation's diminishing supply of nurse faculty, it's particularly disturbing to see that almost 3,000 qualified applicants were denied entry

into graduate nursing programs last year" (AACN, 2005a, p. 3). According to a survey of 300 nursing schools released in June 2003 by the AACN, there were 614 faculty vacancies (AACN, 2005b).

Factors Influencing Shortage of Faculty

Six factors have been identified relating to the nursing faculty shortage in colleges and universities nationwide: aging faculty, retirement, job competition, lack of nurses with advanced degrees, costs in time and money, and job dissatisfaction.

Aging Faculty

Faculty age continues to climb for nursing faculty in colleges and universities nationwide. Multiple studies concur that age is a factor in relation to the shortage of nursing faculty (AACN, 2001; Bellack, 2004; Berlin & Sechrist, 2002; Buerhaus, 2000; Hinshaw, 2001; Iowa, 2003; Johnson, 2004; Larson, 2002; National Council, 2004; Nurses for a Healthier Tomorrow, 2004; Silver, 2002; Valiga, 2004). Valiga (2004) reports that of the 10,200 faculty teaching in baccalaureate and higher degree programs, 60% are over 50 years of age. The average ages of doctoral faculty at the assistant professor, associate professor, and professor level are 50.8, 54.8, and 56.8 respectively (AACN, 2001).

Retirement

Retirement rates among nursing faculty are rising and will continue to increase. Berlin and Sechrist (2002) report that the average age at which nursing faculty retire is 62.5 years. Berlin and Sechrist (2002) and the Iowa Department of Public Health (2003) project that each year over 500 nursing faculty will be eligible for retirement.

Job Competition

The AACN (2001) reported that clinical and private sectors are enticing current and potential educators away from teaching. For example, a 2003 National Salary Survey of Nurse Practitioners, addressed in Nurses for a Healthier Tomorrow (2004), found that the average salary for an Emergency Room (ER) nurse with a master's degree was $80,697 and the average for a nurse educator with a master's degree was $60,357. Johnson (2004) reports that many educational institutions cannot compete with other salary opportunities for nursing faculty.

Lack of Nurses with Advanced Degrees

According to the U.S. Department of Health and Human Services, Health Resources and Services Administration, and the Division of Nursing (2002), only 10% of the total nursing workforce is prepared at the master's and doctoral level. Due to the limited number of prepared nurse educators, 64% of doctoral positions and 30% of master positions among nursing faculty are vacant (Bellack, 2004).

Cost in Time and Money

Contributing to the limited number of master's and doctoral nursing faculty are two key issues: time and money. It is difficult for a nurse to consider going back to school when already making a decent living, especially with the amount of time and money it takes to obtain a master's or doctoral degree (Valiga, 2004). In disciplines other than nursing, from the start of master's courses to completion of a doctoral degree it takes an average of 8.5 years, as opposed to nursing for which the average is 15.9 years (Valiga, 2004). Cost is another factor. According to the Iowa Department of Public

Health (2003), tuition, fees, and room and board for graduate students average $9,437 in public institutions and $18,260 in private institutions per year.

Job Dissatisfaction

An increased workload is causing job dissatisfaction and safety concerns. Valiga (2004) reports that nursing faculty are leaving the profession because of the heavy workload, long hours, lack of university support, and poor salaries.

Due to these six factors, educators are leaving and either going to work in the clinical setting, retiring, or quitting all together. "If there are no teachers, there will be no nurses" (National Council of State Boards of Nursing, 2004, p. 3).

Statement of the Problem

The serious shortage of qualified nurses and nursing faculty outlined above has led many nursing programs to adopt distance educational technology. Distance learning courses allow institutions to increase enrollment, thereby potentially increasing the number of future nurses. For example, universities such as The University of Oklahoma are delivering the same course simultaneously through compressed video to multiple sites, thereby reaching more potential and current students (Leasure, Davis, & Theivon, 2000). In AACN (2000), Donnie Booth, Southeastern Louisiana University's nursing dean, also reported increasing enrollment through a distance learning program in order to reach more students, thereby potentially increasing the number of future nurses.

However, technology will not automatically help to counter the current nursing and nursing faculty shortages (AACN, 1999). It must be used effectively. As the use of technology increases, nursing programs must continually evaluate the educational experiences of both students and faculty and seek ways to improve delivery of

instruction. Bandura's (1986) Social Cognitive Theory may help in these endeavors. This study will apply Social Cognitive Theory to understanding nursing students' perceptions of learning in one specific distance learning context as these perceptions were influenced by the learning environment, the instructors, the facilitators, and support personnel. In doing so, the study will explore ways to potentially increase the quality and effectiveness of the nursing students' learning environment.

Purpose of the Study

Because of the shortage of nursing faculty in colleges and universities throughout the country, distance educational technology has been seen as a way to teach nursing students in both the clinical and academic settings. One type of technology used in delivering nursing courses is two-way interactive video. The purpose of this study is to apply Bandura's (1986) Social Cognitive Theory to explain nursing students' perceptions of their learning experience as it was influenced by the environment, instructors, and support personnel, in specific required nursing courses delivered via two-way interactive video. In the following research questions, support personnel refers to technical support, facilitators, and administration.

Research Questions

This study focused on the following research questions:

1. How are origination-site nursing students' perceptions of the learning experience in a two-way interactive video setting influenced by the environment, instructors, and support personnel?

2. How are remote-site nursing students' perceptions of the learning experience in a two-way interactive video setting influenced by the environment, instructors, and support personnel?
3. How does Bandura's (1986) Social Cognitive Theory explain these perceptions?

Significance of the Problem

Using two-way interactive video to teach nursing students has been seen as part of the solution to a nationwide clinical nursing shortage. This study may uncover different perceptions through the voices of undergraduate nursing students and individuals affiliated with the two-way interactive video environment in order to identify problems, if any, and improve the quality and effectiveness of learning via two-way interactive video.

Methodology

In this study, Bandura's (1986) Social Cognitive Theory provided a framework for examining nursing students' perceptions of one specific learning environment. Bandura's (1986) theory refers to social settings in which individuals live, work, and play. Individuals learn from observing the behaviors of others and the social consequences of those actions (Bandura, 1986). Understanding the perceptions of the two-way interactive video environment may help in improving nursing students' learning environments.

Using naturalistic inquiry, the strategies for collecting data included observations, interviews, an autoethnography, and document artifacts. Two courses in a four-year nursing program at a Midwestern university were selected for the study. A total of 25 nursing students, 20 on the origination-site and five on the remote-site; two instructors;

two facilitators; two technical support personnel; and one administrator participated in the study.

Observations were conducted on both the origination and remote sites and recorded in a reflexive journal. Focus group interviews were conducted among nursing students at both sites—four on the origination site and one on the remote site; and individual interviews were conducted with one instructor, two facilitators, two technical support persons, and one administrator. As the other instructor, I completed an autoethnography on myself. Document artifacts consisted of solicited student demographics and end of semester evaluations.

Analysis strategies included persistent observation, triangulation, peer debriefing, referential adequacy of materials, member checking, reflexive journaling, and an audit trail. These strategies allowed me to establish trustworthiness, credibility, transferability, dependability, and confirmability in this study. Bandura's (1986) Social Cognitive Theory provided a theoretical lens to view and explain student perceptions.

Researcher Bias

As an instructor, my initial experience with two-way interactive video was not a positive one. Without warning, I was told a week before classes started that I was going to teach my Pediatric nursing course via two-way interactive video, a course which I had been teaching in the traditional environment for several years. As a fairly new teacher, I was familiar with the traditional setting. While a graduate student, I had experienced some two-way interactive video. With the small amount of experience as a graduate student in the two-way setting, I thought I would have no problem teaching. I was wrong. As an instructor coming into the two-way interactive video classroom with no

expectations and a small amount of experience as a student, I was astounded. At the beginning, as a new instructor, I found the environment to be very frustrating and anxiety provoking. My experience as an instructor in the two-way interactive video setting was overwhelming.

I learned how difficult it was to use this medium to instruct the same course that I had been teaching in the traditional setting. Over time and to provide students with an environment conducive to learning, I have done a lot of trial and error with my teaching strategies and interaction with students. In addition to developing teaching strategies and skills as an instructor, dealing with ongoing technology problems and animosity between students at each site were other issues associated with the two-way interactive environment. Teaching in a two-way interactive video environment is very challenging and requires a lot of time and energy, though I have no problems with embracing technology as long as the necessary pieces are in place, such as proper equipment, technical and administrative support, current hard and software, and adequate facilitation and communication.

My experience with technology began in graduate school. I took two courses, a community nursing and a pathophysiology course via two-way interactive video. I experienced being both an on-site (in the community nursing course) and remote-site (in the pathophysiology class) learner. I had no idea of what to expect with learning in the two-way interactive video environment and was just thankful I did not have to drive two hours one way for class each week.

Overall, I had a positive experience with both two-way interactive video classes. Instruction was effective, but there were times when technology problems occurred, such

as difficulty hearing the instructor, a fuzzy television screen, and getting cut-off, which caused distractions in learning. However, despite the technology problems and medium used to teach these two courses, I took responsibility for my learning and was self-directed, assertive, and motivated. Whether offered via technology or in the traditional classroom, instruction serves the same purpose, and I worked just as hard in both environments. Just like anything, with more experience, I became more comfortable and adjusted to the environment.

In this study, I established a positive relationship with research participants by showing respect, sensitivity, honesty, and interest in what they had to say. I provided all participants with an explanation of the study in complete detail. Neutrality was maintained, but at the same time, I established rapport by answering participants' questions, sharing my knowledge and experience, and providing support when asked, thereby developing trust and mutuality between the participants and me. I understand that my biases and the fact that I was both instructor and researcher had some affect on the process and findings of study. Rigor was maintained through triangulation of interviews, observations, document artifacts, peer debriefing, member checking, and maintaining a reflexive journal.

Summary

The shortage of clinical nurses and nursing faculty has led to increased use of educational technology in nursing education. The next chapter will look at the various forms of educational technology used in nursing education, the nursing courses that are being taught via the various educational technologies, the reasons for using educational technology, the frameworks used, the results of using educational technology, and how

Bandura's (1986) Social Cognitive Theory relates to educational technology in nursing education. Chapter three will present the methodology which will include the research design, theoretical framework, participants and site selection, and data collection. Chapter four identifies and describes the settings and principal respondents. The data and data analysis are presented in Chapter five. The sixth chapter includes a brief summary of the findings, the conclusions, the implications, and recommendations for further study.

CHAPTER II

LITERATURE REVIEW

The literature review is composed of two sections. The first section is an overview of research that has examined the various educational technologies used to deliver course instruction in nursing education. The second section presents an overview of Bandura's (1986) Social Cognitive Theory and research studies that have examined educational technology in nursing and other fields using Bandura's theory.

The Use of Educational Technology in Nursing Instruction

For more than 40 years, distance education in healthcare has existed primarily to provide educational training related to the area of a professional's expertise (Knebel, 2001). Only within the last two decades have nursing programs used distance educational technology to teach nursing courses that have both a theoretical and a clinical component (Knebel, 2001). Recognizing technology's ability to provide nursing education at a distance, especially at a time when the numbers of professional nurses, nursing faculty educators, and nurse researchers are at an all time low, the American Association of Colleges of Nursing (AACN) (2000) along with Knebel (2001) encourage the use of distance education to provide improved access, and increased flexibility to increase enrollment to address the nursing shortage.

Nursing programs at the associate, baccalaureate, and doctorate levels have embraced distance education to service students who lack access to programs or have

personal or professional responsibilities, to increase the numbers of professional nurses, and to compensate for the lack of nursing faculty to teach required nursing courses (AACN, 2000). For example, to cater to working professionals with responsibilities, the University of Phoenix offers Registered Nurses (RNs) a full-time Bachelor of Science in Nursing (BSN) program that can be completed in 18 months via distance education, and the College of Nursing at the University of Nebraska Medical Center offers a doctoral program from three different distant locations (AACN, 2005a).

Following is a review of the literature related to educational technologies used to deliver course instruction in nursing education. Topics covered include two-way interactive Video (ITV); audio teleconferencing; Web-based instruction; compact disc read-only memory (CD-ROM); wireless/mobile devices, such as a personal digital assistant (PDA) and a tracker system; computer-assisted instruction (CAI); online journaling; simulation; and combinations of educational technologies.

Two-Way Interactive Video (ITV)

ITV allows for real-time, two-way communication of participants in multiple locations (Knebel, 2001). The use of two-way interactive video in nursing is supported in "A Matter of Perspective" (1997); Bischoff, Bisconer, Kooker, and Woods (1996); De la Cruz and Jiang (2002); Hilgenberg and Tolone (2000); Keck (1992); King and Witney (1998); and Nicoll, Steinhacker, and Ouellette (1996).

The authors of "A Matter of Perspective" (1997) compared on-site and remote-site nursing students' attitudes towards two-way interactive video. Three courses, taken over three semesters, at various sites were studied. The results of semi-structured interviews with two former nursing students and one of their instructors about what they

liked and disliked about the two-way interactive video courses revealed three themes: problems with interpersonal communication, the technology, and instructional effectiveness.

The problem with interpersonal communication was associated with animosity between the students at the different two-way interactive video sites. For example, students who did not have the instructor at their site complained that students at the site with the instructor were receiving special treatment and were considered an "in-group" (p. 2). Technical difficulties were generally related to students' lack of technical experience. For example, some students would press the microphone at the same time, were afraid of using the microphone, and watched the television monitor instead of the instructor. The problems related to instructional effectiveness concerned the instructional quality at both sites and included a lack of interaction with the instructor (especially when the instructor was not on-site), a lack of technical support and facilitators at the remote-sites, inconsistent grading criteria between the sites, and remote-site students' not receiving timely feedback on course work and exams.

Bischoff et al. (1996) examined the interaction process among nursing students and faculty in the two-way interactive video environment. Results revealed that communication and interaction between the student and teacher were greater in the interactive course, and students on both sites felt equally close to the teacher and other students.

De la Cruz and Jiang (2002) examined nursing student satisfaction with the didactic component of four family nurse practitioner (FNP) courses via two-way interactive video, and Hilgenberg and Tolone (2000) examined nursing student

satisfaction with learning and opportunities to improve critical thinking and interaction when courses were also offered through two-way interactive video. Results revealed that both FNP and graduate nursing students at both sites were satisfied with course delivery and their opportunities to engage in critical thinking and interact with the instructor. De la Cruz and Jiang (2002) also reported that student satisfaction would increase as both students and faculty gained more experience with the technology.

Keck (1992) compared learning outcomes between graduate nursing students in two-way interactive video classes, which are identified as telecourses, and the traditional classroom. Eight traditional and seven two-way interactive video classes were used. Results revealed no differences in learning outcomes for students either in the traditional classroom or two-way interactive video classroom.

King and Witney (1998) evaluated senior nursing students' perceptions of the effectiveness of innovative teaching strategies in promoting engaged learning via two-way interactive video by using an adult learning theory which relates to self directedness, past life experiences, problem-solving, time perspective, and readiness to learn. Results revealed that students enjoyed small discussion groups and activities and found outlines, overheads, and study guides to be helpful. As for understanding the course content, the students did not feel the ITV course enhanced their understanding. The students felt the need for more interaction with both students and the instructor through discussion groups and case studies. Students also noted inconsistency in grading criteria between the two sites.

To evaluate the benefits of the educational experiences of nursing students, Nicholl et al. (1996) compared the use of two-way interactive video and traditional

teaching methods with clinical components in an associate degree nursing program. Three types of learning experiences, traditional, modified, and distance, at four teaching sites were studied. Overall findings indicated that the performance of nursing students at the four different sites was consistent both academically and professionally.

In summary, studies of the use of two-way interactive video in nursing education revealed that nursing students, for the most part, were satisfied with their learning, and when compared to the traditional setting, the setting made no difference in student learning (Dela Cruz & Jiang, 2002; Hilgenberg & Tolone, 2000; Keck, 1992; King & Witney, 1998; Nicholl, Steinhacker, & Ouellette, 1996). However, although they were generally satisfied with the two-way interactive environment, nursing students identified areas for improvement: the need to use a variety of teaching strategies (King & Witney, 1998), the need for increased communication and interaction (i.e., among faculty and students) ("A Matter of Perspective", 1997; Bischoff, Bisconer, Kooker, & Woods, 1996; Dela Cruz & Jiang, 2002; Hilgenberg & Tolone, 2000; King & Witney, 1998), the need for consistency between sites (i.e., grading criteria, and timely feedback on coursework and exams) ("A Matter of Perspective", 1997; King & Witney, 1998), the need for support (i.e., technical support and facilitation on remote sites) ("A Matter of Perspective", 1997), the need for course management (i.e., discussions among students) (Dela Cruz & Jiang, 2002), and the need for an orientation to the technology and technical support (i.e., due to lack of technical experience) ("A Matter of Perspective", 1997).

Audio Teleconferencing

Audio teleconferencing is a simultaneous conference in which participants in different locations use telephones or other audio equipment to communicate with each other in real time (Knebel, 2001). Cragg, Plotnikoff, Hugo, and Casey (2001) examined the development of professional attitudes and values of Canadian nursing students who were already RNs (Registered Nurses) and were obtaining their BSN (Bachelor of Science in Nursing) degree through a mixture of audio teleconferencing and onsite instruction. Academic scores were used to compare these students to newly admitted RN-to-BSN students and to graduating RN-to-BSN students, as well as to identify whether the program and work experience (i.e., full-time or part-time) were associated with achieved academic scores.

Results revealed that all BSN graduates had significantly higher scores than did the diploma-prepared nurses entering the RN-to-BSN program. As for using audio teleconferencing, RN-to-BSN graduates had the highest scores, followed by onsite RN-to-BSN students. RN-to-BSN students who took both audio teleconferencing and onsite courses had similar scores. Previous distance experience and full-time employment status were significantly associated with higher scores among graduating RN-to-BSN students.

To summarize, the use of audio teleconferencing along with previous distance education and work experience among RN-to-BSN students has been associated with higher academic scores. Audio teleconferencing proved beneficial to non-nursing students as well (Cragg, Plotnikoff, Hugo, & Casey, 2001).

Web-Based Instruction

Web-based instruction, also referred to as online learning, World Wide Web (WWW), and Web-CT, is a form of computer-based training in which training and instruction occur through the Internet (Knebel, 2001). Significant research has been done in using Web-based instruction in nursing. Support for the use of Web-based instruction in nursing is revealed in Andrusyszyn and Yankou (2004); Barakzai and Fraser (2005); Bata-Jones and Avery (2004); Buckingham (2003); Buckley (2003); Choi (2003); Frith and Kee (2003); Jang, Hwang, Park, Kim, and Kim (2005); Kearns, Shoaf, and Summey (2004); Lashley (2005); Leasure, Davis, and Thievon (2000); Rose, Frisby, Hamlin, and Jones (2000); Thurmond and Vawter (2003); Townsend, Campbell, Curran-Smith, McGinn, Persaud, et al. (2002); Wills and Strommel (2002); and Zucker and Asselin (2003).

Studies by Andrusyszyn and Yankou (2004), Bata-Jones and Avery (2004), Buckley (2003), Jang et al. (2005), Kearns et al. (2004), Lashley (2005), Leasure et al. (2000), Rose et al. (2000), and Zucker and Asselin (2003) examined required graduate and undergraduate nursing courses taught both online and in a traditional setting. Results revealed there was no difference in the learning experience or outcomes.

Studies by Buckingham (2003), Choi (2003), Frith and Kee (2003), and Wills and Strommel (2002) examined graduate and undergraduate nursing students' perceptions and satisfaction with online learning. Results revealed online learning to be effective and the perceptions positive.

Studies by Barakzai and Fraser (2005), Thurmond and Vawter (2003), and Townsend et al. (2002) examined the effect of demographic and environmental variables,

along with accessibility and interactivity, on graduate nursing students' learning online. The demographic variables, which were native language, gender, and prior computer experience, revealed no difference in academic achievement of native and non-native English speakers or in course satisfaction between the two groups. Neither gender nor prior computer experience affected either academic achievement or course satisfaction.

Next, the environmental variables, which are encouraging faculty/student contact, developing reciprocity and cooperation, engaging in active learning, providing quick feedback, emphasizing the amount of time dedicated to a task, and respecting diversity were most significant in predicting student satisfaction with the course; but the three most important environmental variables in explaining student satisfaction were students' perceptions that their learning would be assessed in a variety of ways, followed by the likelihood of working in groups and receiving timely feedback. Lastly, accessibility, different ways in which the technology of distance education is available to students, and interactivity, the interplay and exchange in which individuals and groups (learner-learner, instructor-learner) influence each other, were shown to be intertwined and important determinants of students' success in using Web-CT.

To summarize, the findings from the above research on Web-based instruction in nursing education, studies revealed nursing students had positive learning experiences (Andrusyszyn & Yankou, 2004; Barakzai & Fraser, 2005; Bata-Jones & Avery, 2004; Buckingham, 2003; Choi, 2003; Jang, Hwang, Park, Kim, & Kim, 2005; Lashley, 2005). Areas within the Web-based setting that were identified by nursing students as needing improvement include the communication strategies among faculty and students (Bata-Jones & Avery, 2004; Frith & Kee, 2003), the clarity of instructions (Bata-Jones and

Avery, 2004), the amount of information provided on course web-sites (Bata-Jones and Avery, 2004), providing technical support (Frith & Kee, 2003), and providing adequate socialization and support, especially for new students (Wills & Strommel, 2002).

Compact Disc Read-Only Memory (CD-ROM)

Messecar, Van Son, and O'Meara's (2003) study involved a nursing statistics classroom course that was being replaced by a tutorial program using a CD-ROM, which is a record-like storage medium that uses digital and optical laser technology to store text, pictures, and sound. Nursing students were asked to complete a questionnaire, similar to an end-of-course evaluation, asking what they thought about the course change. The CD-ROM program was then compared to a Web-based course taught a year prior and results revealed that due to technical problems with the Internet courseware, students were happier with the CD-ROM program than with the Web-based delivery. Because technical problems were not an issue, students preferred learning via CD-ROM (Messecar, Van Son, & O'Meara, 2003).

