2005

Technological stressors of Louisiana baccalaureate nurse educators

Mary Ann Stark Burke

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TECHNOLOGICAL STRESSORS OF LOUISIANA
BACCALAUREATE NURSE EDUCATORS

A Dissertation
Submitted to the Graduate Faculty of the
Louisiana State University and
Agricultural and Mechanical College
in partial fulfillment of the
requirements for the degree of
Doctor of Philosophy

in

The School of Human Resource
Education and Workforce Development

by

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December 2005
DEDICATION

On November 26, 1999, a wonderful, loving man and father, Charles A. Stark, Sr., was taken away very suddenly. I dedicate this study to him.

Daddy, you were always there for me when I needed you. I wish you could be with me now to celebrate this important accomplishment. I know you are up there watching me, and I know you are proud of me. I love you and miss you.
ACKNOWLEDGEMENTS

First of all, I would like to thank God for granting me the gift of higher education and blessing me with parents that taught the value of education. Mom and Dad, I thank you from the bottom of my heart for encouraging me to do my best throughout my academic studies and for your never-ending love and support. Dad, I know you are watching over me from heaven and celebrating this monumental occasion with me. Mom, thanks for all the baby-sitting, meals, and phone calls to make sure I was alright. I'll be picking up Peyton from school every day now!

Don, my wonderful husband, I would have never accomplished this without you. You were always there with your love, cooking, cleaning, babysitting, and grocery shopping. Your understanding of the times I needed to study, work on this project, or just have some alone time or sleep did not go unnoticed. Now, let’s take some time for ourselves!

My angel, Peyton, I love you with all my heart. Your laughter and smiles have provided endless hours of enjoyment and distraction from the stress of school. Mommy is so sorry she couldn’t always play with you when you wanted her to. But guess what? Mommy doesn’t have to study anymore! Let’s have a Mommy-Peyton day!

Thanks to all my wonderful friends who have supported me throughout this process. Jeannie, we’ve finally done it! You have been my rock throughout my educational endeavors. Thanks for 13 years of being there for happy times, sad times, school times, and shopping times. Let’s go to the mall! Thanks to my “study
“buddies,” Cathy Cormier, Kristen Whitty, and Catherine Fontenot. Studying for statistics was much more enjoyable with friends like you.

To Courtney Michelli, I would have never completed my year of residency without you. You were a gift from God when I needed you most. Thank you for all the endless hours of babysitting and your willingness to help me accomplish my goals.

Mr. Albert and Mrs. Anna Lee, you love me like your own daughter. Thanks for understanding when I didn't come visit for the past two years and for encouraging me along the way.

Thanks to all my wonderful committee members. Dr. Machtmes, you are a true mentor. Thanks for all your endless hours of support and guidance. Your voice could always calm me down when I was stressed out when things didn't always go as planned. Dr. Burnett thanks for teaching me to love and respect the research process. Dr. Earl Johnson, you are the best document editor. Thanks for all your attention to details and for being so supportive and encouraging. Thank you, Dr. Gerry Johnson, for being there and offering words of encouragement and advice along the way. Thanks to Dr. Eugene Kennedy for agreeing to serve on my committee at such a short notice.
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Computers are now a part of everyday life, with the majority of daily activities revolving around the use of a computer. The concept of technostress was first introduced in the 1980’s when computers became more prevalent in the business and academic world. Nurse educators have been impacted by the rapid changes in technology in recent years. A review of the literature revealed no research studies that have been conducted to investigate the incidence of technological stress among nurse educators. Therefore, the purpose of this descriptive-correlational study was to describe the technological stressors that Louisiana baccalaureate nurse educators experienced while teaching nursing theory courses.

A census of 311 baccalaureate nurse educators was selected to participate in the study, and a total of 180 questionnaires were returned resulting in a 58% response rate. Of these completed questionnaires, 61 participants indicated that they had not taught a baccalaureate nursing theory course in the past six months, which indicated a frame error, and four additional participants indicated that they did not utilize technology in their theory courses. One hundred and fifteen usable questionnaires were included in data analysis, resulting in a 46% response rate.