Wireless/Mobile Devices

Billings (2005) reports that nursing education is moving to more wireless and more mobile instructional media to make access to information and learning resources available any time and any place. Miller, Shaw-Kokot, Arnold, Boggin, Crowell et al. (2005) and Ndiwane (2005) studied the use of wireless/mobile devices. Miller et al. (2005) studied the use of personal digital assistants (PDA's), which are handheld devices that have multiple capabilities, such as being able to access information quickly. PDA's were used by second-degree students in an accelerated and in a traditional baccalaureate nursing degree (BSN) program to examine students' information-seeking behaviors and

the cost-effectiveness of incorporating PDA's into students' clinical practice. Results support the use of PDA's as an effective student learning resource, especially for reference materials. Reasons for the positive results were linked to access speed and readability.

Ndiwane (2005) evaluated the Nightingale Tracker system, another wireless device, which allows individuals to communicate electronically with each other in community-focused settings. Results revealed that the system enhances student learning, especially in performing and documenting physical assessments, data input and transmissions, and autonomous clinical practice.

In summary, the use of wireless/mobile devices, such as the PDA and Nightingale's Tracker system, in nursing education enhanced student learning due to the amount of available information and various capabilities they offer (Miller, Shaw-Kokot, Arnold, Boggin, Crowell et al., 2005; Ndiwane, 2005).

Computer-Assisted Instruction (CAI)

Christian (2003) studied the use of computer-assisted instruction by senior nursing students in a public Baccalaureate of Science in Nursing (BSN) program in West Tennessee. The Staggers Nursing Computer Experience Questionnaire was used to elicit students' perceptions of their computer use and knowledge. Results revealed that nursing students had very little computer experience and knowledge. Reasons for lack of computer use and knowledge included lack of interest and patience, anxiety, and fear of losing files. In summary, CAI was received poorly by nursing students because of their lack of technical experience (Christian, 2003).

Online Journaling

Daroszewski, Kinser, and Lloyd (2004) identified online journaling as a sharing and reflection strategy that enables students to discuss, mentor, and critically think online. They used online journaling in a two-quarter, community health, advanced practice nursing clinical course to enhance clinical learning. Results revealed, through evaluation, that online journaling was highly effective and valuable for nursing students**.** The use of online journaling proved beneficial and enhanced nursing student learning (Daroszewski, Kinser, & Lloyd, 2004).

Simulation

Medley and Horne (2005), and Seropian, Brown, Gavilanes, and Driggers (2004) identified the use of simulation to help nursing students improve their skills in a safe, non-threatening environment that also provides opportunities for decision-making, critical thinking, and team building. Feingold, Calaluce, and Kallen (2004) evaluated both student and faculty member perceptions of using a computerized universal patient simulator called SimMan in a simulated clinical scenario. During two consecutive semesters, in this baccalaureate program, both students and faculty members were surveyed with the same response scale. Results revealed that both students and faculty believed the simulations to be realistic and valuable. While the entire faculty agreed that the skills learned in the clinical setting would transfer to a real clinical setting, only half of the students did so. However, faculty did report that implementation of the simulated clinical scenario required more time and resources than using the traditional setting would have required.

Simulation in nursing education, even though time consuming, was revealed as a valuable tool for both nursing students and faculty (Feingold, Calaluce, & Kallen, 2004). However, applicability to the clinical setting was questioned by nursing students (Feingold, Calaluce, & Kallen, 2004).

Combinations of Educational Technologies

Numerous researchers have studied the use of a combination of educational technologies. Support for the use of combinations of educational technologies in nursing is revealed in Anderson, Dougherty, Miller, Rentfro, and Roach (2003); Andrusyszyn, van Soeren, Laschinger, Goldenberg, and DiCenso (1999); Andrusyszyn, Cragg, and Humbert (2001); Cragg, Andrusyszyn, and Humbert (1999); Debourgh (2003); Fraser and Haughey (1999); Gillis, Jackson, Braid, MacDonald, and MacQuarrie (2000); Kamin, Deterding, and Lowry (2002); and Kim and Vetter (1999).

Anderson et al. (2003) reported the collaborative efforts of two Texas institutions to develop a Distance Education Initiative (DEI) for a BSN completion program. The DEI is a program which slowly transitions from traditional, classroom-based education to the use of two-way video conferencing and online educational environments. All nine nursing courses, four of which have a clinical component, have been taught through this initiative. This report revealed how these two institutions have been able to meet the needs of the students while at the same time providing quality nursing education in a progressive and accessible distance education format.

Studies by Andrusyszyn et al. (1999), Andrusyszyn et al. (2001), and Cragg et al. (1999) examined nursing students' preferences and satisfaction with multiple distance education delivery methods, in a Canadian primary care nurse practitioner (PCNP)

program. The delivery methods were print-based modules, textbooks, audio- and videotape, audio teleconferencing, video teleconferencing, Internet-based computer conferencing, and CD-ROM. Results revealed that the multiple methods for delivering course content were well received, but respondents were most satisfied with face-to-face delivery and print-based material, the methods with which they were most familiar.

Debourgh (2003) investigated graduate nursing students' satisfaction with a nursing course taught via interactive video teleconferencing and the Internet. Using a Student Satisfaction Survey, she examined the relationships among five learner attributes--previous technology courses, technology competence, between class technology usage, age, and remote-site group size--and three instructional variables: instructor/instruction, technology, and course management. Results revealed that student satisfaction was significantly due to the instructor and instruction and not the technology.

Fraser and Haughey (1999) examined administrative issues associated with five post-RN baccalaureate nursing degree programs offered by distance education in Canadian dual-mode universities. Each course had a clinical component and used a combination of print, audio-conferencing, telephone tutoring, and on-site gatherings. Results from interviews with administrators revealed multiple dilemmas for administrators in regard to student-related concerns about learning at a distance. Some dilemmas associated with using distance education with a clinical component were enrolling too many students, which limited clinical placement; an inability to provide students with independence in their course work; a lack of available student support services; and students' receiving insufficient interaction and socialization.

Gillis, Jackson, Braid, MacDonald, and MacQuarrie (2000) examined the use of print-based and CD-ROM technology to deliver a nursing course to current registered nurses, who were all women, enrolled in a distance education BSN program in the Nova Scotia area. Results suggest that these women were positively affected by using a combination of print-based and CD-ROM materials.

Kamin et al. (2002) examined nursing student attitudes towards a virtual problem-based learning program during their pediatric clinical experience. The problem-based learning program is called Project LIVE, Learning through Interactive Video Education. This CD-ROM/Web hybrid program used digital video cases to conduct virtual problem-based learning groups with students doing a clinical rotation in a remote setting. Cases involving patient/physician encounters were disclosed by video on a CD-ROM. Students were placed in one of three groups: face-to-face with a paper case, face-to-face with a video case, and in a virtual group with the digital video case. Interviews with focus groups revealed that although students' preferred face-to-face groups, the virtual experience was perceived positively by students at all sites.

Kim and Vetter (1999) describe Japanese nursing students' experience with taking a nursing course via two-way interactive video and the Internet. Results revealed the international course was successfully offered through the use of two-way interactive video, World Wide Web pages, electronic mail, and electronic discussion forums.

In summary, various combinations of educational technologies used in nursing education have been shown to be beneficial to student learning (Anderson, Dougherty, Miller, Renfro, & Roach, 2003; Andrusyszyn, van Soeren, Laschinger, Goldenberg, & DiCenso, 1999; Andrusyszyn, Cragg, & Humbert, 2001; Debourgh, 2003; Gillis,

Jackson, Braid, MacDonald, & MacQuarrie, 2000; Kamin, Deterding, & Lowry, 2002; Kim & Vetter, 1999). However, areas of concern voiced by nursing students include technical problems (Cragg, Andrusyszyn, & Humbert, 1999), lack of technical experience (Cragg, Andrusyszyn, & Humbert, 1999), lack of available student support services (Fraser & Haughey, 1999), insufficient interaction and socialization (Fraser & Haughey, 1999), too many students in a group (Fraser & Haughey, 1999), and inability to provide students with independence in their course work (Fraser & Haughey, 1999).

Overview of Bandura's Social Cognitive Theory

Bandura's (1986) Social Cognitive Theory provides a theoretical framework for understanding human behavior, social interaction, and psychological well-being. Social Cognitive Theory explains human learning in terms of a model called triadic reciprocality, which includes behavior, personal, and environmental factors. The theory suggests that behavior, personal, and environmental factors interact with each other to impact the learner. First, behavior reflects the set of practices and behaviors that the student brings to the learning situation. Next, personal factors reflect individual traits and predispositions. Last, environmental factors reflect external stimuli. The three types of factors operate as interacting determinants of each other, thereby influencing students' emotional, cognitive, or motivational processes.

An expansion of Bandura's (1986) Social Cognitive Theory, but separate from its triadic reciprocality, is self-efficacy. Self-efficacy is described by Bandura as individuals' confidence in their ability to control their thoughts, feelings, and actions thereby influencing an outcome or their perception of their ability to be successful in an activity. These perceptions of self-efficacy influence individuals' actual performances,

emotions, and choices of behavior and the amount of effort and perseverance expended on an activity.

The influence of self-efficacy has been studied in medicine, athletics, health, exercise, media, business, social and political change, psychology, psychiatry, and education, where the focus has been on academic achievement, attributions of success or failure, goal setting, social comparisons, memory, problem solving, career development, teaching, and teacher education (Pajares, 2002). In psychology research, self-efficacy has been used to study phobias, depression, social skills, diabetes, assertiveness, smoking behavior, and moral development (Pajares, 2002).

Following is a review of the literature both in other fields and in nursing education that has examined educational technology using Bandura's (1986) Social Cognitive Theory and self-efficacy.

Other Disciplines and Self-Efficacy

Multiple studies focusing on online learning in other disciplines have used Bandura's (1986) theory of self-efficacy. Support for the use of self-efficacy in other disciplines is revealed in Cavanaugh, Milkovich, and Tang (2000); Clark (2003); DeTure (2004); Ergul (2004); Holcomb, King, and Brown (2004); King, Holcomb, and Brown (2002); LaRose, Eastin, and Gregg (2001); Lim (2001); Smith (2002); and Watson (2005).

Cavanaugh et al. (2000) examined participant characteristics, technology characteristics, and distance perceptions to determine the effectiveness of using multimedia distance learning (MDL) in an international human resource management course. The participants' technology self-efficacy and attitudes toward technology were

the participant characteristics, measured before and after training. The technology characteristics were technology reliability and effective use of technology. Results revealed that technology self-efficacy, attitudes toward MDL technology, technology reliability, and distance perceptions, are important factors to consider when using MDL to deliver a course.

Clark (2003) examined both on-campus and online undergraduate students' beliefs and perceptions of online education regarding perceived difficulty, level of effort required, and predicted success in online courses. The two online courses were Advanced Computer Applications and Data Communications and Networking. Results revealed that student beliefs and perceptions, along with mode of interaction, time commitment, self-discipline, and quality of assessment, directly influenced a student's inclination to enroll in an online course. There were differences between online and on-campus students in perceptions regarding learning the same amount of material and perceived level of difficulty and effort required.

Perceptions of students on learning the same amount of material revealed that online students felt they acquired the same level of knowledge in the online class as they would have acquired in the same class taken on-campus, and 82% felt they would make the same grade whether the course was online or in a traditional setting. Thirty-six percent of on-campus students felt they would learn the same amount of material in the same course online, and 50% felt they could make the same grade in the online course. There was no significant difference between online and traditional students in perceived level of difficulty, effort required, and overall success as seen in grade distribution.

DeTure (2004) examined cognitive style and self-efficacy in students enrolled in six Web-based general education distance courses at a community college, to identify learner attributes that may be used to predict student success, based on grade point average. A Group Embedded Figures Test (GEFT) for Field Dependence/Independence and the Online Technologies Self-Efficacy Scale (OTESES) was used to determine the students' entry level confidence with necessary computer skills for online learning. The study revealed that students who were more field independent tended to have higher online technologies self-efficacy but did not receive higher grades than those students who were field dependent and had lower online technologies self-efficacy. Cognitive style scores and online technologies self-efficacy scores were poor predictors of student success in online distance education courses.

Ergul (2004) examined the relationship between student characteristics such as motivation, learning styles, gender, and learning strategies and academic achievement in distance education among freshman students enrolled in Anadolu University's distance learning programs in economy, finance, public administration, working economy, industrial relations, and business administration. Ergul used a questionnaire to gain students' demographic characteristics such as age, gender, and employment status and self-efficacy and self-regulated learning strategies subscales to measure self-efficacy and self-regulated learning strategies. Results revealed that self-efficacy of distance education was significantly correlated to students' academic achievement. However, there was no significant relationship between academic achievement and age, self-regulation, and achievement goals.

The accounting department at a large northeastern university wanted to determine whether students would be interested in enrolling in additional courses in an online master's program, and whether there were any differences in technology self-efficacy, distance education self-efficacy, or self-regulation, which is "self generated thoughts, feelings, and actions that are planned and cyclically adapted to the attainment of personal goals" (Zimmerman, 2000, p. 14) due to gender, age, previous distance education experience, or educational level (graduate or undergraduate). King et al. (2002) examined both undergraduate and graduate students enrolled in distance education courses, accounting, marketing, and finance, in the School of Business, using the World Wide Web and Web-CT. Three surveys were used to evaluate the online courses. The first two surveys were mandatory and the third one was optional.

In the main study, 83% of students indicated they would enroll in future accounting courses offered via distance education; there were no significant differences for gender with respect to technology self-efficacy, self-efficacy for distance education, or self-regulatory skills; previous experience with distance education had a significant impact on both distance education self-efficacy and self-regulation skills but no impact on technology self-efficacy; and there was no significant difference between graduate and undergraduate students with regard to technology self-efficacy, distance education self-efficacy, or self-regulation.

A study conducted by Holcomb et al. (2004) examined a system for evaluating Web-based courses in a similar manner to those taught traditionally and looked at how self-efficacy, gender, and academic level are related to predicting student success in Web-based university distance education courses. The participants in the study were

undergraduate and graduate students enrolled in one of five business courses in the areas of accounting, finance, or marketing. Results revealed course evaluations used for traditionally taught courses are also appropriate for distance education courses. Self-efficacy and self-regulation were compared across gender and no significant gender differences were found.

LaRose et al. (2001) examined the relationship between Internet use, social support, and depression to account for the possible influence of self-efficacy, Internet-related stress, and perceived social support of students enrolled in an introductory telecommunication class at a large midwestern university. Results revealed a link between Internet use and depression.

Lim (2001) examined the satisfaction of adult learners in a web-based distance education course at five institutions in the spring and summer semesters of 1999 and their intent to participate in future web-based courses. Personal and experimental variables used as predictors were computer self-efficacy, academic self-concept, age, gender, academic status, years and frequency of computer use, computer training, Internet experience in a class, and participation in a workshop for a Web-based course. Results revealed that computer self-efficacy was the only significant predictor variable. There was a positive relationship between learners' satisfaction with their Web-based education and intent to participate in future web-based courses.

Smith (2002) examined undergraduate student interest in information technology at a large midwestern university by using Lent, Brown, and Hackett's (1994) Social Cognitive Career Theory Model, which also encompasses the academic and career domains and is an extension of Bandura's (1986) Social Cognitive Theory. Smith studied

undergraduates' sources of computer self-efficacy, computer self-efficacy beliefs, outcome expectations, and information technology interests. Results revealed that mastery experience, which is the interpreted result of one's previous performance, and affective states, which are determined by perceived reactions to situations influenced by personal mental and physical conditions such as stress and anxiety, significantly predicted interest in information technology and computer self-efficacy, and outcome expectations significantly impacted information technology interest.

Watson (2005) examined the influence of previous online course experience and student success among counselor education students. Using the Online Technology Self-Efficacy Scale (OTSE), which measures self-efficacy specific to the online learning environment, Watson's results revealed that students with previous online learning experience felt more confident to succeed in an online course than those who had minimal or no previous online experience.

To summarize the studies of self-efficacy in other disciplines, online learning in disciplines such as business, computer and information sciences, information technology, human resource management, counselor education, and general education revealed that student self-efficacy, regardless of learning medium, was influenced by similar issues such as the importance of interaction and communication among faculty and students (Clark, 2003), student demographics, in particular, age, gender, and employment status, (Ergul, 2004; King, Holcomb, & Brown, 2002; King, Holcomb, & Brown, 2004), receiving support (LaRose, Eastin, & Gregg, 2001), dealing with technology problems (Cavanaugh, Milkovich, & Tang, 2000), receiving adequate technical support (Cavanaugh, Milkovich, & Tang, 2000; Clark, 2003), students' learning style and

personality (Ergul, 2004; Lim, 2001), receiving timely feedback on course work (Clark, 2003), and previous technical experience (DeTure, 2004; King, Holcomb, & Brown, 2002; Lim, 2001; Smith, 2002; Watson, 2005).

Nursing Education and Self-Efficacy

In nursing education, self-efficacy and technology have been studied in the areas of simulation and computer conferencing. Iwasiw (2005) investigated the effect of classroom simulation on junior baccalaureate nursing students' self-efficacy in health teaching. Results revealed that the use of simulation increased student confidence and Iwasiw recommended the continued use of simulation as a teaching-learning method, applying simulation as a strategy to enhance other learner behaviors and cultivating faculty's use of simulation in their teaching.

Babenko-Mould, Andrusyszyn, and Goldenberg (2004) examined the influence of computer conferencing on senior baccalaureate nursing students' self-efficacy for professional nursing competencies and computer-mediated learning (CML) during a final clinical practicum. Results revealed that computer conferencing enhanced learning and CML increased self-efficacy. The strengths of CML included connection, support, learning, and sharing, and the challenges of CML were students' being able to spend enough time using the technology and Internet access.

Studies have revealed that the use of simulation and computer conferencing in nursing education resulted in increased nursing student self-efficacy and thereby enhanced learning behavior and confidence (Babenko-Mould, Andrusyszyn, & Goldenberg, 2004; Iwasiw, 2005).

Summary

Research indicates that educational technology in various forms has been used in nursing education for some time and that its use is increasing because of the current nursing and faculty shortage, higher education budgetary cuts, and especially even more so its accessibility and flexibility. Within this body of literature are a large number of quantitative studies using various scales, inventories, questionnaires, and theories to measure the satisfaction of nursing students in associate, baccalaureate, and graduate nursing programs taking theoretical or both theoretical and clinical courses through various educational technologies.

This research indicates that learning can take place regardless of the classroom setting but also identifies problem areas with learning in the various technical environments. Problem areas include interaction/communication (i.e., between faculty and students and among students), instructor expertise and experience, teaching strategies, course management (i.e., organization and support), consistency (i.e., grading criteria between sites), technical problems, and available resources (i.e., technical support and training, and orientation) ("A Matter of Perspective, 1997; Bata-Jones & Avery, 2004; Bischoff, Bisconer, Kooker, & Woods, 1996; Cragg, Andrusyszyn, & Humbert, 1999; Dela Cruz & Jiang, 2002; Fraser & Haughey, 1999; Frith & Kee, 2003; Hilgenberg & Tolone, 2000; King & Witney, 1998; Thurmond & Vawter, 2003; Townsend, Campbell, Curran-Smith, McGinn, Persaud, et al., 2002; Wills & Strommel, 2002).

Research involving Bandura's (1986) Social Cognitive Theory has been used in nursing and other professional fields with a primary focus on self-efficacy and online learning. In quantitative studies, questionnaires, subscales, surveys, and tests were used

to measure student self-efficacy in relation to factors associated with the online environment: motivation, learning strategies, academic achievement, academic status, computer training and use, computer self-efficacy, previous technical experience, academic self-concept, available support systems, and student demographics (i.e., age, gender, and employment status) (Cavanaugh, Milkovich, & Tang; 2000; Clark, 2003; DeTure, 2004; Ergul, 2004; Holcomb, King, & Brown, 2004; King, Holcomb, & Brown, 2002; LaRose, Eastin, & Gregg, 2001; Lim, 2001; Smith, 2002; Watson, 2005). These various factors helped create awareness of and determine student success within the distance environment. No qualitative studies were found in the literature involving self-efficacy.

The next chapter provides the elements of the research study's methodology: the research design, the theoretical framework, participants and site selection, data collection, and the data analysis process.

CHAPTER III

METHODOLOGY

Research Design

The purpose of this study was to use Bandura's (1986) Social Cognitive Theory to explain nursing students' perceptions of specific required nursing courses delivered via two-way interactive video as influenced by the learning environment, the instructors, the facilitators, and support personnel. I collected data through observations, interviews with focus groups and individuals, an autoethnography, and document artifacts. Naturalistic inquiry seeks to explain an individual's perceptions and subjective experiences (Erlandson, Harris, Skipper, & Allen, 1993). Using this approach, I attempted to understand the perceptions of nursing students, as influenced by the environment, instructors, facilitators, and support personnel. This chapter includes the theoretical framework, participants, site selection, data collection, and data analysis process.

Theoretical Framework

Bandura's (1986) Social Cognitive Theory reflects his view of human behavior, which is that individuals are both products and producers of their own environments and social systems. Triadic reciprocality is the term he uses to refer to the dynamic interplay of three determinants or factors of human functioning: behavior, personal, and environmental. Triadic reciprocality provided the basis for this study in that each of

these three factors was examined**,** and its effect was considered in looking at how nursing students perceived their learning environment, the two-way interactive video setting.

Bandura's notion of behavior refers to the set of practices and traits that the student brings to the learning situation. For this study, nursing students' behavior during the teaching and learning process was observed. Personal factors reflect individual traits and predispositions. These were identified during group discussions and through these solicited student demographics: age, gender, race, martial status, children, student status, work status, and previous distance learning experience. Environmental factors reflect external stimuli that impact the student**.** These were identified through focus group and one-on-one interviews, classroom observations, and an autoethnography. Environmental factors included technology barriers and problems, equipment and upgrades, and available resources. The available resources were technical support and training, instructor teaching strategies, technical experience and expertise, use of facilitators, and administrative support.

Gaining nursing students' insights, in relation to these three factors, can help both students and educators build student confidence and improve the classroom environment, thereby increasing the effectiveness of the two-way interactive video environment.

Figure 1 illustrates Bandura's triadic reciprocality theory, that is, the interconnectedness of behavior, personal, and environmental factors.

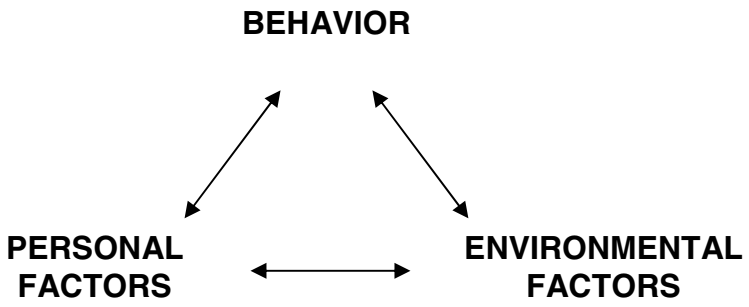

Figure 1. Bandura's triadic reciprocality model.

For example, several personal factors might affect behavior**.** Male students might have more technical experience and/or interest in learning at a distance**.** Married students with families and students with children may be more flexible and patient than single students with no children**.** Students working full- and part-time might show more motivation and interest in class than those who work Pro Re Nata (PRN, which means as needed), or are unemployed because of time constraints and added responsibility**.** Students with previous distance experience might be more tolerant and patient with technical problems than students who do not have any experience with distance classes.

Next, students' and instructors' previous technical experience may affect their need for technical support and training, which is an environmental factor. If the teaching strategies are not appropriate for the two-way interactive video teaching situation, students might have a difficult time learning the course content. If facilitators provide effective remote-site support, students may be more eager to participate in class activities, and if administration listens to and considers student issues, students may be more likely to demonstrate positive attitudes toward learning via two-way interactive video.

Participants, Site Selection, and Purposive Sampling

Two courses in a four-year nursing program at a Midwestern university were selected for the study. These courses were selected because they were the only two courses being taught via two-way interactive video in the nursing program. Selection of the courses was based on scheduling, convenience, availability, consent (from course instructors, facilitators, and students), and classroom locations. The courses selected for observation were from the same academic discipline and were taught and facilitated by two different instructors. In the spring of 2005, 25 nursing students, 20 on the origination- site and five on the remote-site, two instructors, two facilitators, two technical support personnel, and one administrator participated in the study. Demographic information was obtained by asking students to write the information on a piece of paper or, for convenience, to e-mail the information to me.

Data Collection

I was the primary data collection instrument for the study (Erlandson et al., 1993). Data were collected through open-ended weekly and monthly observations, focus group and individual interviews, document artifacts, and an autoethnography, which is a reflective process that connects the person to the context being studied (Erlandson et al., 1993).

Verbal permission to observe the selected courses was obtained from the adult health instructor and the two facilitators. The adult health instructor and facilitators later signed approved written consent forms agreeing to the course observations and interviews. The adult health instructor and facilitators granted me time to introduce myself to the two classes, briefly describe the study, and invite students to participate in

the study and to ask any questions that they might have throughout the observation and interview period. I told the students that I would be present throughout the remainder of the course and that none of the data would be associated with individual names. After the explanation of the study, students who volunteered to participate signed approved written consent forms agreeing to group interviews. In addition to the adult health instructor, facilitators, and students, technical support personnel, and an administrator were also approached and after agreeing to individual interviews, signed approved written consent forms.

Data were collected from two required nursing courses, the Pediatric and Adult Health nursing courses, which were taught through two-way interactive video. The Pediatric course is a four credit hour course with both a theoretical and clinical component. It focuses on the promotion, maintenance, and restoration of the health of the child and the family. The Adult Health course is a six credit hour course with both a theoretical and clinical component. It explores nursing concepts and theories to promote, maintain, and restore health for the adult client.

Data collection began with observations of the two nursing courses. On the origination site, nine consecutive weeks of observations were conducted, and observations on the remote-site were conducted one time each month for two consecutive months. The observations at the origination site occurred in the same two-way interactive television classroom for the entire nine weeks. As for the remote-site, observations took place in two separate two-way interactive television classrooms. These observations allowed me to record rich descriptive data and maintain flexibility (Denzin & Lincoln, 2003).

Weekly and monthly observations were recorded in a reflexive journal. Reflexivity, as defined by Emerson, Fretz, and Shaw (1995), is central to how we understand the worlds of others and how those worlds are shaped "as meaning systems negotiated and constructed through relationships" (p. 216). Using a reflexive journal enabled me to go back and forth through the observations in order to gain a better understanding of the observed environment.

Further data for the study were collected from individual and focus group interviews. Focus group interviews involved nursing students at both sites. Individual interviews were performed with one instructor (of the Adult Health course); two technical support persons, one from each site; two facilitators, both on the remote site; and the Dean of the Nursing program. Interviews with nursing students at both sites were conducted via five focus groups. Four of the focus group interviews took place at the origination-site and one at the remote-site. Student focus groups were peer selected. Focus groups enabled me to gather large amounts of information in a limited period of time through creating collectivity and multiple lines of communication within each group (Denzin & Lincoln, 2003). These focus group interviews also made it possible for me to observe the interactive processes among the nursing students. Morgan says, in Denzin and Lincoln (2003), that focus groups "are a way of listening to people and learning from them" (p. 9).

Much more intimate than a focus group interview, the individual interviews offered me the opportunity to gain an in-depth picture of how the Adult Health instructor, technical support personnel, facilitators, and the Dean view their world. After the initial interviews, with both focus groups and individuals, had been completed and transcribed,

follow-up interviews were conducted. These follow-up interviews added information or clarified any discrepancies from the initial interviews and contributed to a clearer understanding of what is entailed in the distance environment (Erlandson et al., 1993).

My research was interpretive and reflexive. Observations and interviews provided an opportunity to study participants in their cultural context. The data collection process was continually revised due to emerging themes, changes, and limitations in the data. Audio tape recorders were allowed by all participants and used in the focus group and individual interviews as well as for subsequent transcription.

Another part of the data collection process consisted of performing an autoethnography. As stated earlier, an autoethnography is a reflective process that connects a person to the context being studied (Erlandson et al., 1993). As the instructor of the Pediatric course that was part of the study, I conducted an autoethnography to reflect on my experience as a nursing instructor and, previously, as a student in the two-way interactive video environment. I conducted the autoethnography throughout the observation and interview process. During this period of time, for half an hour or so immediately following the focus group or individual interviews and classroom observations, I would sit, reflect, and then begin to write about my previous and current experience with two-way interactive video, prompted by discussions with the students, instructor, or technical support personnel about instruction, technical problems, or technical support, or by observing a technical problem or facilitator issue during a classroom observation.

The last part of the data collection process involved collecting document artifacts, which included soliciting student demographics and end of semester evaluations. These

documents gave me further insight and background information into the dynamics of the nursing students and their learning in the two-way interactive video environment as well as helped me to triangulate the data with the observations and interviews (Erlandson et al., 1993).

The interview tapes and data will be stored for at least one year, and in order to protect participants' identities, all names were removed. All information has been and will be kept confidential and stored under lock and key in a place to which only I have access. The data for use in articles, dissertation, and/or presentations at professional conferences do not identify individuals, places of study, names, or events, and pseudonyms are used; all distinguishing characteristics have been changed to protect the anonymity of the participants.

Data Analysis

Erlandson et al. (1993) emphasize the importance of systematic analysis in the naturalistic process:

> If intellectual inquiry is to have an impact on human knowledge either by adding to an overall body of knowledge or by solving a particular problem, it must guarantee some measure of credibility about what it has inquired, must communicate in a manner that will enable application by its intended audience, and must enable its audience to check on its findings and the inquiry process by which the findings were obtained. (p. 28)

During data collection and analysis, I continually compared the various data sources: the interviews, the autoethnography, observations, and document artifacts. For example, I looked for similarities and differences among the various

observation transcripts as well as in the data from both focus group and individual interview transcripts and document artifacts. The week-to-week observations on the origination site and monthly observations on the remote site were transcribed on the same day they occurred. The focus group and individual interviews were also directly transcribed after they occurred.

The autoethnography was written continually; after each interview or observation, I would write. When the autoethnography was complete, I compared and contrasted it with the interviews, observations, and document artifacts.

Lastly, the document artifacts included student demographics, collected at the beginning of the semester, and the end of semester evaluations and grades. After I had collected all the document artifacts, they were compared and contrasted with the focus group interviews and observations in order to identify similarities or differences.

Multiple procedures were used to establish trustworthiness, credibility, transferability, dependability, and confirmability in this study. Prolonged engagement established credibility and allowed me to submerge myself in the culture of the two-way interactive video classroom environment (Erlandson et al., 1993). The prolonged engagement included weekly interaction with students on the origination site for nine consecutive weeks and two consecutive monthly interactions with remote site students. After the allotted amount of time, information began to repeat itself; therefore, I believe that "enough" time was spent to interpret observations of all three two-way interactive video environments.

Another procedure used to establish credibility was persistent observation (Erlandson et al., 1993) of students during weekly origination site and monthly remote site classroom observations. While observing the two-way interactive video environment, the technology, technical support, interaction, student and instructor behaviors and attitudes, facilitation, and instructor expertise, experience, and teaching strategies, I took field notes and then recorded them in the reflexive journal which was continually reviewed to note any differences in the observations conducted week to week or monthly. Consistent and constant analysis of the week-to-week and monthly observations provided relevancy in the data.

Also associated with credibility is triangulation. Triangulation helps confirm the knowledge claims of the study and explains inconsistencies that may result (Erlandson et al., 1993). Through triangulation, I integrated my results during the interpretation phase of focus group and individual interviews, an autoethnography, classroom observations, and document artifacts. To construct the reality that exists within the context of the study, I collected information from the research participants on each site about their learning through the two-way interactive video setting. The different or similar opinions of nursing students who were learning through two-way interactive video were checked against observed classroom behavior, end of semester student evaluations of the class, focus and individual interviews, and an autoethnography associated with the two-way interactive video setting (Erlandson et al., 1993).

Peer debriefing, another procedure used to establish credibility for the study, ensured my loyalty to the study and kept me honest. Peer debriefing made me aware of my position in the study. I established meetings with my advisor and other professionals

outside the context of the study who had a general understanding of the nature of the study to help provide feedback through refinement and redirection of the inquiry process (Erlandson et al., 1993).

Referential adequacy of materials also helped establish the credibility of the study. Erlandson et al. (1993) state, "It is extremely important that material be collected to give holistic views of the context" (p. 31). Pencil and paper sketches were transformed into Auto-CAD sketches of all three two-way interactive video classrooms, and documents such as student and faculty demographics, end of semester student evaluations, and instructor semester reports provide a "slice of life" from the context being studied and a supportive background to communicate to the reader a more thorough contextual understanding of my analyses and interpretations.

Member checking increased the trustworthiness and credibility of my qualitative findings by validating the information provided by the research participants as being accurate (Erlandson et al., 1993). The transcribed transcripts enabled me to keep a running accuracy check by conducting follow-up interviews with the research participants.

A reflexive journal supports the credibility, dependability, and transferability of the study. Data collected during the weekly and monthly observations, focus groups and individual interviews, follow-up interviews, and autoethnography, were logged into the reflexive journal, which included personal data concerning me and the participants of the study. The reflexive journal also contains descriptions of all two-way interactive video classrooms, activities, personal thoughts, and people involved in the study (Erlandson et al., 1993).

Detailed description helped to establish transferability and helped me keep an extensive record of contextual data so I could report the data with sufficient detail and precision (Erlandson et al., 1993). The reflexive journal contained descriptions of the observations, interviews, and autoethnography, as well as thorough descriptions of all three two-way interactive video classroom environments, research participants, the instructor, and the atmosphere. Another procedure used to establish transferability is purposive sampling. Specific individuals were selected to provide a relevant description and rich detail about studying nursing students' perceptions towards their learning through two-way interactive video (Erlandson et al., 1993).

The last procedure to establish dependability and confirmability for the study was keeping an audit trail. Documentation for the study included logs of dates and times for conducting classroom observations; focus group and individual interviews; an autoethnography; logs of audio-taped interviews and follow-up interviews; a coded reflexive journal and field notes; and data cards, which are also coded. Maintaining an audit trail enables an external reviewer to make judgments regarding the contents of the study (Erlandson et al., 1993).

Summary

This chapter details the methodology used in this study. Specifically, it explains the theoretical framework, participants, sites, data collection, and data analysis process. The next chapter will identify and describe the two settings and the principal respondents at each location.

CHAPTER IV

DATA PRESENTATION

The purpose of the data presentation is to identify, describe, and explain the course delivery method, settings, principal respondents, and interactions. The delivery method is described first. Next, the three classroom settings are described followed by descriptions of the principal respondents, which are the students, instructors, facilitators, technical support staff, and an administrator. Interactions among respondents are mentioned throughout.

Delivery Method

The delivery method for the two courses used in this study is two-way interactive video. Two-way interactive video permits "students at one site to see, hear, and participate in instruction from another site" (Kroll-Wheeler, 2000, p. 1). Video and information are shared between sites, using two-way interactive video. For transmission of video and data to occur, a pipe must be set up and connected by the telephone company because video has a large signal. Pipes used to connect and transmit video and data come in various sizes. Kroll-Wheeler (2000) says the larger the pipe or the wider the bandwidth, the higher the cost to display video instruction. To control costs, video is compressed.

To be able to compress, decompress, code, and decode video, a codec is necessary (Kroll-Wheeler, 2000). A codec is an electronic device that transmits and receives video

signals that students will see on the television monitors in the two-way interactive video classroom. In addition, different forms of instructional technology such as video cassette players, DVD's, recorders, microphones, cameras, and computers, can be connected to the codec and transmitted and displayed to remote locations.

Within this network, Kroll-Wheeler (2000) says digital lines, instead of telephone lines, transmit information. The digital lines that transmit video are T-1 phone lines. Effective for two-way interactive television, T-1 phone lines are high-speed lines that are leased because of being so costly. The cost of leasing T-1 phone lines is based on distance not usage. For two-way interactive video to be cost effective, increased usage is necessary.

Settings

The settings, where the observations took place, are in three two-way interactive video classrooms at two separate locations. One classroom is located at the origination-site, and is labeled and identified as OS. The two other classrooms are located on the remote-site and are labeled and identified as RS1 and RS2.

Origination-Site Setting

Located in one of three red brick buildings, on the urban, extension campus of the public four-year midwestern university is the origination-site classroom. Inside the North Hall building, on the second floor, room 222, is the OS classroom. The control room and Instructional Technology (IT) department, where technical support is housed, is located 20 feet from the OS classroom. The OS classroom is off white and has no windows. It is also neat and clean. Lighting is adequate. The room temperature is neither too warm nor cold. The size of the classroom is approximately 35' x 60'.

The OS classroom is equipped with an instructor's desk that includes a personal computer (PC) workstation with Internet access, a document camera for document display, a dual video-cassette recorder and DVD player, and a telephone. On top of the telephone there is a bold black extension number to call technical support as needed. There are also two mounted black cameras, black microphones, desks, chairs, and three plasma screen televisions, throughout the OS classroom (See Appendix A). A cushioned grey swivel chair is behind the desk where the instructor sits.

The most prominent pieces of equipment are the three plasma screen televisions. Two of the three plasma screen televisions are at the front of the OS classroom mounted on the wall adjacent to and on each side of the instructor's desk. The third plasma screen television is mounted on the wall in the back of the classroom directly facing the instructor's desk at the front of the classroom.

Other features of the OS classroom are two oak doors at the front and each end of the classroom with a red EXIT sign on top of each door for entering and exiting the classroom. The two black cameras, as identified earlier, are located in the front and back of the OS classroom. The black camera, in the front of the OS classroom, is mounted on the wall and between the two plasma screen televisions. A clock is also mounted and between one of the plasma screen televisions and the black camera in front of the OS classroom. The other black camera is in the back of the OS classroom and mounted next to the third plasma screen television.

On each side of the OS classroom, there are four sets of long, brown tables and approximately five foot space dividing the eight tables. Spread out along the top of each table is three microphones. Set behind the eight tables are 49 grey, cushioned swivel

chairs. There is approximately 12 inches between each chair and they are spread throughout the OS classroom and range from as little as four to as many as eight behind each desk.

Remote-Site Settings

Approximately 90 miles from the urban, extension campus is the rural, main campus of the public four-year midwestern university and where the two remote-site classrooms are located. Housed in two separate red brick buildings approximately 100 yards apart are the RS1 and RS2 classrooms. The RS1 classroom is located in Moore Hall, on the second floor, and in room 214. The RS2 classroom is located in Sanford Hall, on the first floor, and in room 123. Also housed in Sanford Hall and right next to the RS2 classroom is where the control room and the technical support's office is located.

The RS1 and RS2 classrooms have similar desktop equipment as the OS classroom with the exception of using televisions. The RS1 classroom has one 37-inch television (See Appendix B). The RS2 classroom has two 37-inch televisions (See Appendix C).

The most prominent pieces of equipment in the RS1 and RS2 classrooms are the three 37-inch televisions. In the RS1 classroom, the 37-inch television is at the front of the classroom and to the right of the facilitator's desk. In the RS2 classroom, the two 37-inch televisions are at the front of the room and adjacent to the right and left sides of the facilitator's desk.

The RS1 classroom is a white room, has grey carpeting, and is approximately 20' x 30'. The lighting is adequate. The room temperature is neither too warm nor too cool. The classroom is neat and clean. There are windows across the entire back wall. White

blinds cover the windows and are closed. There is also a small black camera mounted and centered on the back wall and above the windows.

From the back of the classroom and to the left side there is a glossy, white writing board. The writing board, in the upper right corner, has the technical support personnel's name, which is in all caps, and extension written in red. Also on this wall and in the far left corner is a mounted black, JBL speaker.

On the front wall and in the left corner of the classroom is a brown door for entering and exiting the classroom. There is also another mounted black camera in the corner between the door and left wall. In front of the door and slightly to the left, there is an L shaped desk with three control panels and a computer set on the desk. Next to and on the left side of the desk and hanging from the ceiling and slightly in front of it is a mounted slate gray 37-inch Sony television.

To the right side of the room is a mounted digital black clock, on the wall, with red numbers. Next to the right of the digital black clock is another mounted black JBL speaker. Just below the clock and speaker and on the floor is a 37-inch silver Toshiba television which sits on a metal stand angled toward three long tables.

In the middle of the classroom are three long tables lined up one behind the other. On top of each table are three microphones. These microphones are located every other seat. Each table also has six cushioned gray and black back swivel chairs with rollers.

The RS2 classroom is carpeted grey, has pale pink, carpeted walls, and is approximately 50' x 75'. The classroom has adequate lighting, but is slightly cool. The classroom is also clean and neat.

The wall in the front and to the left of the room has two sets of light switches, one plate with two switches and the other with five. To the right of the switches is a large, portable, green chalkboard, then the American flag hanging on a metal pole, and lastly, a black 37-inch television on a wooden pedestal. Above the 37-inch television that is on a wooden pedestal and to its right is an outlet half way up the wall, a thermostat, and a mounted black camera with an outlet and a metal cover directly above it. Next to the black camera and to its right is another black 37-inch television on a wooden pedestal.

On the front corner of the left wall is a brown door to enter and exit the classroom. Next to the door and to its left is another door and large tinted window that houses the control room. To the right side of the control room is another wall outlet. On the back wall of the room and in the left corner are a mounted black 37-inch Sony television and a black camera to its right.

The middle of the room contains four long speckled gray tables lined up one behind the other. Each table, except the last table, in the room, has four microphones. The last table has three microphones and they are staggered every other seat. There are seven gray and tan reclining chairs along the first table, eight along the second and third, and six across the last.

Principal Respondents

Origination-Site Nursing Students

Located on the urban, extension campus of the four-year public Midwestern University are the origination-site nursing students, used in this study. These students on the origination-site will be identified and labeled with an "O" in front of their alias names.

O-Monica, a 26-year-old Hispanic female with dark shoulder-length hair, is short, and heavy set. She speaks very fast and is very vocal about problems with learning via two-way interactive video, but she always has a smile on her face. She is a first semester senior and full-time nursing student, married, and has no children. O-Monica works part-time at a local teaching hospital as a pediatric extern and has no two-way interactive video or distance experience.

O-Monica sits in the front of the classroom next to three other nursing students. She listens intently to the instructor and though she does not participate much, she is engaged by writing notes on her PowerPoint outline and viewing her textbook as the instructor lectures. She is pleasant, cooperative, respectful of others, and upbeat, but gets distracted and frustrated when a technical problem, such as a noise or the remote students speaking too loudly in to their microphones.

O-Amber, a 21-year-old Caucasian female with sandy blonde shoulder-length hair, is thin and of average height. She is very quiet and timid, but occasionally speaks, when spoken to, about learning via two-way interactive video. She is a first semester senior and full-time nursing student. O-Amber is not married and has no children. She works part-time and has no two-way interactive video or distance experience.

During class, O-Amber sits at the back of the classroom and next to another nursing student. She does not participate in class discussion, but is engaged and takes notes as she listens to the instructor and while other nursing students speak.

O-Christie, a 30-year-old African-American female with dark-shoulder length hair, is tall and thin. She is also very quiet and does not speak much, but will speak when spoken to, especially about two-way interactive video. She is also very pleasant,

cooperative, and never complains. O-Christie is a first semester senior and full-time nursing student. She is a divorced mother of six children and works full-time. O-Christie has no two-way interactive video or distance experience.

During class, O-Christie sits off to the right side of the classroom with another nursing student. She does not participate in discussions, but intently watches and listens to the instructor.

O-Sally is a very petite 21-year-old African-American female with dark shoulder-length hair. She speaks very fast and is very vocal, holding nothing back about learning via two-way interactive video. O-Sally is a first semester senior and full-time nursing student. She is single, has no children, works part-time, and has no two-way interactive video or distance experience.

During class, O-Sally sits in the back of the classroom with another nursing student and often turns around to watch the students on the remote site through the plasma television screen in the back of the classroom just to see what they are doing. O-Sally participates a little during class discussion but for the most part remains quiet.

O-Carrie is a 24-year-old African-American female who has dark chin-length hair and a medium build. She is also very vocal about learning via two-way interactive video. When O-Carrie speaks about two-way interactive video, there is a sense of constant frustration and anger in her voice. O-Carrie is a first semester senior and full-time nursing student. She is married and has three children and says her full-time job is being a mother. She also has no two-way interactive video or distance experience.

Even during class, O-Carrie is very vocal and will say what is on her mind, especially when she feels something is not right. O-Carrie sits by herself in the middle

and to the center of the classroom and participates often during discussion. She writes notes in her PowerPoint outline and follows along in her textbook. When there is any type of noise or disruption, O-Carrie gets very frustrated and disgusted. Sometimes, O-Carrie will not participate just because of technical problems, such as noises, but all in all, she tolerates the learning environment and is respectful and cooperative.

O-Terry is a 26-year-old Caucasian male, of average height and slightly heavy, with black hair and a mustache. He is well-spoken and seems knowledgeable when talking about and being fascinated with the technology. O-Terry is also very laid back and pleasant, and often comes late to class. As a first semester senior and full-time nursing student, he drives 120 miles round trip to school everyday. O-Terry is married with one daughter, 21 months, and another child due in 6 months. O-Terry also works full-time and has no two-way interactive video or distance experience.