Two researcher-developed questionnaires, a demographic data sheet and The Nurse Educator Technostress Scale, were used for data collection. Data collection was completed through the use of an on-line survey software, called Zoomerang©. Findings revealed that the baccalaureate nursing education workforce in Louisiana is aging and experiencing technological stress. Furthermore, findings indicated that there was no relationship between demographic variables, such as
age, ethnicity, gender, and educational level and a nurse educator’s technological stress. The variable, perceived administrative support for use of technology in the classroom, was a significant predictor in a regression model predicting Louisiana baccalaureate nurse educators’ technological stress ($F = 14.157, p < .001$). This finding is significant in a time of shortage of qualified baccalaureate nurse educators. Results from this study support the need for a university-sponsored technology orientation and continuous technological support in order to reduce the incidence of technological stress among nurse educators.
CHAPTER 1
INTRODUCTION
Rationale/Justification

Computers are now a part of everyday life, with the majority of daily activities revolving around the use of a computer. Individuals are now able to pay bills on-line, shop on-line, and communicate with family and friends via e-mail and instant messaging. The computer revolution has also greatly impacted the field of education. Students are now able to register for classes, and communicate with instructors and fellow classmates via e-mail and on-line chat rooms. Course work can be completed, and entire degree programs are available on-line. College students were born during the computer technology explosion and usually have adequate computer skills necessary to adapt to the changes in technology.

Technological stressors affect both students and educators. The concept of technostress was first introduced in the 1980’s when computers became more prevalent in the business and academic world. According to Broad (1984), technostress is “a modern disease of adaptation caused by an inability to cope with new technologies in a healthy manner” (p. 16). When computers and new information technologies were first introduced, they brought the hope of decreased workloads and better job performance. However, as the use of more technology dramatically increased, these new technologies were allowing workers to become multi-tasked, thus increasing their workloads (Clark & Kalin, 1996). According to Clark & Kalin, the new technologies are not to blame for the changes and stress; the consumers are the ones who utilized these technologies. They further stated that
technostress is not caused by the use of these technologies, but from the pace of the technological changes.

Champion (1988) provided some symptoms of technostress. These included “panic, anxiety, denial, resistance, technophobia, conflict, mental fatigue, physical discomforts, intolerance, and perfectionism” (p. 48). Champion further discussed some causes of technostress, which are not all directly related to the technology itself. The first category of causes is related to the work environment. This relates to “an uncomfortable work environment, inadequate equipment, improper lighting, electrical problems, accidental loss of data, lack of maintenance knowledge, and lack of trained personnel” (p. 49). The second category is related to social causes. This includes issues such as “power struggles, task and role changes, job insecurity, and job fragmentation” (p. 49). Moreover, Champion identified four general personality profiles that are prone to technological stress. The first personality type is the “resistor.” This person “denies the new and values the old” (p. 49). The second personality type is the “experimentor,” who will try new ideas in a scientific manner. The third personality type is the lover: he “tries anything new and loves anything new” (p. 49). Finally, the manager is a person who “thinks, plans, and chooses selectively” (p. 49). How a person will react to the changes that technology brings is based on the individual’s personality, previous reactions to change, and his or her knowledge of the technology (Clark & Kalin, 1996).

Nurse educators have been impacted by the rapid changes in technology in recent years. Nurse educators are now communicating via e-mail, conducting literature searches via the internet, completing student academic advising on-line,
and using computer technology in the classroom. However, nurse educators today are also faced with increasing workloads due to faculty shortages and the demand from administration and students to teach traditional courses in a non-traditional manner (American Association of Colleges of Nursing, 2000; Brendtro & Hegge, 2000; Hinshaw, 2001; Reinert & Fryback, 1997). They are faced with changing their teaching methodology when they are not even knowledgeable about the technology that they will be utilizing (Care & Scanlan, 2000). Educators are overwhelmed by student e-mails, incorporating technology in traditional classrooms, and developing distance education courses. Furthermore, today’s nurse educators do not have the computer skills that the typical college student possesses. These demands will increase their already overwhelming workload and ultimately increase their chance of developing technological stress.