During class, O-Terry sits to the far left of the classroom and by himself, leaning to his left side and propping his arm up on the desk to support him. He either watches the instructor live or on the plasma television screen in the front of the classroom. O-Terry participates very little during discussion, but seems engaged by listening and watching the instructor during class.

O-Jessica is a 23-year-old Caucasian female who has long dark hair, is short, and heavy set. She is a very sweet and pleasant. O-Jessica is vocal about how the two-way interactive video learning environment causes distractions and that she has to spend more time at home going over the material covered that day in class. She is a first semester senior and full-time nursing student who is married and has a two year old son. O-Jessica

works PRN, at a local teaching hospital, in the Pediatric unit, and has no two-way interactive video or distance experience.

During class, O-Jessica sits in the front of the classroom next to another nursing student and tape records class. O-Jessica tries to engage in class, but is easily distracted by technical noises and students on the remote site talking loudly in to the microphone. These distractions cause O-Jessica to quit taking notes and not listen to the instructor.

O-Eva is a 23-year-old Caucasian female who is of average build and height and has red hair. She is pleasant and does not complain much. She is a first semester senior and full-time nursing student. O-Eva is married with a child who is one and is currently 6 months pregnant. She does not work and has had one two-way interactive video class previously.

During class, O-Eva sits in the back of the classroom with two other nursing students. She eats and moves around in her seat often. O-Eva often whispers to the nursing student next to her when she misses what the instructor has just said. She does not participate much, but writes notes on her PowerPoint outline and follows along in her textbook.

O-Amy is a 26-year-old Caucasian female who is tall and thin with shoulder length, bleached blonde hair. She is very quiet, but does talk about learning via two-way interactive video when asked. O-Amy is a first semester senior and part-time nursing student. She is married with three children and is 6 months pregnant with twin boys. O-Amy is not working and has no previous two-way interactive video or distance experience.

During class, O-Amy sits in the back of the classroom next to two other nursing students and remains very quiet. O-Amy does not participate in class discussion, but she does write notes on her PowerPoint outline and follows along in her textbook as the instructor instructs.

O-Michelle is a 24-year-old Caucasian female of average height and weight and has sandy blonde hair. She is knowledgeable and readily shares her opinion on learning via two-way interactive video. O-Michelle, single with one son, is a first semester senior and a full-time nursing student. She does not work and has no two-way interactive video or distance experience. O-Michelle sits in the back of the classroom next to two other nursing students but is focused and writes notes and follows in her textbook as the instructor lectures. She does not participate during discussion, but is receptive to others in the classroom as they speak.

O-Crystal is a 22-year-old Caucasian female who is tall and thin, and has thick, long, bleached blonde curly hair. She is vocal, assertive (often taking the initiative), respectful, pleasant, and cooperative. O-Crystal is a first semester senior, full-time nursing student, and President of the Student Nurses Association (SNA). She is single and has no children. O-Crystal works part-time at a local hospital in the Nursery and Neonatal Intensive Care (NICU) and has no previous two-way interactive video or distance experience.

During class, O-Crystal sits towards the middle of the room next to another nursing student and listens intently in class to the instructor and other students who participate in class discussion. O-Crystal participates some during the class discussions

but for the most part writes notes on her PowerPoint outline and remains quiet and focused.

O-Marsha is a 43-year-old Caucasian female who is slightly heavy with long, light brown hair pulled away from her matured face. She is a knowledgeable, pleasant, and gentle woman. In a soft but assertive manner, O-Marsha offers her thoughts towards learning via two-way interactive video. She is a first semester senior and full-time nursing student. O-Marsha is married and has three sons aged 17, 13, and 11. During the middle of the semester O-Marsha's youngest son was diagnosed with testicular cancer. She works PRN, as a Licensed Practical Nurse (LPN). O-Marsha has no previous two-way interactive video or distance experience.

During class, O-Marsha sits between two nursing students in the middle of the classroom and often participates in class discussions. She also remains focused and writes notes as the instructor speaks.

O-Barbara is a 55-year-old petite, Caucasian female with short blonde hair. She is vocal, well-spoken, knowledgeable, and very regimented. O-Barbara is a first semester senior and full-time nursing student, is married to a local Pediatrician, and has three sons aged 27, 32, and 37. None of the three children live at home. She also has one dog named Sasa and an African Grey named Jake. O-Barbara works at International Travel Medicine as a counselor and administers immunizations. She has no two-way interactive video experience but has taken Internet classes.

During class, O-Barbara sits towards the front of the classroom and next to two other nursing students and participates often in class discussions. She remains very focused while listening to the instructor and writing notes on her PowerPoint outline.

O-Emily is a tall, heavy, 24-year-old Caucasian female with long blonde hair. She is very vocal, knowledgeable, respectful, cooperative, well-spoken, and assertive. O-Emily discusses how much she dislikes learning via two-way interactive video and how much it affects her learning. A first semester senior and full-time nursing student, she is single and has no children. O-Emily is not employed during the school year and has no previous two-way interactive video or distance experience. She sits in the front of the classroom next to two other nursing students, but does not participate in class because the technical problems that occur during class cause distractions which make her frustrated and angry.

O-Anita is a 34-year-old African-American female. Tall and thin, with shoulder length hair, she is pleasant and respectful, and does not complain about anything. When asked, O-Anita will voice her opinion about the two-way interactive video environment. She is a first semester senior and full-time nursing student and a divorced mother of three children. O-Anita's two sons are 15 and 14 and her daughter is 10. O-Anita also works full-time and has no two-way interactive video or distance experience.

During class, O-Anita sits in the middle and on the right side of the classroom next to another nursing student and engages in class by writing notes on her PowerPoint outline or looking in her textbook. She does not participate in the class discussions, but listens intently to the instructor and the other students who do participate in the discussions.

O-Kara, a 22-year-old Caucasian female, is tall and thin with wispy chin length blonde hair with highlights. When O-Kara talks about the two-way interactive video setting or anything else, she is very pessimistic and negative. A first semester senior and

full-time nursing student, O-Kara is single and has no children. She works part-time and has no previous two-way interactive video or distance experience.

During class, O-Kara sits towards the back of the classroom next to two other nursing students and although she does not participate in class discussion, she is quiet and listens when the instructor and other nursing students speak.

O-Cassie is a 29-year-old Native-American female who is slightly heavy and average in height with dark, chin length hair. She is very vocal and negative about learning via two-way interactive video. O-Cassie says, "If the choice was mine, I would not be taking an ITV class. I do not care for Internet, ITV, or correspondence classes." A first semester senior and full-time nursing student, she is married and has two children. O-Cassie also works full-time. She says the only two-way interactive video experience she has ever had was for one day, the previous semester, and the instructor was at the remote site, because the instructor on her campus was sick that day and could not come to class.

During class, O-Cassie is sits in the front of the classroom next to two other nursing students and engages and participates often during class discussion. She is focused and listens intently to the instructor and other students.

O-Callie is a short, heavy set, 29-year-old African-American female who has dark, shoulder-length hair. She is pleasant, respectful, and cooperative, and always has a smile on her face. When asked, O-Callie provides her thoughts about learning via two-way interactive video. She is a first semester senior, a full-time nursing student, and married with two children. O-Callie works part-time and has no previous two-way interactive video or distance experience.

During class, she sits next to two other nursing students and participates some in class discussion. She also tape records class. As the instructor teaches, O-Callie diligently writes notes on her PowerPoint outline and follows along in her textbook.

O-Linda, a 44-year-old African-American female, is short, heavy set, and has short, dark hair. She is pleasant, cooperative, grateful, quiet, and never complains. She is very soft spoken and shares her thoughts about learning via two-way interactive video. A first semester senior and part-time nursing student, O-Linda is married and has two children. She works part-time and has no two-way interactive video or distance experience.

During class, she sits to the right and at the front of the classroom by herself. O-Linda also tapes class. She does not participate in class discussion, but listens intently to the instructor as she writes her notes on her PowerPoint outline and follows along in her textbook.

Lastly, O-Brian is a 26-year-old African-American male, of average height and weight, with short dark hair, and is always neatly dressed. He is very quiet and only speaks when spoken to. O-Brian, a first semester senior and full-time nursing student, is single and has no children. He works part-time and has no two-way interactive video or distance experience. During class, O-Brian sits in the middle of the classroom by himself and remains quiet and listens intently to the instructor. O-Brian does not participate during class discussion, but writes notes on his PowerPoint outline and follows along in his textbook by using a highlighter.

Age, gender, race, student and work status, marital status and family, and previous distance experience are personal factors that help describe characteristics of the

origination-site nursing students on the OS setting. Further descriptions of the origination-site nursing students and their classroom behaviors are as follows.

The origination-site nursing students came to class wearing clothing ranging from T-shirts, jeans, shorts, flip-flops, pullovers, and tennis shoes, to blouses, heels, sweaters, collared shirts, slacks, and dresses. Each week, one to two students were absent and two to three students were tardy. After arrival, origination-site nursing students would choose a seat and open their backpacks or rolling bags and get out their textbooks, PowerPoint outlines, and notebooks, and place them on the table where they were going to sit. Almost every week, each origination-site nursing student sat in the same seat. There was no seating chart and the students sat where ever they wanted. The same three origination-site nursing students, O-Jessica, O-Callie, and O-Linda, placed individual tape recorders, each week, on the instructor's desk to tape record class. O-Jessica stated, "Recording class is helpful in the learning process, but at the same time is still hard to hear."

When class began, the origination-site nursing students became quiet, focused, and listened very intently to the instructor for the entire class. The origination-site nursing students took notes, followed along and highlighted their textbooks, used their PowerPoint outlines and jotted down notes, or watched the instructor on the television screen or live in the classroom. On several occasions, an origination-site nursing student nodded his or her head in agreement with what the instructor was saying. One origination-site nursing student was caught looking at another origination-site nursing student's notes because she missed what the instructor had just said and did not want to interrupt class by asking the instructor to repeat it.

The origination-site nursing students did not disrupt class and were respectful of the instructor and other origination-site nursing students in the classroom. If origination-site nursing students spoke, they whispered to one another or raised their hand to ask or answer a question. The origination-site nursing students remained engaged, responded quickly, and were compliant, attentive, and receptive. I sensed the origination-site nursing students felt secure and comfortable with having the instructor in the same room because of how they were sitting in their chairs and if they missed something, they would go up to the instructor after class and ask her a question.

There were no breaks during class. The instructor told the students she would not give breaks because she did not want to chance the technology being disrupted. Some of the origination-site nursing students got up periodically, mostly after about an hour and fifteen minutes, and went out of the classroom to the bathroom or to just stretch and would return after a few minutes. Origination-site nursing students who left the classroom were not gone long because they did not want to miss what the instructor was talking about.

The origination-site nursing students were allowed to have drinks and food in the two-way interactive video classroom. Drinks ranged from Mountain Dew and Dr. Pepper to Dasani and Nestle bottled water and Minute Maid Cranberry Juice. Food consisted of Dolly Madison doughnuts, Honey Buns, Doritos, and Snicker candy bars.

What did cause the origination-site nursing students to react toward the two-way interactive video environment was their lack of two-way interactive video experience, a personal factor, and when learning they encountered technology problems, an environmental factor.

The origination-site nursing students revealed their lack of experience with two-way interactive video, by constantly forgetting to press the microphone to speak. Besides forgetting to press the microphone, the origination-site nursing students, at times, also chose not to press the microphone because they did not want to be the center of attention with the camera moving and zooming in on them when they would speak. The following comments were made. O-Carrie said, "We are intimidated to press the microphone and don't feel like being put on stage and just give up. I really don't want anyone to see how many skittles I am eating." O-Terry said, "Camera movement is very intimidating." However, as the semester progressed, the origination-site nursing students became more comfortable with the setting and started to press the microphones more to speak.

Next, the technology problems identified by several origination-site nursing students include the following:

O-Eva: Static occurs often, especially when all students try and talk at once.

O-Amy: Voice delays occur, for a few seconds.

O-Michelle: There are noises such as humming, click-click-click, buzzing, feedback, and fuzz.

O-Crystal: There are resolution delays.

O-Marsha: We have to adjust the TV screen often.

O-Brian: There is constant repeating of information by the instructor to the remote site because of technical problems, such as getting cut off or a noise occurring.

O-Barbara: We lose connection.

O-Emily: Images are distorted.

Origination-site nursing students would sigh out loud, grumble under their breaths, complain to one another, or look at a peer in disbelief, when these problems occurred. The origination-site nursing students did not cope well with technology problems. Several origination-site nursing students stated:

O-Eva: When tech problems occur, it is very distracting and it is hard to get started again and back on track to learn and focus on what the teacher is saying.

O-Jessica: An increased volume causes distraction and stress.

O-Monica: There is a loss of concentration due to noise.

O-Cassie: We were unable to take notes due to too much stimuli.

O-Emily: Learning is more time consuming because of distractions.

Besides complaining about the technology problems that affected the learning environment, the origination-site nursing students also complained about the amount of interaction and personal contact they are receiving, and their relationship with the remote-site students, which are considered environmental factors.

O-Anita: There are too many students, too much discussion, and we fall behind in class.

O-Kara: ITV is impersonal and provokes frustration, anxiety, and decreased class participation.

O-Sally: We feel like we are playing Jeopardy and it is a competition between the two sites.

O-Cassie: Having a large class size affects learning because there is too much discussion.

O-Emily: We are not getting our money's worth.

The significance of the origination-site nursing students is their willingness to verbalize problems that are associated with their learning environment. The personal and environmental factors that affect their behavior include lack of previous two-way interactive video and distance experience, technology barriers and problems, lack of interaction and personal contact, and relationship with the remote-site nursing students.

Remote-Site Nursing Students

Located on the rural, main campus of the four-year public Midwestern University are the remote-site nursing students. The nursing students on both remote-site settings, RS1 and RS2, are identified and are labeled with an "R1" or "R2" before their alias names.

R1 and R2-Pat is a 23-year-old African-American female, of average height, with an athletic build, and dark long hair pulled back in a ponytail. She is very vocal, but respectful and cooperative. R1 and R2-Pat has much to say regarding to learning in a two-way interactive video setting. For example, she said several times that she wanted to be in the same room as the instructor. R1 and R2-Pat is single and has no children. She is a first semester senior and full-time nursing student with a part-time job. R1 and R2-Pat previously took a two-way interactive video class where she was in the same room with the instructor, but she had never taken a two-way interactive video course where the instructor at the other site.

During class, R1 and R2-Pat sits in the middle of the classroom by herself and intently focuses on what the instructor is saying. She also participates often during class discussions, along with writing notes and following along in her textbook. Sometimes,

R1 and R2-Pat will help out her classmates and tell them what page the instructor is referring to.

R1 and R2-Molly, a 23-year-old African-American female, is tall, slightly heavy, and has long black hair. She is quiet, polite, and respectful. R1 and R2-Molly only speaks when other nursing students are quiet, which is very rare. She is also single and has no children. She is a first semester senior and full-time nursing student with no job and has had four two-way interactive video courses.

During class, R1 and R2-Molly sits towards the front on the right side of the classroom and next to another nursing student. R1 and R2-Molly does not participate in class but is focused and writes notes and follows along in her textbook as the instructor speaks.

R1 and R2-Liz is a 47-year-old Native American female. She is of average height and slightly heavy, and her chin-length, fuzzy, blonde hair stands up on her head. She is extremely vocal along with being very boisterous, loud, and, at times, obnoxious. R1 and R2-Liz says whatever comes to her mind. Married with three children, R1 and R2-Liz is a full-time first semester senior nursing student who works part-time. She has never taken a two-way interactive video class, but has Internet experience.

During class, R1 and R2-Liz sits in the front and on the right side of the classroom by herself. She is very knowledgeable and participates often in classroom discussions, but, at times, interrupts other students and the instructor when they are speaking. R1 and R2-Liz speaks whenever she chooses to do so.

R1 and R2-Phillip is a 45-year-old Caucasian male. Short, slightly heavy, and with dark short hair, he is a very professional and pleasant gentleman. He is vocal in his

concern with having to learn via two-way interactive video and struggles with learning in this environment. R1 and R2-Phillip is married and has two daughters, 12 and 15. He is a first semester senior and full-time nursing student. He also works full-time, but plans to cut back on work to finish his nursing degree. R1 and R2-Phillip has no two-way interactive video experience, but he participated in interactive video conferences in a previous career.

During class, R1 and R2-Phillip sits in the back of the classroom by himself and participates as often as he can during the discussions. R1 and R2-Phillip is very focused and tries to follow along in his textbook and writes notes, but gets very frustrated when the technical problems occur and quits taking notes.

R1 and R2-Wesley, a 22-year-old African-American male, is tall, thin, and has dark short hair. He is extremely quiet, but listens to the other nursing students when they speak in class. He is single and has no children. R1 and R2-Wesley is a first semester senior and full-time nursing student. He works part-time as a Certified Nurses Aide (CNA) at a long-term care facility, but he does not like the job. R1 and R2-Wesley has had two, two-way interactive video classes with the instructor being in the same room. He has never taken a two-way interactive video course where the instructor is on the other site.

During class, R1 and R2-Wesley sits in the middle and on the left side of the classroom by himself. He remains quiet, rarely participating in class discussion, but is polite and will speak when spoken to. R1 and R2-Wesley follows along in his textbook and will occasionally write notes on his PowerPoint outline.

Age, gender, race, student and work status, marital status and family, and previous distance experience are personal factors that help describe characteristics of the remote-site nursing students on the RS1 and RS2 settings. Further description of the remote-site nursing students and their classroom behavior are as follows.

The remote-site nursing students came to the RS1 and RS2 classrooms wearing clothes ranging from jogging suits and tennis shoes, T-shirts and jeans, pullovers, turtle necks, a leather jacket, and a corduroy jacket to sweaters, slacks, and dresses. In each class session, one student was absent and one or two came to class ten minutes late. After arriving, the remote-site nursing students opened their backpacks, got out their textbooks, PowerPoint outlines, and notebooks, and placed them in front of where they were going to sit. Almost every week, each remote-site nursing student sat in the same seat. When in the RS2 classroom, the students wore their jackets because of the classroom cool temperature.

As class began, the remote-site nursing students became quiet and focused, and they listened very intently to the instructor for the entire session. Remote-site nursing students highlighted their PowerPoint outlines, watched the instructor on the television screen, or took notes in their notebooks, while listening to the instructor. One student had her entire textbook tabbed with multicolored stickers. If a student missed what the instructor said, he or she moved over and looked at another student's notes, so as not to disrupt the class. Also, they helped each other out when they could. For example, a remote-site nursing student, at times, and without disrupting class, referred the other remote-site nursing students in the classroom to a page that was being discussed by the instructor.

No breaks were provided and the students were not allowed any food or drink in class. Since no breaks were provided, students got up, periodically, and went out of the classroom for a few minutes and came back. Those who went out of the room were not gone long because they did not want to miss what the instructor's lecture.

The students encountered numerous and frequent technology problems, environmental factors, as these comments show:

R1 and R2-Molly: There are delays in receiving the information.

R1 and R2-Liz: Technology issues occur all of the time and, when they occur, it really messes up the whole continuity of flow. For instance, the TV screen goes blank and we can only hear the instructor's voice.

R1 and R2-Phillip: There is freezing of the TV screen.

R1 and R2-Pat: There is too much down time and we get cut off.

Even with the multiple technology problems and the frequency with which they occurred, in both the RS1 and RS2 classrooms, the remote-site nursing students did not complain and continued to work and learn under these conditions.

What they did react to was origination-site nursing students neglecting to press their microphones to speak, a personal factor; the lack of interaction and personal contact with the instructor, an environmental factor; and not receiving clear and consistent information, an environmental factor. Regarding to microphone use, R1 and R2-Pat said, "Students on the origination-site don't press their buttons [the microphone] and it makes us mad."

Remote-site nursing student comments relating to instructor interaction and personal contact include the following:

R1 and R2-Phillip: ITV is just impersonal. I need for class to be more personal.

R1 and R2-Pat: We learn better and more with the instructor in the same room.

R1 and R2-Phillip: We want to see the instructor all of the time because being able to see the instructor in person helps with learning.

R1 and R2-Pat: Through tone of voice, body language, and demeanor, we are able to get the entire meaning of the concept being taught.

R1 and R2-Phillip: Hearing the instructor's voice just isn't the same as being in person. We want to feel like we are important and want positive reinforcement and encouragement.

R1 and R2-Pat: Even if it is only a few times a semester, we would like to see the instructor.

Remote-site nursing students also commented about receiving unclear information:

R1 and R2-Wesley: We need constant clarification of presented material because we didn't understand what was said by the instructor.

R1 and R2-Liz: We question the clarity of the instructor's voice and if she is talking too fast.

R1 and R2-Pat: We get confused about the information being taught and need constant clarification.

The significance of the remote-site nursing students is their willingness to verbalize problems associated with their learning environment. The personal and environmental factors that affect their behavior include previous two-way interactive video and distance experience, technology barriers and problems, lack of interaction and personal contact, and relationship with origination-site nursing students.

Origination-Site Nursing Instructors

The two nursing instructors are located on the OS. The instructor for the Adult Health course is labeled and identified as Mary. The instructor for the Pediatric course is me.

Adult Health Nursing Instructor, Mary

Located on the urban, extension campus of the four-year public midwestern university is Mary. Mary's office is housed on the third floor of the North Building, just above the OS classroom.

Mary is a Caucasian woman, in her 60's. On the day of our interview, Mary was dressed in stretchy green cotton pants, a matching green turtle neck underneath a printed button down vest, and slip-on brown shoes. She had on green studded earrings, a necklace, a watch, a plain gold wedding band on her left hand, the fourth finger, and several rings on her other fingers. Mary has been a full-time faculty member at the midwestern university's baccalaureate nursing program for the past six years teaching the Adult Health course. Of those six years, Mary has been teaching the Adult Health course via two-way interactive video for five.

Regarding to having two-way interactive video experience, Mary indicated that her only experience was during graduate school, in the late 1990's, and that she had never taught a course through two-way interactive video until she began five years ago. As the interview proceeded, Mary was very vocal in her feelings towards having to teach via two-way interactive video. Through such experience, Mary stated:

> I was provided no choice on whether or not I wanted to teach via ITV. I had no previous ITV training or preparation and that lends to ineffective teaching and

learning. It takes years of experience; but over time, and with experience, I have become more comfortable with ITV. Training is imperative and experience with ITV is very important. There is a significant need for faculty development and support, in order to teach via ITV and the results of no ITV training and support has proved to be a roadblock, trial and error, sink or swim, and feeling like road kill.

Mary's performance at the OS with the origination-site nursing students and on both the RS1 and RS2 settings with the remote-site nursing students was consistent. Each class, Mary was neatly and professionally dressed. She wore either dark or light colored clothes. Her tops and pants matched and she would wear a light sweater or jacket. She began class on time, unless there were technology problems beyond her control, spoke coherently and fluently, and was specific and concise. She always appeared calm and relaxed, even when technology problems occurred. Mary had her textbook, notes, and a Dasani bottle of water in front of and on her desk top. Also, in the first 10-15 minutes of class, Mary clarified material from the previous day or week and made announcements.

Mary's primary teaching strategy was lecture/discussion. She did use other teaching strategies which included PowerPoint presentations, overheads, videos, group activities, critical thinking exercises, discussion questions, which students had to pull off of Web-CT and complete prior to class, and course content related to her experiences and the clinical setting.

Positive remarks made by origination-site nursing students about Mary's teaching strategies include:

O-Eva: She uses a variety of teaching strategies.

O-Jessica: She uses overheads which are helpful and supplement learning.

O-Callie: Handouts are effective.

Negative remarks made by origination-site nursing students about Mary's teaching strategies include:

O-Kara: She needs to be more structured and organized.

O-Amy: Group work is not always advantageous and can be very frustrating.

O-Sally: It is more difficult to have a variety of teaching strategies in an ITV environment because it is more limited.

O-Carrie: The use of discussion is either good or too much and most students just want to learn the material and not discuss.

O-Callie: When there is too much talking, we are missing out on what a student is trying to add to the discussion.

Mary engaged both origination-site and remote-site nursing students through asking questions about the content being covered or the discussion questions the students pulled off from Web-CT. This was the first time Mary used Web-CT and the remote-site nursing students had a lot to say about the use of Web-CT as part of the class. Positive remarks made by the remote-site nursing students regarding Web-CT were:

R1 and R2-Molly: Web-CT is helpful.

R1 and R2-Phillip: Web-CT is not required but has a lot of information.

Negative remarks made by the remote-site nursing students regarding to Web-CT include:

R1 and R2-Liz: She puts questions on Web-CT, at the last minute.

R1 and R2-Phillip: No one likes Web-CT when they can't get on it. It's not useful.

R1 and R2-Molly: Web-CT entails more work.

R1 and R2-Pat: Accessibility to a computer in order to utilize Web-CT is difficult.

R1 and R2-Wesley: The server is down when trying to access Web-CT.

R1 and R2-Phillip: Technical problems occur when students can not get on to Web-CT at all.

Mary provided immediate feedback to origination-site and remote-site nursing students when they asked questions. She also looked around the room, often, as she spoke to the students. She emphasized the importance of material and would say "Just know," "Focus on," or "This is important," and would simplify and relate material to something the students could identify with. For example, Mary would discuss a medical condition and relate it to the late Christopher Reeve's illness; or Abraham Lincoln portrays the physical characteristics of the disorder we are discussing. She also helped the students prepare for exams by telling them what they needed to focus on. For example, Mary would say there are going to be 14 pharmacological questions on the exam and they will be worded similar to "The patient is receiving this particular drug because..." and "There will be five fill in the blank questions."

Mary also paused, periodically, to ask the students if they were confused or needed clarification of the information she had just covered. She acknowledged students

by name, provided explanations of course content, provided positive reinforcement, and took time to help students think through the answers they chose. For example, O-Callie voiced that she and another classmate did the posted Web-CT assignment together and Mary took time during class and asked the students what their answer was and why they chose it. Several origination-site nursing students remarked about Mary:

> O-Crystal: She goes over everything, is very clear, and wants us to learn and succeed.
>
> O-Linda: She is cognizant of student learning needs.
>
> O-Marsha: She is interested.
>
> O-Anita: She helps students think through their answers, explains information, and keeps it simple.
>
> O-Amber: She is helpful.
>
> O-Carrie: She cares.
>
> O-Barbara: She listens to and jokes with students.
>
> O-Marsha: This instructor's time and hard work is evident in Web-CT and preparation for class.
>
> O-Jessica: Very concise and thorough teacher.
>
> O-Terry: Definitely wants her students to learn and understand the material.
>
> O-Barbara: This instructor makes each student feel capable of understanding and analyzing the information concerned with the course.
>
> Remote site nursing student, R1 and R2-Pat, said that Mary "is receptive to students."

Mary also respected and acknowledged the students by saying, "I am going to treat you like the nurse and I want you to start thinking like a nurse." She joked with the students, periodically, to break up the serious nature of the course, and kept them well informed. For example, if Mary did not finish going over material in class she postponed the exam. The students appreciated how Mary's behaviors, teaching strategies, technical experience, and expertise influenced the learning environment.

Interaction was primarily instructor to student. However, Mary did look at the plasma television screen in the back of the classroom and acknowledged the remote-site nursing students often, too often for some of the origination-site nursing students:

> O-Callie: The instructor pays more attention to remote students than to origination students and we feel alienated, snubbed, and are not receiving enough attention.
>
> O-Crystal: I felt as though more attention was paid to the main campus [remote-site settings]; this may because they are very loud.
>
> O-Marsha: Many times we were overlooked when answering questions and the main campus [remote-site settings] was credited with the answer.

Mary said, "I have become more focused on remote students because I want to see if remote students are engaged and because of them being on another campus." Mary further stated, "I forget about the origination site students and lose track of them. I make more of a conscious effort to include remote site students and try to provide a seamless environment for both sites; however, this is difficult to accomplish."

The significance of Mary functioning as the Adult Health instructor identifies the importance of receiving faculty support, technical training, an orientation to the teaching and learning environment, time for course preparation, proper resources, adequate

facilitation, and continuous technical and administrative support, to teach through the two-way interactive video setting. Without possessing a variety of teaching strategies and technical experience and expertise, and receiving adequate resources and continuous support and assistance, all of which are considered environmental factors, quality and effective learning, within this setting, is unlikely. The instructor, as well as the associated variables, all considered environmental factors, affect student behavior and their learning environment.

Pediatric Nursing Instructor

I am the Pediatric instructor located on the urban, extension campus of the public four-year midwestern university. My office is on the third floor of the North Building, just above the OS classroom. I reflect on my experience and feelings toward teaching via two-way interactive video through an autoethnography. Through focus group interviews with students, classroom observations, one-on-one interviews with other individuals affiliated with the two-way interactive video environment, and personal experience, I have gained a wealth of insight and knowledge of the two-way interactive video environment.

I am a Caucasian woman, in my early to mid 30's, and from a generation that unlike students today, learned primarily through the traditional lecture. The extent of my experience with technology has been a typewriter and a word processor, until purchasing a computer during my master's degree. My first exposure to two-way interactive video was as a student in a master's program, between 1994 and 1998. I had to take two courses, one nursing, in which I was on the same site as the instructor, and one non-nursing course, in which I was on the remote site with no instructor.

Being a student and having never experienced two-way interactive video until my master's degree, I did not know what to expect. I knew that I needed these courses to receive my degree and this was how they were going to be offered. I did not complain and did what I had to do. I remember that a few technology problems occurred during class, such as the volume, disconnections, and the picture being unclear, but, all in all, the two-way interactive setting did not bother or distract my learning.

Shortly after finishing my master's degree and having worked in the clinical setting for six years, I began teaching nursing at a four-year public university. After teaching a required nursing course, Pediatrics, for two years, in the traditional setting, I was told, not asked, a week before classes were to begin that I was going to teach the Pediatric course via two-way interactive video, which is how this research study has come to be. Being new to the realm of teaching, I thought nothing of it. I thought, "Since I have already taught this class for two years, how different could it be?"

I was sadly mistaken. Being a student and an instructor in the two-way interactive video setting are two very different situations. Students focus on receiving the information from the instructor, regardless of the instructor's location, where as the instructor has multiple roles and responsibilities. For instance, the instructor must be familiar with the technology, develop appropriate teaching strategies to teach over a television screen, be responsible for two classes of students not just one, coordinate and have ongoing communication with the facilitator and technical support, make sure both sites are getting the same material, and so forth. What was I thinking!

The beginning phases of teaching via two-way interactive video were tumultuous, frustrating, annoying, insulting, and maddening. There was never a dull moment.

Something always happened. For example, technical issues, such as black outs, cut offs, and loud noises came out of nowhere. Students were not pressing their microphones to talk. I was trying to figure out how to use all of the equipment on the desk in front of me without trying not to look ignorant in front of the students. I would react to anything. I was a mess and was never more humiliated and embarrassed in my life.

Fortunately, as time has passed, teaching in the two-way interactive video environment became much easier. There were still problems but with trial and error and more experience, the problems that had been so big were not so big anymore. I have learned to cope with this environment so that I can provide students with a quality learning environment.

This experience with two-way interactive video has taught me many things: to be more aware of the teaching strategies I use, the value of student perspectives, the importance of feedback and interaction, and of identifying how students learn. This experience has also taught me how to deal with technology barriers and problems as they occur and not to react to them. I learned the value of technical experience and expertise to maintain control of the classroom and provide students with a seamless learning environment. I became aware of the need for technical and administrative support and of the facilitator's roles and responsibilities.

Several origination-site and remote-site nursing students commented regarding to my teaching. The origination-site nursing students' opinions follow:

O-Michelle: I think she likes teaching and helps her students in any way she can to help promote their learning.

O-Jessica: The instructor always makes time for any of the students that need or want her help.

O-Emily: She is a very organized instructor.

O-Carrie: She was laid back and so was the class and that makes learning much more comfortable and enjoyable.

O-Monica: She was not intimidating and was very easy to get along with.

O-Cassie: I really enjoyed the class not only because of the subject, but also because of the environment that she created.

O-Marsha: This teacher's willingness to work with students and encourage us is outstanding.

Remote-site nursing students said,

R1 and R2-Philip: I believe that the instructor was good for the course.

R1 and R2-Pat: I enjoyed this class. The instructor lectured and made the information interesting. Good teacher.

R1 and R2-Molly: Very truthful when providing examples from real life experiences.

My teaching strategies and technical experience and expertise also influenced the learning environment.

Negative remarks made by origination-site nursing students include:

O-Sally: I prefer lecture to discussion.

O-Kara: Discussion is difficult in the interactive video setting, especially with having remote-site students.

O-Brian: The tests were a little difficult even with studying. Sometimes it seemed that there wasn't enough time to go over all the information.

Remote-site nursing students said:

R1-Liz: We are unable to get through all of the material, at times. We are rushed.

R1-Pat: There is not enough discussion or time to ask questions.

Core to the two-way interactive video setting is the instructor, their teaching strategies, and technical experience and expertise, all of which are considered environmental factors. As the Pediatric instructor at the OS, the teaching strategies, and technical experience and expertise I use affects student behavior and their learning environment. When the instructor has limited teaching strategies and technical experience and training, both teaching and learning are difficult in the two-way interactive video setting. If provided the necessary tools to function with the two-way interactive video setting, teaching and learning are much more effective.

Remote-Site Facilitators

The following two respondents are nursing instructors functioning as facilitators, on the RS1 and RS2 settings, for the two required nursing courses being taught through two-way interactive video. The facilitator for the Adult Health course is identified and labeled as Tina. The facilitator for the Pediatric course is labeled and identified as Ann.

Adult Health Facilitator, Tina

Located on the rural, main campus of the public four-year midwestern university is Tina. She is a full-time nursing faculty member and, for the past three years, the Adult Health facilitator. She is a middle-aged African-American woman who is dressed in a printed silk blouse, black slacks, and slip on black leather shoes. Her dark hair is short

and she wears glasses. Tina also has on gold studded earrings, a gold necklace, and a gold wedding band.

Tina's office is housed in the School of Nursing and Health Professions. Her office is long, large, and mint green. Windows surround the room. A significant amount of natural sunlight shines through the slightly opened white metal blinds covering the windows. The room is plain but has a few posters and pictures hanging around the room. Next to Tina's desk are several long brown tables stacked with papers and books. There are also off-white cabinets and brown lacquered book shelves in several corners of the room filled with more books and papers.

Talking with Tina**,** late one morning in her office**,** and sitting in a chair next to her desk, I found her demeanor to be very brusque and condescending. She was very forward in her communication and believed her role to be the same as Mary's and just as important. Tina expresses her opinion and her opinion only. For example, if another instructor or student makes a statement about something and she does not agree with their statement, she provides her thoughts and disregards the other person's comment.

In a regimented, cool, and brief manner, Tina stated, "My role is equal to the instructor's [Mary]." "My presence, as the facilitator on the remote site, is needed" and "I am an integral part to student learning." Several comments from origination-site nursing students relating to Tina follow:

> O-Monica: We have no idea what the facilitator's [Tina's] role is on the remote site for the Adult Health course. I do not know how a capable instructor on the remote site can only act in a facilitator role.
>
> O-Carrie: We feel that the facilitator [Tina] does not participate in discussion.

Tina further identified her roles and responsibilities as, "proctoring class and exams, answering questions related to the course, ensuring students have all handouts, grading papers, and providing feedback to the origination-site instructor [Mary] related to the course."

Several incidents involving Tina, in her role as the Adult Health facilitator, were captured on the OS, RS1, and RS2. The first three incidents were on the OS. The first incident occurred when Mary began to go over a weekly Web-CT assignment. Before Mary began to discuss the questions she had posted on Web-CT, several remote-site nursing students voiced that Web-CT was down over the weekend and they could not pull up the information. Mary then proceeded to ask the entire class if there was anyone else who was not able to pull up the posted assignment. There was a brief silence and Mary explained that the reason for posting these assignments was student complaints during a Student Faculty Forum. Mary further acknowledged that if students were not going to bother doing the assignments she was not going to waste her time.

Then, very boldly and loudly, Tina said, "The students [remote-site nursing students] on the remote setting [RS1] did not have any problems pulling up the information on Web-CT over the weekend. They just decided or chose not to attempt to complete the assignment." Again, there was complete silence among all students. No one said anything until a few seconds later. O-Carrie responded directly and with much frustration and anger about Tina's comment: "I could not pull up the assignment either whether the remote-site students could or not." The class remained quiet and did not say anything but appeared to have been taken off guard and to have taken great offense to Tina's comment. O-Carrie, again, stated "We feel that the facilitator does not participate

in discussion; however, if she does participate, she is very negative and speaks rudely to the instructor and students."

The next incident, again, involved origination-site and remote-site nursing students. Origination-site and remote-site nursing students found out, by mistake, that one class was doing a group exam while the other class was doing an individual exam over the same material. O-Anita, stated, "She [Tina] provides inconsistent communication between the two sites."

The third incident occurred when origination-site and remote-site nursing students acknowledged that Tina was not present, in the RS1 classroom, when the instructor [Mary] had asked her a question. The reason for Tina's not being in class was that she was 20 minutes late to class.

At RS1 and RS2, more incidents with Tina occurred. Tina continued to be late to class, one time arriving 47 minutes late in the RS2. After arriving late, Tina worked on other material and did not pay attention to class. However, when a technical problem occurred, Tina told the remote-site nursing students "I will answer any questions that you have in regard to the material being missed." During the second interview with the remote-site nursing students a month later, I asked them if Tina had answered their questions. They said the information Tina provided was contradictory to Mary's.

In another instance, and in the RS1, R1-Liz asked a question relating to the material being discussed and was scolded by Tina in front of her peers because she felt it was inappropriate. Besides scolding this student, Tina constantly spoke down to the remote-site nursing students and often interrupted class. R1-Pat said "The Adult Health

facilitator [Tina] is not helpful or receptive, and is demeaning and talks down to students."

Lastly, Tina provided information contrary to Mary's during class in the RS1. For example, after Mary had given the students information about catheters, R1-Phillip asked Mary again what she said. Mary could not hear R1-Phillip, so Tina answered the question with different information, thereby confusing all of the remote-site nursing students. Mary stated, "The facilitator [Tina] has not been beneficial to the two-way interactive video course. I question the helpfulness of facilitation provided by the remote-site facilitator [Tina]. The Adult Health facilitator [Tina] provides contradicting information to the remote site students and places a different emphasis on the same material that I present in class to both sites."

Regardless of Tina's presence, the remote-site nursing students spoke to and relied on Mary as much as they could during class time by asking her questions and coming to class early to clarify information they were not sure about. The remote-site nursing students relied on Tina as little as possible. R1-Liz stated, "We want information from the instructor and not the facilitator, especially if it is going to be contradicting information; because there is an inconsistency between the two campuses."

The significance of Tina's role, as the facilitator for the Adult Health course, in the RS1 and RS2, proved to be contradictory, and both poorly understood and negatively received by Mary and the origination-site and remote-site nursing students. Her behavior in the RS1 and RS2 displays her lack of support and disregard for Mary and the origination-site and remote-site nursing students. Tina's behavior, considered an environmental factor, affects student behavior and their learning environment.

Pediatric Facilitator, Ann

Located on the rural, main campus of the four-year public midwestern university and housed in the School of Nursing and Health Professions building is Ann, a part-time nursing instructor. Ann has been the facilitator for the Pediatric course since I began it via two-way interactive video five years ago. Ann, an African-American woman in her late 50's, is dressed eloquently in a long skirt and blouse, while donning a silk scarf around her neck, and wearing dark knee length boots. Accessorizing her outfit, Ann also has on large dangling gold earrings, a beaded necklace, a watch, and rings on each hand.

During a weekday and about mid morning, I sat in a chair across from Ann's desk talking with her. Ann's office is small, dark, and dingy green. It has a grey metal desk with a black chair behind it, and an off-white file cabinet against the back of the wall. The room is drab, dark, and cool, and has no windows. There are no books, pictures, or bookshelves.

Ann spoke with a deep but gentle and kind voice about her roles and responsibilities:

> My role with the students in the classroom is mainly for the purposes of support; clarification of course requirements; disseminating, monitoring and grading tests; posting grades; test review; and clarification of testing, written assignments, and occasional lecture questions. This all goes smoothly because of the instructor's excellent planning and provision of the complete package - syllabus, handouts, tests, keys, and ongoing communication. Communication with the origination site is maintained via e-mail, telephone, and in person. All three methods of communication are helpful for a united front as students' needs and issues arise.

During class time, Ann's contributions to the course were minimal. If Ann contributed to class, she would make a statement relating to the content I was covering. Other than her brief comments, she remained quiet. She was always respectful of the students and me. She never talked down to the students and, when she spoke to me, she was professional and would address me by Mrs. The only comment made by remote-site nursing students about Ann was that, if they had any questions about the course content, they needed to ask me and not her.

The significance of Ann's role, as the facilitator for the Pediatric course, in the RS1 also proves to be poorly understood and negatively received by faculty and students. Ann's behavior, considered an environmental factor, during class displays her lack of participation and support for myself and the origination-site and remote-site nursing students. Ann's behavior, considered an environmental factor, affects student behavior and their learning environment.

Technical Support

Two more respondents associated with the two-way interactive video courses are technical support personnel. The technical support person on the OS is identified and labeled as Luke. The technical support on the RS1 and RS2 is identified and labeled as Bob. Luke and Bob are department heads on their designated sites.

Origination-Site Technical Support, Luke

Located on the urban, extension campus of the public four-year midwestern university is technical support, Luke. His office is inside the North Hall building, on the second floor, and near the OS classroom and control room, for which he is responsible.

Luke punctually met me at the entrance of the Instructional Technology (IT) department where his office is located. A middle-aged, Caucasian man, he was dressed in pressed black dress slacks, a tailored black jacket, a starched white collared shirt, and a tie with the university's logo. Luke is a tall, thin man with an olive skin tone, dark speckled grey hair, and he wears glasses. When Luke speaks, he has a deep scratchy voice and a reoccurring raspy cough, like someone who smokes cigarettes.

After leading me into his office, Luke sat down behind his desk and I sat down in a chair directly across from him. Books are stacked around the room and papers cover his entire desk. Luke's phone continually rang during the interview. He also had to leave his office door open for technical personnel to come in for assistance. Interruptions occurred often, due to continual phone calls and assistance with technical issues. Luke dealt promptly with each situation as they occurred.

When Luke spoke, he provided information in great detail, such as specific costs and his roles and responsibilities associated with two-way interactive video. He answered every question immediately and in layman's terms. He was vocal and willing to answer any question that I asked. Luke's knowledge and awareness regarding the two-way interactive video environment was astounding. For example, when talking about costs associated with the two-way interactive video medium, he elaborated in depth on the origination sites' costs structure:

> We have three different budgets. The first is the general budget which consists of personnel, travel**,** and training. The second budget is a learning site budget, which is grant money used to add an eighth two-way interactive video room and for

additional equipment. The third budget consists of outside contacts that pay for the use of the two-way interactive video rooms.

Luke added, "Up front costs are high, but are only a one time fee. To set up an interactive video room, costs range from $25,000 to 30,000, and we have seven of them." Understanding the costly nature and need for funding upgrades Luke said, "The institution has created several partnerships to help circumvent these costs." As for technical support roles and responsibilities, Luke said:

> I make sure there is proper equipment to run an effective interactive video classroom, provide advice and support for all seven interactive video classrooms, train faculty and students, install and upgrade equipment, schedule classes, keep the facility up to date, address students' needs, provide students with a memo in each interactive video classroom about how to work the equipment and a website to access information which is readily available when needed, change rooms as needed to accommodate class size or the instructor, to provide a seamless environment, train technological personnel to run the interactive video room, and maintain a student-centered environment.

Besides the costs structure and roles and responsibilities of technical support, I also asked Luke why there were so many technical problems occurring in the two-way interactive video classes. He responded,

> If any technological problems occur, it is due to the instructor not having the proper know-how or experience with the equipment. It is rare that the technology itself is at fault. For example, problems with increased volume are due to the instructor messing with it; delays occur due to too much network trafficking; and

audio and video blackouts occur due to audio mixing. As for starting class late, this could be due to students arriving late or not being connected by remote technological support.

Luke further indicated that the instructor must have technical experience and training:

> Being properly trained is extremely important and it takes time to be able to teach via ITV. It's an art and any time you work in an area that is an art, you have to work at it all of the time and you can't go on auto pilot.

Luke and his staff were readily available on the OS. When a technical problem occurred, it would be fixed immediately, unless it was a remote-site setting problem. Mary, the Adult Health instructor, said, "The technical support on the origination-site is excellent. Luke is marvelous. He's a God send. He's very professional and just a wonderful person."