Statement of the Problem

There are several studies that examined the incidence of technological stress in the business world (Bradley, 2000; Howard & Smith, 1986; Towell & Lauer, 2001). In addition, the field of mass communication has also examined technostress among journalism and mass communication faculty (Beam, Eunseong, & Voakes, 2003; Ogan & Chung, 2003; Voakes, Beam, & Ogan, 2003). Several studies have addressed the incidence of computer anxiety among high school and college teachers (Christensen, 2002; Desai, 2001; Harris & Grandgenett, 1996; Russell & Bradley, 1996; Tseng, Tiplady, Macleod, & Wright, 1998). Furthermore, several studies have been done to explore the incidence of technological stress and computer anxiety in college students (Ayersman & Reed, 1995-1996; Rovai &
Childress, 2002-2003; Scott & Rockwell, 1997). However, no research has been located which investigated the incidence of technological stress among nurse educators. Therefore, the purpose of this descriptive-correlational study was to describe the technological stressors that Louisiana baccalaureate nurse educators experience while teaching nursing theory courses. Nurse educators utilize different forms of technology in the clinical setting, especially computerized bio-medical equipment such as intravenous fluid pumps and electrocardiogram monitors. Such experiences could cause technostress. However, the focus of this study was on the specific technologies that were utilized in the classroom situation.

**Research Objectives**

In order to accomplish the purpose of this study, the following objectives were developed to guide the researcher:

**Research Objective One**

Describe baccalaureate nurse educators in the state of Louisiana on the following personal and professional characteristics:

- age
- gender
- ethnic origin
- educational level
- years of experience as a nurse educator
- academic rank
- previous computer training
- use of a computer at home
• use of technology in nursing theory classes
• types of technology used in nursing theory classes
• on-line teaching
• compensation for incorporation of technology in nursing theory course
• perceived administrative support for utilizing technology in nursing theory classes.

Research Objective Two

Describe the technology stressors that Louisiana baccalaureate nurse educators experience while teaching nursing theory courses as measured by the Nurse Educator Technostress Scale.

Research Objective Three

Determine if a relationship exists between Louisiana nurse educators’ perceived technology stress as measured by the Nurse Educator Technostress Scale and the following demographic variables:

• age
• gender
• ethnic origin
• educational level
• years of experience as a nurse educator
• academic rank
• previous computer training
• use of a computer at home
• use of technology in nursing theory classes
• types of technology used in nursing theory classes
• on-line teaching
• compensation for incorporation of technology in nursing theory course
• perceived administrative support for utilizing technology in nursing theory classes

Research Objective Four

Determine if a model exists which explains a significant portion of the variance of technological stress as measured by the Nurse Educator Technostress Scale from the following demographic characteristics:

• age
• gender
• ethnic origin
• educational level
• years of experience as a nurse educator
• academic rank
• previous computer training
• use of a computer at home
• on-line teaching
• compensation for incorporation of technology in nursing theory course
• perceived administrative support for utilizing technology in nursing theory classes

**Operational Definition of Terms**

**Nurse Educator.** A faculty member with a minimum of a master's degree in nursing who teaches in a Louisiana State Board of Nursing approved baccalaureate nursing program in the state of Louisiana. Furthermore, for the purposes of this study, a nurse educator was an educator who was currently teaching or has taught at least one baccalaureate nursing theory course within the past six months.

**Technological stressors or Technostress.** Technological stressors or technostress is “a modern disease of adaptation caused by an inability to cope with new technologies in a healthy manner” (Broad, 1984, p. 16). Technostress is “a combination of performance anxiety, information overload, role conflicts, and organizational factors” (Kupersmith, 1992, ¶ 1).

**Computer anxiety.** Computer anxiety is a possibly debilitating fear of interacting with computers which is out of proportion to the actual threat posed by the computer (Howard & Smith, 1986). Computer anxiety is one aspect that contributes to the development of technological stress.