The significance of Luke's technical support role is that he controls and maintains the technology to conduct the two-way interactive video courses for students and faculty on the OS. Because of Luke's extensive knowledge base, organization, budget structures, promptness, student focus, having adequate resources, such as equipment and upgrades, and collaborations with other institutions, he exhibits necessary environmental factors that must be in place to use effectively the two-way interactive video medium. Luke's behavior as technical support, considered an environmental factor, on the OS, affects students' learning and their learning environment.

Remote-Site Technical Support, Bob

Located on the rural, main campus of the public four-year midwestern university is technical support, Bob. His office is located in Sanford Hall, on the first floor, and near the RS2 classroom and control room, for which he is responsible.

For his interview four hours later, Bob came swiftly into a dark and cool two-way interactive video conference room, instead of using his office. Bob is a middle-aged, African-American man. He had on dark slacks, a dark collared cotton shirt, and a light black jacket. Strapped to Bob's belt was a cellular phone. He is of average height and medium build with a slight hunch in his upper back. Speaking in a low, deep voice, which at times is hard to hear, he indicated that he had just come from taking a lunch break between two-way interactive video classes.

Bob and I sat across from each other at opposing ends of a long, dark conference table. There was a slight hesitancy and discomfort in Bob's voice when I began to ask him questions, especially about costs and his role and responsibilities as the technical support person for the remote setting. However, as the interview continued, Bob became more open and receptive to discussing the costs involved with two-way interactive video along with his roles and responsibilities as the only technical support person.

Regarding costs associated with the two-way interactive video setting, Bob said, "We are funded through the state and have a total of five ITV rooms that are well equipped. A full-blown room costs $50,000 and a minimalist room costs $35,000." Bob emphasized the significant cost associated with two-way interactive television by stating, "The University does not have enough proper equipment or upgrades because it is very expensive."

As for getting more help, Bob said:

> I am the only person running the department. I am a one and a quarter man department and being a smaller university prevents hiring others. In three days, I can easily work 40 hours. There is not enough money in the university's budget to hire another technological support person.

Having adequate resources is a part of the learning environment. Bob then identified his roles and responsibilities as follows:

> I am responsible for room design and set up, input, function, interface design, faculty orientation each semester, daily functioning, orienting new students for three to four minutes to the ITV setting each semester, accommodating faculty and students as much as possible, and facilitating class if asked to do so.

Besides costs and responsibilities, I also asked Bob why technical problems occurred so frequently on the remote-site settings. Bob stated:

> Multiple technological problems are due to construction and network upgrades on the remote site. The quality has gone down and there is a poor quality of the video because of Internet problems. The location of the three interactive video rooms, which are not in the same building due to set-up and space, add to the numerous technical difficulties and barriers. Therefore, it is difficult to get to classrooms right away when a technical problem occurs. We need more personnel to keep up with the demand and do not have enough staff to facilitate class. But when the instructor knows how to use the equipment, it helps to prevent technological difficulties, such as increased volume.

Several problems for origination-site and remote-site nursing students were created because of Bob. The first incident occurred on the OS setting. The remote-site nursing students were late for class because Bob had not opened the RS2 classroom on time. Due to the remote-site nursing students being late for class, Mary had to repeat what she had already gone over in class with the origination-site nursing students.

The various other incidents involving Bob occurred on both the RS1 and RS2 settings. Bob's technical support for the remote-site nursing students was inconsistent. The first time Bob entered the RS1 classroom, he opened class ten minutes early to connect to the origination-site setting. The next time, the RS2 classroom was open and Bob was not present when class started. It was not until 45 minutes after class had started that Bob looked in on class briefly and then disappeared again.

When technical problems occurred throughout class and in RS1 and RS2, such as noises, distorted images appearing on the television screen, and freezing of the television screen, Bob was never around and could not be reached to correct the problem. Bob was never available to assist the remote-site nursing students, when problems occurred. Several remote-site nursing students commented about Bob's technical support:

> R1 and R2-Phillip: Technological support is sometimes not available when the technology goes down.
>
> R1 and R2-Pat: Tech support is not consistent and is always late opening the room; and there are too many room changes all of the time and we never know what room we are going to be in.

Right before the second instance and when class was ready to begin, Bob changed classrooms, at the last minute, and the remote-site nursing students would have to run

across campus to the other classroom, RS2, and were late for class. On the other hand, Ann, the Pediatric facilitator, stated, "Technical support on the main campus was excellent. The technician was available and left a phone number to be reached as needed. He even came in from his sick bed to make sure we were connected."

The significance of Bob's technical support role is that he controls and maintains the technology in order to conduct two-way interactive video courses for students and facilitators within the RS1 and RS2 classrooms. Unlike Luke, Bob lacks adequate resources, such as equipment and upgrades and technical assistance. These inadequate resources have led to multiple and continuous technical problems, because Bob can not get to the two-way interactive video classrooms when the problems occur, and not having financial resources to upgrade the equipment as well as hire more assistance. Adequate resources and technical support, considered environmental factors, are needed to correct the reoccurring technical problems, which would allow for more effective and efficient use of the two-way interactive video medium. Bob's behavior as technical support, considered an environmental factor, on the RS1 and RS2 settings, affects student behavior and their learning environment.

Administrator

Identified and labeled as the administrator for this study is the Dean of Nursing and Health Professions. The Dean is located on the rural, main campus of the public four-year Midwestern University and where the two remote-site classrooms, RS1 and RS2, are also located. She oversees the Nursing departments on the origination-site and remote-site, as well as the Physical Therapy program, which is located also on the remote-site. She also teaches one core nursing course a semester to the remote-site

nursing students on the rural, main campus, and has served in her administrative position for the past 12 years.

On the day of our interview, the Dean was stunningly dressed in a light green tailored pant suit, wearing neutral heels, and a pearl necklace and earrings. Her dark hair was shoulder length with shimmering strands of grey. The Dean is an African-American woman**,** in her late 50's. Her tone of voice was relaxed and unhurried. She welcomed my arrival and directed me to sit at the end of a long conference table in her office. She, then, sat down and began to talk with me.

The Dean's office is large and cluttered. She has bookshelves on each side of the room and they are filled with books, large black binders, notebooks, stacks of paper, and various other materials. Her desk and computer area is also cluttered. Papers are scattered across her desk and sticky notes plague the computer work area. Windows cover three-fourths of the room with open white blinds. Natural sunlight shines through the blinds, upon the room.

After small talk, I asked the Dean questions that concerned the need for using two-way interactive video as a means to teach core nursing courses. The Dean briefly paused, collected her thoughts in a calm and cool manner, and then provided me with an elaborate comment. She responded to the question by saying, "The two required nursing courses are being taught via ITV due to need, because there is not enough faculty to teach the two required nursing courses on both remote- and origination-site campuses." The Dean continued, "Acquiring faculty is a tremendous challenge and the challenge is due to the location of the university, options, commitment, devotion, and responsibility to

teaching." She revealed that "for a nine-month contract, full-time faculty makes between $38,000 and $39, 000," adding "salary is a deterrent to recruiting faculty."

Continuing the discussion on the need to use the two-way interactive video medium, I posed a question about nursing faculty on the remote site only facilitating the required nursing courses via two-way interactive video instead of helping teach the courses. The Dean justified the need for both Tina and Ann functioning as facilitators by saying "There is an increased faculty load; therefore, nursing faculty on the remote site do not teach ITV; they only facilitate the class."

After the Dean justified the need to use two-way interactive video and nursing instructors as facilitators, she commented about teaching and learning in the two-way interactive video medium without having any previous experience with the environment**.** She said, "Teaching through interactive video is challenging and difficult, but essential; and ITV provides for more interaction."

Continuing with the interview, the Dean acknowledged how unhappy nursing students, especially the remote-site nursing students, were with learning through the two-way interactive video medium. She said that the remote-site nursing students have told her "we do not like learning through interactive video and feel left out. We are not getting the same information as the origination site and want to be in the same room as the instructor."

Regardless of the remote-site nursing students' comments, the Dean said "Nursing will still use the interactive medium and whoever teaches an ITV course again will depend on need, teaching load, and available faculty, and will be compensated through less loads the next semester but not through monetary gains."

The picture of a negligent and unsupportive Dean is very clear in this nursing program. As an authority figure, the Dean has made the decision to use two-way interactive video for core nursing courses without considering the necessary tools needed to effectively conduct two-way interactive video courses. For instance, the Dean lacks two-way interactive video knowledge and experience, uses the learning medium because of it's availability, does not acknowledge remote-site nursing student concerns, provides no faculty development or time for course preparation to faculty, and in the midst of a nursing shortage, uses nursing faculty to facilitate instead of help teach the core nursing courses being taught via two-way interactive video. The administrator's behavior, considered an environmental factor, affects student behavior and their learning environments, the OS and RS1 and RS2 settings.

Summary

This chapter provided a description of the delivery method, the OS setting and RS1 and RS2 settings, the principal respondents, which are the origination-site and remote-site nursing students, Mary and me, Tina and Ann, Luke and Bob, and the Administrator, and interactions that involved the principal respondents. The next chapter presents the data analysis using Bandura's (1986) Social Cognitive Theory, focusing on the behavior, personal, and environmental factors relevant to this study.

CHAPTER V

DATA ANALYSIS

The purpose of this chapter is to analyze data pertaining nursing students' perceptions of their learning in a two-way interactive video environment, as influenced by the learning environment, instructors, facilitators, and support personnel. Bandura's (1986) Social Cognitive Theory provides the framework for explaining the data in terms of behaviors, personal, and environmental factors that influenced nursing students' perceptions of two-way interactive video. The aliases used in chapter four are used again here to identify the settings and principal respondents.

Bandura's Social Cognitive Theory

Bandura's (1986) theory describes how humans function in terms of three determinants or factors: behavior, personal, and environmental. These determinants interact with each other, which results in triadic reciprocality, a central concept in Bandura's Social Cognitive Theory.

Triadic Reciprocality: Behavior, Personal, and Environmental Factors

In this study, behavior factors are identified as the origination-site and remote-site nursing students' actions in the classroom. Personal factors pertain to student demographics, such as age, gender, student status, race, marital status, family, work status, and previous distance experience. Environmental factors include technology barriers and problems; instructor technical experience and expertise and teaching

strategies; and available resources. The available resources are equipment upgrades, technical support and training, facilitators, and administrative support.

Behavior: Classroom Behavior

According to Bandura's (1986) Social Cognitive Theory, the social setting is identified as a powerful influence on behavior, attitudes, and beliefs about one's self and the world. The two-way interactive video environment, which is the social setting used in this study, influenced the behaviors of the origination-site and remote-site nursing students, and their behaviors were also influenced by the behaviors of the other students in this environment.

In this study, behavior was identified through observations of origination-site and remote-site nursing students' actions, in the OS, RS1, and RS2 settings, during course instruction. During the teaching and learning process, classroom behavior of the origination-site and remote-site nursing students revealed them to be focused and engaged while learning and cooperative, respectful, and helpful to the other students at their own sites. Classroom behavior within the group of students at each site was not problematic. The personal and environmental factors, as discussed in the following sections, influenced origination-site and remote-site nursing student behavior. If personal and environmental factors can be identified and addressed, then student behavior within the two-way interactive video setting can be positively affected.

Personal Factors: Student Demographics and Previous Distance Experience

The personal factors, within Bandura's (1986) Social Cognitive Theory, reflect individual characteristics that affect the social setting and human behavior. Personal factors, in this study, are student demographics and previous distance experience.

Student demographics, which were solicited from both origination- and remote-site nursing students, included gender, student status (i.e., part-time or full-time), race, marital status (i.e., married, single, or divorced), children or no children, work status (i.e., full-time, part-time, Pro Re Nata (PRN, which means as needed), or unemployed, distance learning experience (i.e., Internet, two-way interactive video, or no experience), and age. Table 1 shows origination-site and remote-site student demographics.

Table 1

Origination-Site and Remote-Site Demographics

Demographics	Origination	Remote
Students	20	5
Gender		
Male	10%	40%
Female	90%	60%
Student Status		
Part-Time	10%	0%
Full-Time	90%	100%
Race		
Caucasian	55%	20%
African-American	35%	60%
Native-American	5%	20%
Hispanic	5%	0%
Marital Status		
Married	55%	40%

Demographics	Origination	Remote
Single	35%	60%
Divorced	10%	0%
Children		
No children	35%	60%
Children	65%	40%
Work Status		
Full-Time	25%	20%
Part-Time	45%	60%
PRN	10%	0%
Unemployed	20%	20%
Distance Experience		
Internet Experience	5%	20%
2-way ITV Experience	5%	60%
None	90%	20%
Average Age	28.6	32

The average age of the 20 origination-site nursing students was 28.6 years old. The nursing students were primarily Caucasian (55%), but included African-American (35%), Native-American (5%), and Hispanic (5%) students. The majority of the class was female (90%) but there were also two males (10%). Most of the origination-site nursing students were full-time (90%) but a few were part-time (10%). Origination-site nursing student work status included 25% full-time, 45% part-time, 10% PRN, and 20%

unemployed. Marital status of the origination-site nursing students included 55% married, 35% single, and 10% divorced. Thirty-five percent of the origination-site nursing students had no children and 65% had children. Lastly, 90% of the origination-site nursing students had no Internet or two-way interactive video experience. Of the remaining 10%, only 5% had Internet experience and 5% had two-way interactive video experience.

An example of lack of distance experience was when origination-site nursing students' revealed when they tried to answer a question asked by Mary but forgot to press the microphone so everyone could hear what they had to say. When this occurred, the remote-site nursing students would immediately press their microphones and tell the origination-site nursing students that they could not hear them and to press the microphone so they could hear what they had to say. Besides receiving reminders from the remote-site students, Mary also constantly reminded the origination-site students to press the microphone so the remote-site nursing students could also hear what they had just said. The frequency of this occurrence caused the remote-site nursing students to become frustrated with the origination-site nursing students, because they were not receiving all of the information that was being discussed by the origination-site nursing students during class.

The average age of the five remote-site nursing students was 32 years old. Sixty percent of the remote-site nursing students were African-American, followed by Caucasians (20%) and Native Americans (20%). Sixty percent of the class was female and 40% male. The entire class was full-time. Work status of the remote-site nursing students included 60% part-time, 20% full-time and 20% unemployed. Marital status of

the remote-site nursing students included 60% single and 40% married. Sixty percent of the remote-site nursing students did not have children and 40% had children. Lastly, 60% had two-way interactive video experience, 20% had Internet experience, and 20% had no distance experience.

The experiences of the remote-site students also added to the learning frustration. The remote-site nursing students revealed their distance experience when they would misuse the microphones by holding the microphone close to their mouths and speak. Due to the misuse of the microphones, the remote-site nursing students' voices were so loud that their words sounded muffled, thereby diminishing the origination-site students' ability to discern what was being said as well as causing static, feedback, and mimicking from the equipment.

Previous studies by Cragg, Plotnikoff, Hugo, and Casey (2001) and De la Cruz and Jiang (2002) revealed that technology experience was associated with higher scores and student satisfaction. In Cragg and colleagues' study, full-time work status was also associated with higher scores. In regard to self-efficacy, Smith (2002) and Watson (2005) found that previous technical experience had a significant impact on distance education self-efficacy.

On the other hand, Nicholl, Steinhacker, and Ouellette's (1996) results showed that demographic variables did not affect the educational experience for students either in a traditional setting or via two-way interactive video. Barakzai and Fraser (2005), using Web-based instruction, found that gender and prior computer experience did not affect either academic achievement or course satisfaction. Lastly, in Thurmond and Vawter's (2003) study, student characteristics, such as computer skills, number of Web-based

courses taken, knowledge in use of electronic communications technology, distance from main campus, and age did not help predict students' levels of satisfaction while using the World Wide Web.

In regard to self-efficacy and Web-based learning, previous studies by Ergul (2004), Holcomb, King, and Brown (2004), Lim (2001), and Smith (2002) revealed that gender made no difference in predicting student success and learner satisfaction. Lim also reported that age had no significance.

In this study, 90% of the origination-site nursing students and 20% of the remote-site nursing students had no previous distance experience. Bandura's (1986) Social Cognitive Theory suggests that because of origination-site and remote-site nursing students' lack of two-way interactive video and distance experience their behavior was affected within the learning environment, which resulted in tension, competition, and frustration among and between students, as well as causing a distraction in learning. Providing students who are taking courses via two-way interactive video with a thorough orientation before the courses begin will help alleviate student inexperience with the technology and create student awareness and familiarity with the learning environment.

Environmental Factors

In Bandura's (1986) Social Cognitive Theory, environmental factors are external influences which affect the social setting and human behavior. The environmental factors considered in this study are technology barriers and problems, instructor technical experience and expertise and teaching strategies, and available resources. The available resources are equipment and upgrades, technical support and training, facilitators, and administrative support.

Technology Barriers and Problems

At both the OS setting and the RS1 and RS2 settings, technology barriers and problems affected the two-way interactive video medium and the behavior of origination-site and remote-site nursing students throughout the semester. Comments by the origination-site and remote-site nursing students, along with classroom observations, revealed some of these technology barriers and problems.

Complaints about technology barriers and problems were voiced from the OS setting and the RS1 and RS2 settings. Technology barriers identified by the origination-site and remote-site nursing students include: dark overheads, which prevented origination and remote-site students from being able to read what was being viewed on the television screen; improper microphone use by origination-site students, thereby preventing remote-site students from participating; increased volume, which caused distraction and stress; camera movement and zooming; misunderstanding of the instructor [Mary] due to volume problems and too much talking by remote-site students; a limited classroom view; T.V. watching by some origination and remote-site students; lack of instructor [Mary] eye contact; and reluctance by origination-site students to use the microphone due to lack of experience and not wanting to be the center of attention or sage on the stage.

Technology problems identified by the origination-site and remote-site nursing students included voice and resolution or picture delays; constant television adjustment to center who was on the television screen; noises such as static, humming, "click-click-click," buzzing, feedback, and fuzz; getting cut off; the television screen's going blank and students only being able to hear the instructor's voice; a limited view of the instructor

[Mary] and origination and remote-site students on the television screens; losing connection between the OS setting and the RS1 and RS2 settings; distorted images of the instructor [Mary] and course content, such as overheads; improper use of equipment, such as the students [remote-site] speaking too loudly into the microphones, which caused disturbances in learning and noises; and transmission difficulties.

The differences among the OS and RS1 and RS2 settings regarding technology barriers and problems were that the remote-site nursing students did not continue to complain about the problems like the origination-site nursing students did. The remote-site nursing students continued to deal with the problems because in the RS1 and RS2 settings, they were affected more by the technology problems than were the origination-site nursing students in the OS setting.

Previous research reports in "A Matter of Perspective" (1997), and other research by Lester (2000) and Shaheen, (1998), also reported technical barriers and difficulties similar to those encountered by the origination-site and remote-site nursing students in the OS setting and RS1 and RS2 settings. Other previous studies by Messecar, Van Son, and O'Meara's (2003) and Cragg, Andrusyszyn, and Humbert (1999) revealed that students chose print-based materials over technologies to avoid dealing with technology barriers and problems.

Classrooms observations from the OS setting and RS1 and RS2 settings also support the comments made by the origination-site and remote-site nursing students, regarding technology barriers and problems. Fortunately for the origination-site nursing students, technology barriers and problems decreased as the semester continued. However, for the remote-site nursing students, technology problems became worse.

Technology barriers, in the OS setting and RS1 and RS2 settings, included T.V. watching by some students, improper use of microphones by students either by talking and pressing the microphone at the same time or by speaking too loudly and too close to the microphone. Technology problems, in the OS setting and RS1 and RS2 settings, observed in the classroom, included inconsistent class start and stop times, the server being down, fuzzy Power Point presentations and overheads, feedback, infrequent to frequent noises, such as dit-dit-dit, mimicking, and intermittent static, poor television clarity, visual cut-offs, blackouts, poor volume control, and the camera's being off center.

Bandura's (1986) Social Cognitive Theory suggests that origination-site and remote-site nursing students behavior towards learning via two-way interactive video was affected because of technology barriers and problems faced on the OS setting and on the RS1 and RS2 settings. The technology barriers and problems caused tension, frustration, stress, and distraction among the students. Contributing to the technology barriers and problems was the amount of distance experience possessed by origination-site and remote-site nursing students. Remote-site nursing students, who as a group had more two-way interactive video and distance experience, coped better with the technology barriers and problems than did the origination-site nursing students, who had little to no two-way interactive video or distance experience. Again, providing students with an orientation to the two-way interactive video environment helps students become familiar with the learning environment, thereby alleviating technology barriers and problems.

Instructor Experience and Expertise

Instructor technical experience and expertise was another environmental factor affecting origination-site and remote-site nursing students' behavior within the two-way

interactive video medium. Mary and I lacked technical experience and expertise, at first, in the two-way interactive video setting, and we were not provided any training or support. Only through trial-and-error and time have we developed our skills for teaching in the two-way interactive video setting. Previous research by Debourgh (2003), Feingold, Calaluce, and Kallen (2004), and Townsend et al. (2002), and other research by Bauer (2001) and Valentine (2002) reveals that an instructor must possess the technical skills and confidence to use all of the equipment and in doing so must be provided the time for course preparation, faculty development, and resources, all of which are important determinants of student satisfaction and success.

Even after five years of teaching via two-way interactive video through trial and error, Mary verbalized what she felt as having inexperience in the two-way interactive setting. She acknowledged, as well as the origination-site nursing students, that she consciously paid more attention to the remote-site nursing students and lost sight of the origination-site nursing students. Classroom observations, on the other hand, showed that contrary to Mary's verbalized inexperience with maintaining a seamless environment, she acknowledged and treated origination-site and remote-site nursing students with respect. The only time Mary needed assistance was when there were technical difficulties, such as getting disconnected from the RS1 and RS2 settings.

Bandura's (1986) Social Cognitive Theory suggests that origination-site and remote-site nursing students behaviors towards learning via two-way interactive video were affected by the instructors' technical experience and expertise. Mary's technical experience and expertise caused animosity, competition, tension, and frustration among the origination-site and remote-site nursing students when she was unable to provide

them with a seamless environment and make all students feel important, even though over all, Mary provided a conducive learning environment, despite the circumstances. When teaching in the two-way interactive video medium, the instructor must be provided adequate support, such as time for course preparation, technical training, and an orientation to the teaching environment. These resources allow the instructor to effectively function within the learning environment and provide students with a conducive learning environment.

Instructor Teaching Strategies

Without any technical experience and training or support, Mary and I tried to use a variety of teaching strategies within the two-way interactive video setting. Research by Bozik (1996) supports using various teaching strategies. For instance, Mary used feedback lecture, which was her primary form of instruction, discussion questions, overheads, Power Point, case studies, and Web-CT (the first time she had used it). I used role playing, critical thinking exercises, simulations, group work, videos, weekly outlines, and overheads. Egan, Welch, Page, and Sebastian (1992) indicate that students benefit greatly from the use of visuals and presentation outlines.

The teaching strategies considered useful by the origination-site and remote-site nursing students, for the most part, were the use of Power Point outlines, case studies, and discussion questions. Teaching strategies not considered helpful to the origination-site nursing students were group work and extensive discussion. The remote-site nursing students had problems with receiving the same course content as the origination-site nursing students, such as seeing the overheads, and using Web-CT. Research by Trier

(2003) underscores the importance of all participants' having access to the same information, technology, and use of visuals.

Lastly, origination-site and remote-site nursing students revealed the need for more interaction. Previous studies (see "A Matter of Perspective" (1997), Bata-Jones and Avery (2004), Choi (2003), Fraser and Haughey (1999), Frith and Kee (2003), King and Witney (1998), and Wills and Strommel (2002)) have also shown that interaction and socialization among or between students and the instructor influences students' satisfaction and learning effectiveness.

Bandura's (1986) Social Cognitive Theory suggests that the use of limited and specific teaching strategies and lack of instructor-student interaction affected students' behaviors. The limited and specific teaching strategies used by Mary resulted in origination-site and remote-site nursing students' not participating in class discussions and not being prepared for class; they also created a competitive atmosphere which resulted in tension, frustration, and animosity among students. A lack of instructor-student interaction also caused students to become frustrated, anxious, competitive, and feel unimportant. Again, when the instructor is provided adequate resources, as previously mentioned, and has developed proper technical experience and expertise with the teaching environment, their ability to provide a variety of teaching strategies and more interaction with students is evident.

Available Resources: Equipment and Upgrades, Technical Support and Training, Facilitators, and Administrative Support

Several resources were not consistent between the OS setting and the RS1 and RS2 settings. The resources on the RS1 and RS2 settings that were not consistent with

those at the OS setting were equipment and upgrades and technical support and training. As for administrative support and facilitators, they were located only on the RS1 and RS2 settings.

Equipment and Upgrades

Luke and Bob had similar thoughts in relation to costs associated with the two-way interactive video environment but the amount of funding and the quality of the equipment to run two-way interactive video classes differed. Luke openly provided tangible and intangible costs about funding and equipment within his department. He explained costs related to training personnel, creating new two-way interactive video classrooms, and upgrading equipment. He also discussed outside contacts and support systems that help pay for the use of the two-way interactive video classrooms and additional equipment. For instance, outside contacts mentioned by Luke on the origination site were law firms, the Bar Association, and a university. The outside contacts were obtained through their need for origination site services, such as to conduct depositions or teach courses. In order to use the origination site services, these outside sources paid a specified amount of money. According to Dunn (2000), other institutions are also beginning to create partnerships with other institutions and companies to share technology and to produce and deliver courses because of the large upfront costs to conduct two-way interactive video courses.

For the discussion of costs with Bob, the tone and atmosphere were very different. Bob stated, frequently, that he needed money for upgrading equipment and more technical support on the remote-setting. Due to insufficient funds, the remote setting was

unable to maintain current equipment and upgrades and had yet to develop partnerships with outside contacts.

Bandura's (1986) Social Cognitive Theory suggests that remote-site nursing students' behavior towards learning via two-way interactive video was affected because of the inadequate resources on the RS1 and RS2 settings, thereby contributing to numerous technology problems, which, in turn, caused them to miss out on information being taught by the instructors. Inadequate resources on the RS1 and RS2 settings caused remote-site nursing students to become extremely frustrated and disgusted. Providing and maintaining the two-way interactive video medium with adequate resources, such as current equipment and upgrades, helps alleviate technical problems, thereby allowing for an efficient learning environment.

Technical Support and Training

Technical support between the OS setting and RS1 and RS2 settings was inconsistent. The RS1 and RS2 settings lacked technical support due to lack of funding, causing the remote-site nursing students to have to deal with constant and frequent technical problems and last-minute classroom changes, as frequently observed, whereas the origination-site nursing students had available and efficient technical support personnel. Neither site provided the students, origination and remote-site, or instructors, Mary and me, with a thorough orientation or training. Previous studies by Frith and Kee (2003) and Townsend et al. (2002) confirm the need for an orientation to the technology and technical support.

Bandura's (1986) Social Cognitive Theory suggests that inadequate and inconsistent technical support on the RS1 and RS2 settings could help explain

origination-site and remote-site nursing students' behavior and learning. Bob's behavior caused negative attitudes and frustration, primarily for remote-site nursing students, because there was always a technology problem during each class and he was never around to correct the problem, thereby caused the students to miss out on information being taught by the instructor. As for the origination-site nursing students and the instructors' on the OS setting, Bob also caused them frustration because when there would be a technology problem on the RS1 or RS2 settings; the instructors would have to stop class and wait until Bob fixed the problem or the problem fixed itself.

In regard to providing training and an orientation to the two-way interactive video medium, neither the OS setting nor the RS1 and RS2 settings provided a thorough orientation to the learning environment, which caused origination-site and remote-site nursing students to misuse the equipment within the classroom and identify that they needed an orientation and ongoing technical support and assistance. Providing students with continuous and available technical support, along with an orientation, allows for fewer technology barriers and problems for students within the learning environment.

Facilitators

Another available resource was the use of facilitators. The Dean and Bob deemed the use of facilitators as a necessary and a significant part of the two-way interactive video medium. Tina and Ann also defined their roles and believed themselves to be an important part of the two-way interactive video medium as well. On the other hand, Mary and I, along with the origination-site and remote-site nursing students viewed the role and quality of facilitation provided very differently.

Facilitation was more problematic than helpful to both courses, causing more work for Mary and me, and confusion for the origination-site and remote-site nursing students. The facilitators, especially Tina, were not helpful to Mary and me or the origination-site and remote-site nursing students. The roles identified by the facilitators themselves proved inconsistent with their actual behavior, as observed within the OS setting and RS1 and RS2 settings. Previous research reported in "A Matter of Perspective" (1997) and King and Witney (1998) support problems associated with facilitator inconsistencies, which affected the instructional quality at both settings. Noted areas include: inconsistent grading criteria, students not receiving timely feedback on course work and exams, and lack of interaction.

Bandura's (1986) Social Cognitive Theory suggests that the facilitators' inability to adequately facilitate on the RS1 and RS2 settings affected the origination-site and remote-site nursing students behavior towards learning via two-way interactive video. Affecting the remote-site nursing students more so than the origination-site students, was Tina. Tina's behavior caused negative attitudes and resentment among origination-site and remote-site nursing students, because she did not provide any assistance during class, was always late, provided inconsistent information, and was disrespectful to Mary and the students during class. Facilitation that creates consistency between settings, helps prevent communication barriers, allows for more interaction, reinforces information being taught, and monitors classroom behavior, provides effectiveness to the learning environment.

Administrative Support

The last identified available resource in the use of two-way interactive video is administrative support. In this study, the Dean was negligent in the choice to use the two-way interactive video medium. Aware of origination and remote-site nursing student attitudes towards learning via two-way interactive video, having no knowledge of or experience with two-way interactive video, providing no faculty development or monetary compensation to teach via two-way interactive video, and aware of the nursing shortage but using available nursing faculty to function as facilitators, the Dean chose to use two-way interactive video.

Bandura's (1986) Social Cognitive Theory suggests that the Dean's inability as a leader to address and follow through with student concerns and have available and adequate resources in place before choosing to use the two-way interactive video medium to conduct nursing courses affected both origination-site and remote-site students' behavior towards learning via two-way interactive video. The Dean's decision caused origination-site and remote-site nursing students to have negative attitudes towards learning in the two-way interactive video medium. A healthy teaching and learning environment is created by a leader who listens, is attentive, dependable, communicates, is well-informed, knowledgeable, and is supportive.

Summary

Table 2 outlines the central themes and the results of the analysis in this study.

Table 2

Summary of Analysis

Factors	OS | RS1 | RS2	Implications
Behavior – Classroom Behavior	OS, RS1 & RS2-focused and engaged, cooperative, and respectful and helpful to one another on own setting	OS, RS1, & RS2-behavior created by personal and environmental factors
Personal – Student Demographics & Previous Distance Experience reflected in interaction between behavior and experience	OS-90% no Internet or 2-way ITV experience: chose not to press microphone to speak and objected to being on camera RS1 & RS2-20% no Internet or 2-way ITV experience: misused the microphone	OS, RS1, and RS2-need for an orientation and ongoing technical support and training
Environmental - 1. Technology barriers and problems reflected in interaction between behavior and environment	OS-lack of 2-way ITV experience. Reacted to every technical problem and did not participate in class discussion RS1 & RS2-lacking some	OS-need for an orientation and ongoing technical support and training RS1 & RS2-need for an orientation, adequate technical support, current

Factors	OS | RS1 | RS2	Implications
	2-way ITV experience, technical support, current equipment and upgrades, and facilitation. Misuse of microphones; unavailable technical support; inadequate upgrades; and inadequate facilitation	equipment and upgrades, and facilitation
2. Instructor technical experience and expertise reflected in interaction between behavior and environment	OS-lack of faculty development and training, such as the inability to provide a seamless environment. Caused by minimal orientation, and receiving no administrative support RS1 & RS2-lack of faculty development and training, such as inability to provide a seamless environment. Caused by inadequate support provided by	OS-need for faculty development, and ongoing technical and administrative assistance and support RS1 & RS2-need for faculty development, and ongoing technical and administrative assistance and support

Factors	OS | RS1 | RS2	Implications
	technical personnel and administration	
3. Instructor teaching strategies reflected in interaction between behavior and environment	OS-lack of faculty development, seen in using limited teaching strategies and the lack of personal contact and interaction. Caused by inadequate administrative support to provide technical training and faculty development RS1 & RS2-lack of faculty development, such as Web-CT, and lack of personal contact and interaction. Caused by inadequate support provided by technical support and administration	OS-need for faculty development and administrative support RS1 & RS2-need for faculty development and administrative support
4. Equipment and upgrades reflected in interaction between	OS-no identified problems RS1 & RS2-lack of current equipment and upgrades.	OS-no identified problems RS1 & RS2-need for adequate resources and

Factors	OS | RS1 | RS2	Implications
behavior and environment	Related to inadequate administrative knowledge and funding	administrative support
5. Technical support and training reflected in interaction between behavior and environment	OS-lack of an orientation, due to lack of technical assistance RS1 & RS2-lack of technical support, training, and an orientation, due to lack of technical assistance	OS-need for an orientation RS1 & RS2-need for adequate technical assistance and support and an orientation
6. Facilitation reflected in interaction between behavior and environment	OS-negative response to poor RS1 & RS2 facilitation RS1& RS2-lack of effective facilitation, due to poor facilitation	OS-need for adequate facilitation RS1 & RS2-need for adequate facilitation
7. Administrative support reflected in interaction between behavior and environment	OS-lack of administrative support, related to inadequate administrative knowledge and concern RS1 & RS2-lack of administrative support, related to inadequate	OS-need for administrative support RS1 & RS2-need for administrative support

Factors	OS | RS1 | RS2	Implications
	administrative knowledge and concern	

The data from the observations, interviews, an autoethnography, and document artifacts were examined through a naturalistic lens combined with the use of Bandura's (1986) Social Cognitive Theory, focusing on the triadic reciprocality of behavior, personal, and environmental factors, in order to understanding how nursing students describe their learning in the two-way interactive video setting, as influenced by the environment, instructors, facilitators, and support personnel. Each component affects the other, as seen in classroom behavior, previous two-way interactive video experience, and through various environmental factors.

Lack of previous distance experience by most of the origination-site nursing students and some of the remote-site nursing students revealed the need for an orientation and ongoing technical support and training. Remote-site nursing student previous distance experience revealed they were more tolerant and patient when technology barriers and problems occurred as opposed to the origination-site nursing students, who had very little to no previous distance experience.

With time and trial and error, Mary and I, became proficient with the technology, but at times still needed technical support because of technology problems created by Bob, Tina, and Ann. For the most part, the teaching strategies Mary and I used were appropriate to the learning environment, but the origination and remote-site nursing students identified the need to use a variety of teaching strategies, not just lecture, and to provide for more interaction. Support by technical support, facilitators, and

administration on the RS1 and RS2 settings proved ineffective for the remote-site nursing students and problematic for the origination-site nursing students, thereby producing negative attitudes toward learning via two-way interactive video.

The last chapter includes a brief summary of the findings, the conclusions, the implications, and recommendations for further study.

CHAPTER VI

FINDINGS, CONCLUSIONS, IMPLICATIONS, AND RECOMMENDATIONS

The purpose of this study was to explain nursing students' perceptions of learning in selected courses offered through a two-way interactive video environment. Classroom observations, interviews, an autoethnography, and document artifacts provided data that revealed these perceptions, and Bandura's (1986) Social Cognitive Theory helped explain how behavior, personal, and environmental factors interacted to influence nursing students perceptions of the two-way interactive video environment. This chapter provides a summary and integration of the findings, followed by conclusions, implications, and recommendations for further research.

Summary of Findings

Bandura's (1986) Social Cognitive Theory, with its focus on the interaction of behavior, personal, and environmental factors in the learning environment, provided a way to explain the data. Following are summaries of the findings of this study.

Behavior

In this study, behavior refers to the observed behaviors of the origination-site students and the remote-site students. The behavior of the students showed that in their own settings, they were focused and engaged while learning; they were cooperative, respectful, and helpful to the instructor and to one another. While the instructor taught, both origination-site and remote-site nursing

students took notes, followed along and highlighted their textbooks, used their PowerPoint outlines and jotted down notes, or watched the instructor on the television screen or live in the classroom. Some students, at times, would also nod their heads in agreement with what the instructor was saying, and if students missed what the instructor said, they would lean over and ask another student. Lastly, when students asked or answered a question, they would raise their hands.

Personal Factors

The personal factors were student demographics and previous distance experience. The student demographics included gender, student status, race, marital status, children or no children, work status, distance learning experience, and age. From these demographics, lack of previous distance experience in both origination-site and remote-site nursing students was the only significant personal factor.

Interaction of Behavior and Personal Factors

Only five percent of the origination-site nursing students had had previous two-way interactive video experience. As a group, they had a difficult time with learning in the two-way interactive video setting. This lack of experience was displayed when origination-site students forgot to press their microphone when they spoke, and when they chose not to press the microphone. As the semester progressed, origination-site nursing students began remembering to press the microphone when they spoke. As for the remote-site nursing students, even though they had more previous distance (80%) and two-way interactive video experience (60%), they also revealed inexperience with the technology. For example, remote-site students spoke loudly into the microphone, thereby creating extraneous noises. These behaviors of the origination-site and remote-site

nursing students caused tension, animosity, friction, competition, anger, hostility, resentment, frustration, and distraction with learning.

Environmental Factors

The environmental factors are technology barriers and problems, instructor technical experience and expertise and teaching strategies, and available resources. Available resources include equipment and upgrades, technical support and training, facilitators, and administrative support. All these environmental factors negatively affected both origination-site and remote-site nursing student perceptions.

Interaction of Behavior and Environmental Factors

The first environmental factor affecting origination-site and remote-site nursing student behavior was technology barriers and problems. Technology barriers and problems, such as television watching, voice delays, noises, and distorted images, occurred the entire semester in all three settings. For the origination-site nursing students, technology barriers and problems decreased as the semester progressed. Unfortunately for the remote-site nursing students, technology problems worsened as the semester progressed, but their behavior showed stoic toleration of the barriers and problems. The origination-site nursing students, more than remote-site nursing students, exhibited behaviors of tension, frustration, stress, and distraction with learning.

The next environmental factors affecting origination-site and remote-site nursing student behavior were instructors' technical experience, expertise, and teaching strategies. Both origination-site and remote-site nursing students identified the technical experience and expertise of the instructor as a critical factor in determining student success and satisfaction in the two-way interactive video environment. Both instructors

had identical experience, which was five years of hands-on experience and no formal training. However, the instructors' not being provided time to prepare course content and not receiving necessary support, training, or an orientation to the two-way interactive video environment, contributed to their lack of technical experience and expertise. Both groups took issue with the adult health instructor's lack of classroom control and her paying more attention to the remote-site nursing students. The instructors learned how to teach over time and through trial and error, but their technical inexperience caused origination-site and remote-site nursing students to display behaviors of animosity, competition, anger, hostility, resentment, frustration, and distraction in learning.

The instructors used a variety of teaching strategies. The adult health instructor used feedback lecture (her primary form of instruction), discussion questions, overheads, Power Point, case studies, and Web-CT. The pediatric instructor used role playing, critical thinking exercises, simulations, group work, videos, outlines, and overheads. For the most part, the teaching strategies were appropriate to the OS and RS1 and RS2. However, the teaching strategies considered useful by origination-site and remote-site nursing students, for the most part, were the use of Power Point outlines, case studies, and discussion questions. Students appeared engaged and focused when these strategies were used. Teaching strategies not considered helpful to the origination-site nursing students were group work and too much discussion. They responded to the instructors' attempts to engage them in discussions by withdrawing and participating reluctantly.

The remote-site nursing students experienced problems because of the poor quality of overhead transparencies. They also suffered from problems with Web-CT

which led to not receiving some course content and therefore not being prepared for class through no fault of theirs. Their frustration was obvious.

Lastly, origination-site and remote-site nursing students revealed the need for more interaction. The origination-site students felt their interaction with Mary, the adult health instructor, was limited because she paid more attention to the remote-site students. As for the remote-site students, they felt instruction to be impersonal because the instructors were not physically present in the classroom, thereby limiting interaction with them. The limited interaction created an atmosphere of competition among origination-site and remote-site nursing students, thereby creating frustration, animosity, and feelings of being left out and unimportant.

Also affecting origination-site and remote-site nursing student behavior were the remote-site facilitators. The facilitators for both courses were more problematic than helpful, causing more work for the instructors and confusion for the origination-site and remote-site nursing students. For instance, the adult health facilitator provided remote-site students with inconsistent information, frequently arrived late to class, interrupted class, and was disrespectful to the students and the adult health instructor. The facilitators, especially for remote-site students, caused students on each setting to be frustrated, angry, disgusted, and belittled.

The last environmental factor contributing to origination-site and remote-site student behavior was administrative support. There was a lack of commitment by the administrator to ensure a quality learning environment for nursing students. Even though she was aware of origination-site and remote-site nursing student attitudes toward the medium, the administrator used the two-way interactive medium because of the shortage

of nursing faculty. This lack of support created behaviors of disgust, frustration, and anger, especially for remote-site nursing students.

Interaction between Personal and Environmental Factors

The students' lack of experience interacted directly with the technology barriers and problems, while other environmental factors—equipment and upgrades and technical support—contributed to the technology barriers and problems and therefore interacted indirectly with the students' lack of experience.

Regarding equipment and funds, funding at the remote site was insufficient to maintain current equipment and upgrades. The lack of funds promoted many technology barriers and problems on the RS1 and RS2. Besides lack of funding, the remote-site has yet to develop partnerships with outside contacts. On the other hand, the origination-site was able to maintain proper equipment and upgrades, especially with the help of outside sources. The inadequate equipment, especially for remote-site nursing students, caused the students frustration; however, because of their previous experience, they coped with the limitations of the current equipment.

Technical support between the two sites was also inconsistent. The remote-site lacked technical support from a lack of funding, thereby causing remote-site nursing students to have to deal with frequent technology barriers and problems and last-minute classroom changes. However, because of their previous experience, they were more resigned to the situation and less vocal in their frustration than the OS students, who had technical support personnel who were available and efficient.

Neither site provided the origination-site and remote-site nursing students with a thorough orientation or training. A thorough orientation would have given students more

experience with the technology. The lack of an orientation, therefore, contributed to misuse of microphones by remote-site nursing students and origination-site nursing students choosing not to press the microphone when asking or answering a question. This lack of technical assistance on each setting caused animosity among the students, along with frustration and distraction with learning.

Integrated Findings

The analysis of the data in this study supported Bandura's (1986) Social Cognitive Theory, in relation to the triadic reciprocality of behavior, personal, and environmental factors. The integrated findings among the three factors reveal that the personal and environmental factors related to the technology influenced origination-site and remote-site nursing students' behavior. For instance, when the adult health instructor interacted with the origination-site and remote-site nursing students, to discuss questions, improper use of the technology (i.e., speaking too loudly in to the microphone thereby creating extraneous noises), and lack of technical experience (i.e., resistance to using the microphone) caused tension, animosity, competition, friction, frustration, and distraction with learning.

Other environmental factors that created tension, frustration, competition, and difficulty and distraction with learning among the orientation-site and remote-site students, included the use of poor quality of teaching materials, such as overheads, and difficulties associated with the use of Web-CT; the adult health instructor paying more attention to the remote-site nursing students, which caused origination-site nursing students to not participate; and minimal instructor-student interaction, causing students in each setting to feel unimportant. These behaviors were created because of a lack of

instructor technical training and experience, an orientation, faculty development, and administrative support. Also, on the RS1 and RS2, the students endured numerous technology barriers and problems and received inconsistent and incomplete information due to lack of technical support, inadequate equipment and upgrades, and poor facilitation.

Conclusions

The following conclusions related to the research questions are based on the data analysis:

1. How are origination-site students' perceptions of the learning experience in a two-way interactive video setting influenced by the environment, instructors, and support personnel? Origination-site students' perceptions of their learning experience in the two-way interactive video setting were influenced by their technical experience, technology barriers and problems, instructor technical experience and expertise and teaching strategies, and interaction with the instructor and remote-site students.

The origination-site nursing students' lack of technical experience with the microphones, television screens, and camera movement caused them much frustration, stress, and anxiety and resulted in decreased class participation, distraction in learning, and misinterpretations and misunderstandings. However, as the semester progressed and the origination-site nursing students gained more experience, they did start to communicate more and press their microphones more consistently and frequently.

Origination-site nursing students described technology barriers and problems as hindering their learning. When technology problems such as loss of connection, static,

resolution delays, and distorted images occurred, these students found it difficult to concentrate and listen to what the instructor was saying.

The origination-site nursing students perceived instructor technical experience and expertise as important to their learning in the two-way interactive video setting. They believed that the instructor's ability to use the equipment in the two-way interactive video setting was sufficient but that she lacked the ability to provide structure, organization, and classroom control all at the same time, resulting in animosity and classroom chaos, which also caused distraction in learning. The instructors used a variety of teaching strategies, but origination-site nursing students complained about the use of Web-CT, overheads, and the large amount of material which, they believed, was covered too quickly, causing much frustration.

Lastly, the origination-site nursing students perceived an inability to interact with the instructor and the remote-site nursing students. They believed that such interaction was important but lacking the entire semester. More significantly, the origination-site nursing students perceived that the adult health instructor was paying more attention to the remote-site nursing students than she was to them during class, which caused distractions in their learning, lack of class participation, hurt feelings, competition, and animosity between them and the remote-site students.

2. How are remote-site students' perceptions of the learning experience in a two-way interactive video setting influenced by the environment, instructors, and support personnel? Remote-site nursing student perceptions of their learning experience in the two-way interactive video setting are influenced by technology barriers and problems,

interaction with the instructor and origination-site students, technical support, and facilitation.

Faced with more technology problems than were the students at the OS, the remote-site nursing students believed the numerous and constant problems with the technology hindered their learning. The various technology problems resulted in misinterpretations of the information presented by the instructor, thereby causing the remote-site nursing students to miss test questions.

Deemed important to learning by the remote-site nursing students but lacking in the two-way interactive video setting were student-to-student and student-to-instructor interactions, as well as interactions between themselves and the origination-site nursing students. The lack of physical presence caused the remote-site nursing students to miss out on the adult health instructor's gestures, tone of voice, body language, and the opportunity to gain other perspectives on the course content she presented.

The lack of technical support on the RS1 and RS2 settings also affected remote-site nursing student learning. The remote-site technical support person was consistently late opening the two-way interactive video classrooms, rarely checked in on class, was unable to fix technology problems when they occurred, and changed classrooms at the last minute. With minimal technical support, remote-site nursing student learning was affected either by missing out on course information or because of difficulty understanding or deciphering the course content.

Lastly, poor facilitation also affected remote-site nursing student learning. The adult health facilitator provided inconsistent course content to the remote-site nursing students by placing a different emphasis on the material than the adult health instructor.

Besides giving inconsistent information, the adult health facilitator also frequently arrived to class late, would sometimes interrupt class, and was rude when she spoke to the instructor and the origination-site and remote-site nursing students.

3. How does Bandura's (1986) Social Cognitive Theory explain these perceptions?

Bandura's (1986) Social Cognitive Theory helps explain the interconnectedness of the factors that influenced the nursing students' perceptions of learning via two-way interactive video. Their classroom behavior, which was influenced by the personal factor of previous two-way interactive video experience and various environmental factors, revealed a lack of previous distance experience, which caused improper use of the technology (i.e., speaking too loudly in to the microphone thereby creating extraneous noises) and resistance to using the microphone, resulting in origination-site and remote-site nursing student behavior that revealed tension, animosity, friction, competition, frustration, and distraction with learning.

The poor quality of teaching materials (i.e., overheads and difficulties associated with the use of Web-CT), the instructor's paying more attention to the remote-site nursing students (which caused origination-site nursing students to not participate), and minimal instructor-student interaction (i.e., causing students on each setting to resent one another), which are environmental factors, also contributed to origination-site and remote-site nursing student behaviors that resulted in tension, frustration, competition, and difficulty and distraction with learning. Further issues endured by remote-site nursing students on the RS1 and RS2 were numerous technology barriers and problems and receiving inconsistent information. These environmental factors interacted with

origination-site and remote-site nursing students' level of previous experience with the technology and influenced their behavior.

Implications

Based on the results of this study, there is a need to discover how to make two-way interactive video, an alternative form of education, more attractive to students so they can receive the maximum benefit (Jacelon, 1998). Like the program explained in this study, many faculty, technicians, and students are thrust into situations in which they have little or no preparation. A successful program must focus on the instructional needs of students, rather than on administration concerns or the technology itself, because student attitudes and perceptions can influence the success of learning at a distance (Jacelon, 1998).

The number of distance programs in nursing will continue to grow, especially with the current faculty and nursing shortage and the flexibility of technology in reaching potential nurses who have limited access to education because of other responsibilities. The specific implications for distance education programs arising from this research are that a well-designed program must be in place before offering courses via two-way interactive video. Tools that constitute a well-designed program include current equipment and upgrades; efficient technical support; cooperative, assertive, facilitators; and active support from knowledgeable administrators.

Having current equipment and upgrades will help prevent incompatibility and technology problems and thereby reduce the number of technology barriers and problems. Sites are more likely to maintain connection and equipment is less likely to malfuntion.

Technical support must provide instructors and students with ongoing technical assistance, an orientation, and a seamless learning environment. Doing so will reduce technology barriers and problems. Technical support needs to be accessible during class and have the knowledge and tools to fix problems that might occur.

Cooperative, assertive facilitators should provide consistent information to remote students, answer student questions, address student concerns, maintain communication with the instructor, prevent communication barriers, reinforce information, and maintain classroom control.

Consistent, knowledgeable administrative support is necessary for a healthy teaching and learning environment. On-going faculty development programs are necessary for instructors as well as initial training in the technology and time for course preparation. Being attentive to and addressing student concerns as they arise, being well-informed and dependable, providing ongoing communication, and listening are all part of effective administrative support.

Distance education programs used to deliver nursing education must be well designed to provide quality teaching and learning (Knebel, 2001). When all necessary variables are in place, results of distance learning will lead to positive educational practices and outcomes for all involved (Billings, 2000; Knebel, 2001; Novotny, 2000).

Recommendations for Further Research

Several recommendations for further research related to this study include the following.

1. A replication and extension of this study could be done by using a larger sample size. This could include all different media for instruction, such as the traditional

setting, two-way interactive video, and Web-based learning. The purpose would be to determine trends in attitude toward each medium used to teach a course and allow for improvements to the learning medium.

2. A replication of this study could be done by using different populations and including all degreed programs at different colleges and universities. The generalizability of these results will grow if the study is replicated among different disciplines.

3. A study could be done comparing attitudes toward the course at the beginning and at the end of a distance learning course. Changes in attitudes from the beginning to the end of the semester may have occurred. Examining these attitudes and if they changed could offer insights in how to improve programs using distance learning.

4. A study could compare how attitudes toward a distance learning course affect achievement. Examining attitudes and achievement could offer more specific insights into how students' perceptions of the distance learning environment affect amount and quality of learning that takes place.

5. An extension of this study looking at learning outcomes between the origination-site and remote-site could offer insight in the effectiveness of the distance learning environment in delivering instruction.

6. Further research needs to be done on the forms of media that are appropriate for delivering courses involving both a theoretical and clinical component, that is, with courses that deal with knowledge related to critical issues of life and death.

To conclude, in the words of AACN President, Dr. Bartels, **"**A successful solution to the shortage of RNs and nurse faculty will require a collaborative effort on the part of the nursing profession, the health care system, the federal government, and all

stakeholders. Together, we must remove barriers to nursing careers, provide incentives for nurses to advance their education, and create practice environments that encourage professional development and foster nurse retention" (AACN, 2005a, p. 3).

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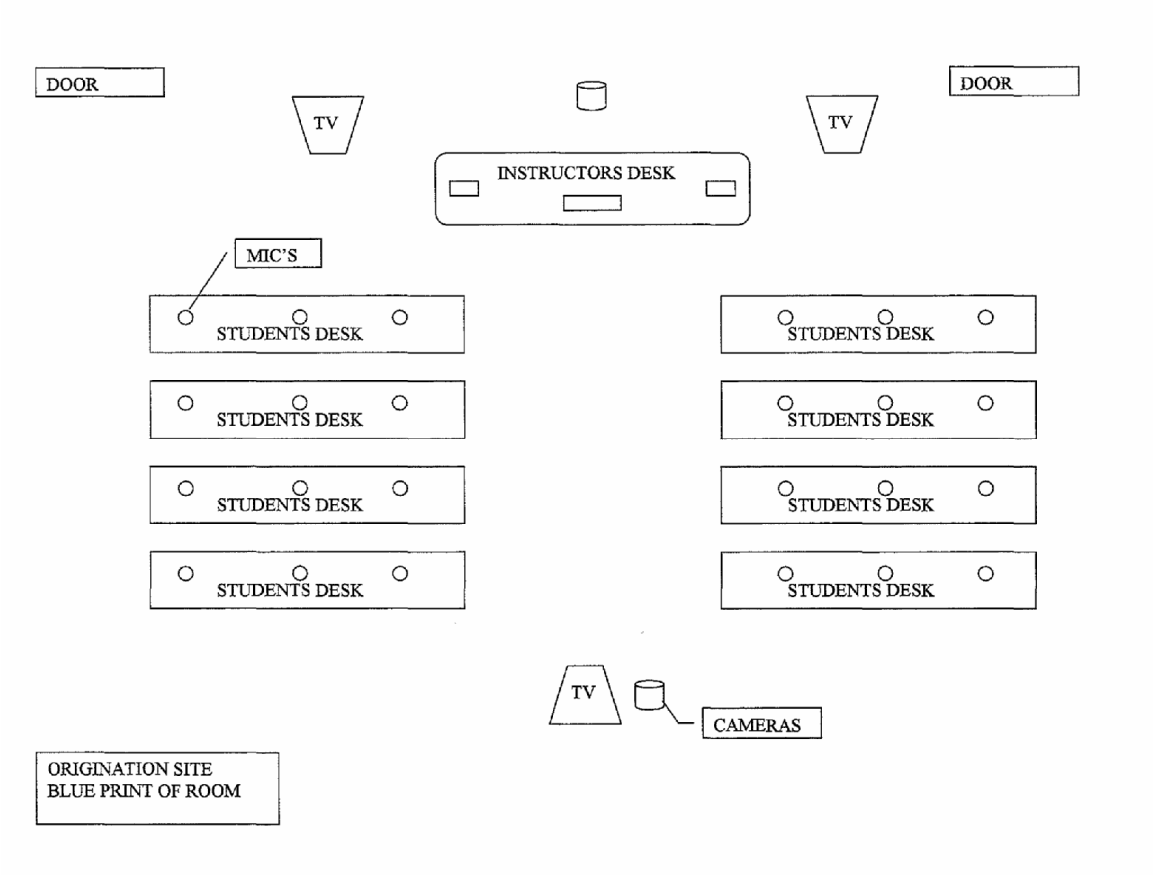
APPENDIXES

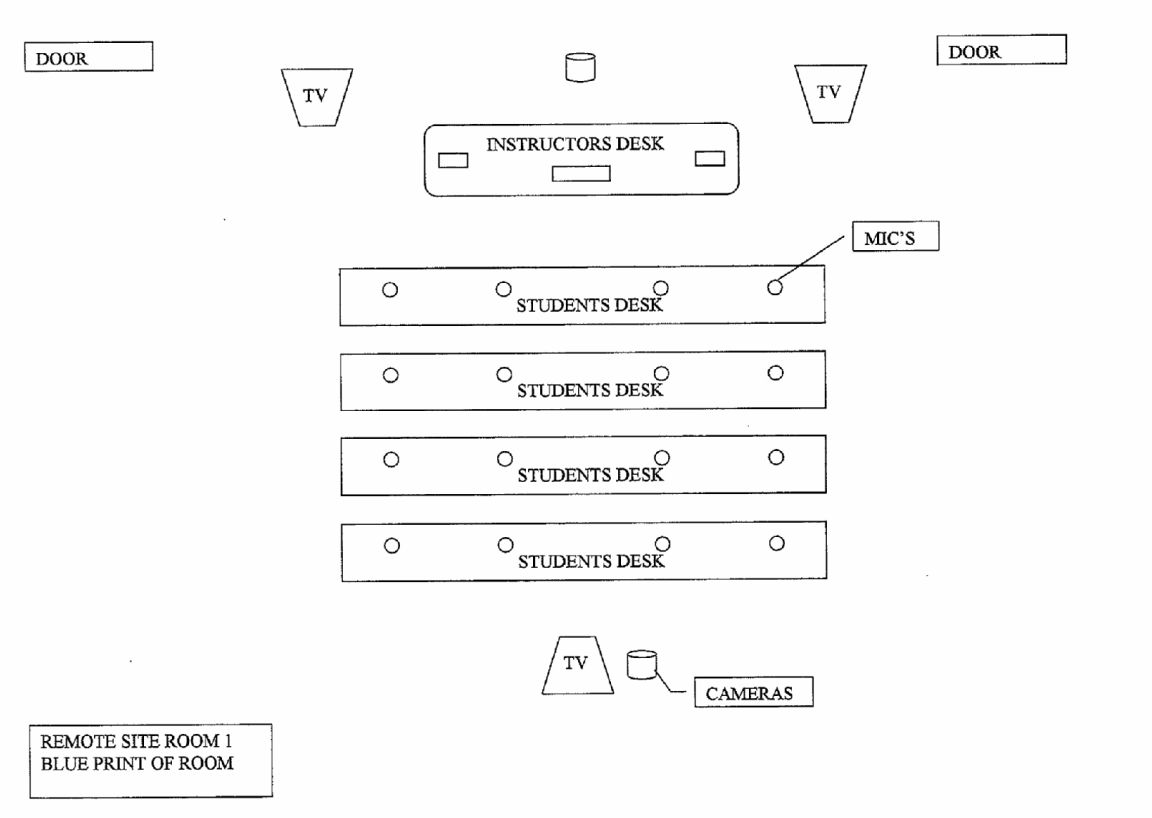
APPENEDIX A

Origination-Site ITV Classroom Diagram



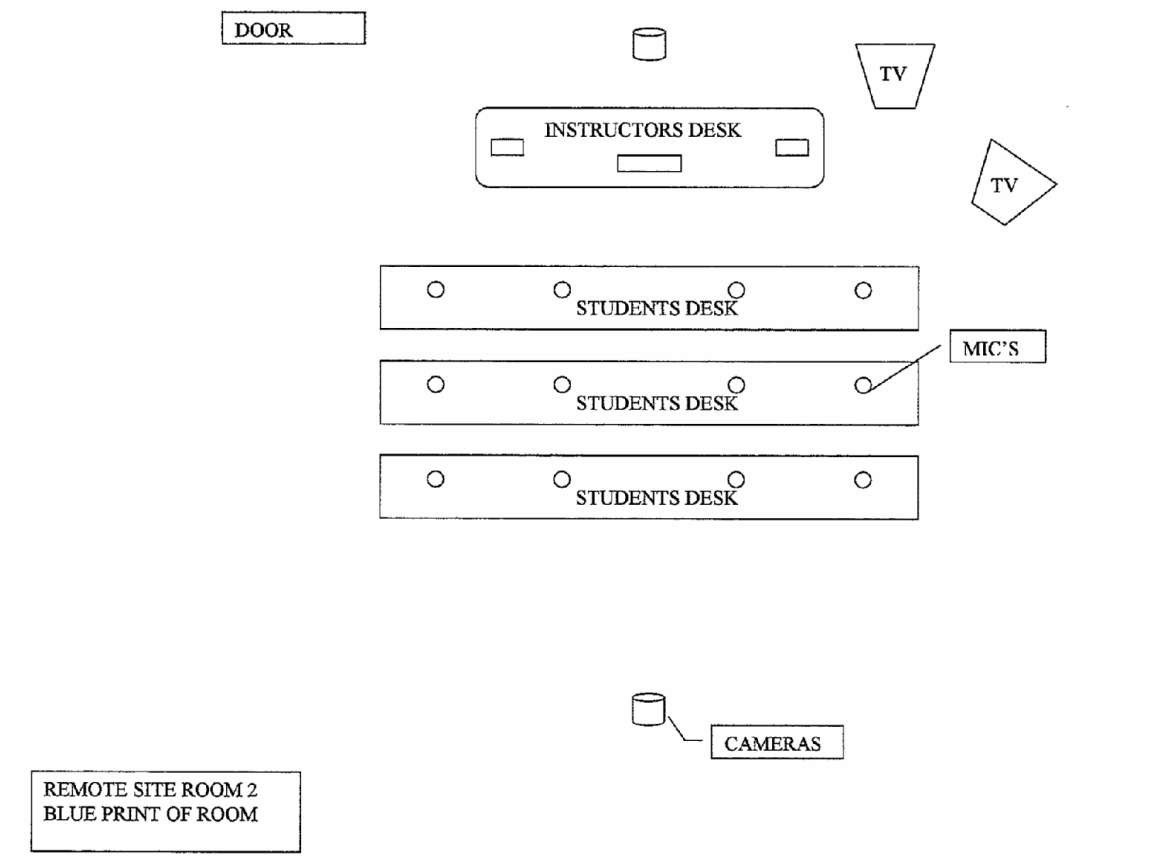
APPENDIX B

Remote-Site 1 ITV Classroom Diagram



APPENDIX C

Remote-Site 2 ITV Classroom Diagram



APPENDIX D

Oklahoma State University Institutional Review Board

Date:	Thursday, February 17, 2005
IRB Application No	ED0574
Proposal Title:	Student Perceptions of "Learning" via ITV
Reviewed and Processed as:	Exempt

Status Recommended by Reviewer(s): Approved Protocol Expires: 2/16/2006

Principal Investigator(s

Jamie L. Blevins
6697 Canyon Road
Tulsa, OK 741314062

Robin Hughes
317 Willard
Stillwater, OK 74078

The IRB application referenced above has been approved. It is the judgment of the reviewers that the rights and welfare of individuals who may be asked to participate in this study will be respected, and that the research will be conducted in a manner consistent with the IRB requirements as outlined in section 45 CFR 46.

☒ The final versions of any printed recruitment, consent and assent documents bearing the IRB approval stamp are attached to this letter. These are the versions that must be used during the study.

As Principal Investigator, it is your responsibility to do the following:

1. Conduct this study exactly as it has been approved. Any modifications to the research protocol must be submitted with the appropriate signatures for IRB approval.
2. Submit a request for continuation if the study extends beyond the approval period of one calendar year. This continuation must receive IRB review and approval before the research can continue.
3. Report any adverse events to the IRB Chair promptly. Adverse events are those which are unanticipated and impact the subjects during the course of this research; and
4. Notify the IRB office in writing when your research project is complete.

Please note that approved protocols are subject to monitoring by the IRB and that the IRB office has the authority to inspect research records associated with this protocol at any time. If you have questions about the IRB procedures or need any assistance from the Board, please contact Beth McTernan in 415 Whitehurst (phone: 405-744-5700, emct@okstate.edu).

Sincerely,

Sue C. Jacobs, Chair
Institutional Review Board

VITA

Jamie Lee Blevins

Candidate for the Degree of

Doctor of Education

Dissertation: A SOCIAL COGNITIVE THEORY EXPLANATION OF NURSING STUDENTS' PERCEPTIONS OF SPECIFIC NURSING COURSES VIA TWO-WAY INTERACTIVE VIDEO

Major Field: Higher Education

Biographical:

Personal Data: Born in Streator, Illinois, on September 28, 1971, the daughter of Steve and Davie Jo Kotches.

Education: Graduated from Streator High School, Streator, Illinois in June 1989; received Associate of Applied Science degree in Nursing, in May 1992, Bachelor of Science degree in Nursing, in May 1994, and Master of Science degree in Nursing, May 1998, respectively. Completed the requirements for Doctor of Education degree at Oklahoma State University in May, 2007.

Experience: Employed as a Student Nurse Extern by St. Mary's Hospital, in Streator, Illinois, in 1991, as a nursing assistant. Employed as a Registered Nurse by St. Mary's Hospital, in Streator, Illinois, from 1992 to 1993, in the Adult Medical-Surgical Unit. Employed as a Registered Nurse by St. John's Hospital, in Springfield, Illinois, from 1993 to 1994, in the Adult Intermediate Medical Care Unit. Employed as a Registered Nurse by Tulsa Regional Medical Center, in Tulsa, Oklahoma, from 1994 to 1995, in the Inpatient Rehabilitation Unit. Employed as a Registered Nurse by St. Francis Hospital, in Tulsa, Oklahoma, from 1995 to 1998, in the Pediatric Intensive Care. Employed as a Registered Nurse by Gentiva Home Health Services, in Tulsa, Oklahoma from August 2000 to May 2001, performing home health visits. Employed as a Nursing Instructor by Langston University at OSU-TULSA, in Tulsa, Oklahoma from August 1998 to December 2005.

Professional Memberships: Sigma Theta Tau International, 1994-Present.

Name: Jamie Lee Blevins Date of Degree: May 2007

Institution: Oklahoma State University Location: Stillwater, Oklahoma

Title of Study: A SOCIAL COGNITIVE THEORY EXPLANATION OF NURSING STUDENTS' PERCEPTIONS OF SPECIFIC NURSING COURSES VIA TWO-WAY INTERACTIVE VIDEO

Pages in Study: 154 Candidate for the Degree of Doctor of Education

Major Field: Higher Education

Scope and Method of Study: The purpose of this research study was to use Bandura's (1986) Social Cognitive Theory to explain nursing students' perceptions of their learning experience as it was influenced by the environment, instructors, facilitators, and support personnel, in specific required nursing courses delivered via two-way interactive video. Participants in the study were a combination of 25 students, 20 on the origination-site and 5 on the remote-site, at a public, midwestern university. Most of the participating students were enrolled in two required nursing courses that were taught simultaneously over one academic semester. Particular attention was given to how nursing students reacted toward learning through a two-way interactive video setting. Naturalistic inquiry and Bandura's (1986) Social Cognitive Theory, focusing on triadic reciprocality, were used to explain how nursing students perceived their learning environment, the two-way interactive video setting. The methods for data collection included observations; focus group interviews of students and individual interviews of an instructor, facilitators, technical support personnel, and an administrator; an autoethnography of an instructor; and document artifacts.

Findings and Conclusions: Findings from the study revealed that the majority of nursing students prefer learning through a traditional classroom setting as opposed to a two-way interactive video setting and identified the complexities associated with learning in the two-way interactive video setting that contributed to nursing students' perceptions. Naturalistic inquiry and Bandura's (1986) Social Cognitive Theory, focusing on triadic reciprocality, revealed nursing student perceptions are affected by previous two-way interactive video experience, a personal factor and by the environmental factors of technology problems and barriers, instructor technical experience and expertise and teaching strategies, equipment and upgrades, technical and administrative support, and facilitation. The interactions of these factors contributed to the negative experience with learning via two-way interactive video.

ADVISER'S APPROVAL: Dr. Ed Harris