**Educational technologies.** The use of computers, software, and hardware to supplement teaching methodologies. These technologies include, but are not limited to, items such as computers, personal digital assistants, video-conferencing equipment, over-head projectors, video-recorders, computer-assisted instruction, Smartboards, and BlackBoard educational software.
Theoretical Framework

Lazarus and Folkman's (1984) theory on stress and coping will serve as the theoretical framework for this study. According to Lazarus and Folkman, stress is a relationship between an individual and the environment in which the individual interacts. Lazarus and Folkman further defined psychological stress as a relationship between the individual and an environment that is perceived to be taxing or exceeding the individual’s resources and is a danger to the individual’s well-being. The decision on whether or not the situation is stressful depends upon the cognitive appraisal of the individual. Furthermore,

the extent to which a harmful or potentially harmful encounter between the person and environment is stressful depends on the meaning and significance of that encounter, which in turn is based on the personal agendas and coping resources the person brings to it. (Gruen, Folkman, & Lazarus, 1988, p. 744)

Daily hassles are daily stressful events and do not have equal significance for the individual (Gruen et al., 1988). Only the daily hassles that reflect ongoing issues in a person’s life have impact on the physical and psychological well-being of the person. According to Gruen et al. these issues are called central daily hassles. Central daily hassles tend to result in preoccupations that remain long after the encounter with the stress is over. In addition, central hassles are related to goals, beliefs, and commitments and tend to reoccur frequently.

According to Lazarus & Folkman (1984), cognitive appraisal is the event that influences coping. The individual evaluates the significance of the event in terms of
individual well-being through the use of cognitive appraisal. There are three types of cognitive appraisal according to Lazarus and Folkman. These include: primary appraisal, secondary appraisal, and reappraisal. Primary appraisal includes the judgment that the encounter is irrelevant, benign-positive, or stressful. Secondary appraisal relates to a judgment concerning what might and can be done. This includes the evaluation of what coping strategies that could be used effectively and the consequences of using a particular coping strategy. Moreover, reappraisal refers to a modified appraisal that is based on new knowledge gained from the person and/or the environment.

Change and adaptation to new technology could be termed a stressful event which could result in the taxing of an individual’s coping resources. Lazarus and Folkman’s (1984) Theory on Stress and Coping is a relevant theory to guide this study and it supports the variables that will be tested in this study. Based on this theory, a nurse educator will cognitively appraise a situation involving technology as stressful and utilize control processes to adjust. However, these processes may be ineffective, and the individual will experience technological stress. This study described the technological stressors that nurse educators in Louisiana were experiencing.

**Significance of the Study**

Nursing education is being faced with an aging workforce. According to Trossman (2002), in the year 2000, the average age of faculty in baccalaureate and graduate nursing programs was 50 years old and the average age of doctoral-prepared nurse educators was 55.9 years. Furthermore, a survey completed by the
American Association of Colleges in Nursing (AACN) in October of 2000, found a 7.4% nurse educator vacancy rate among the 220 schools that responded (Trossman, 2002). In the near future, the most knowledgeable faculty will be retiring with few qualified individuals in line to take their place (Hinshaw, 2001; Trossman, 2002). Therefore, it is increasingly important to become knowledgeable about the stressors that nurse educators experience when utilizing technology in order to create a more rewarding workplace for the new and remaining faculty. Results from this study provided information about the stress that nurse educators experience when utilizing new education technology. With the increasing use of technology in the classroom and academic settings, such as using personal digital assistants (PDAs) for time management, this information would be beneficial to university administration in order to create a more rewarding and less stressful workplace for nurse faculty.

As stated previously, the research on technological stressors of nurse educators is lacking reliable information. There are previously published studies on the incidence of technological stressors in other disciplines (Argabright, 2002; Beam et al., 2003; Champion, 1988; Christensen, 2002; Ogan & Chung, 2003; Voakes et al., 2003), but no studies on the incidence of technological stressors among nurse educators have been located. The results from this study could provide a knowledge base related to the technological stressors of nurse educators. Moreover, results from this study could support the need for a university-sponsored technology orientation and continuous technological support in order to reduce the incidence of technological stress among nurse educators.
Assumptions

1. Measurement of technological stressors at one moment in time may not be an accurate representation of the technological stressors that nurse educators experience while teaching nursing theory courses.

2. Baccalaureate nurse educators have an awareness of the technological stressors they experience while incorporating technology into nursing theory courses.

Limitations

1. The research instruments used to collect data were researcher-developed; therefore reliability and validity of the instruments were not determined prior to data collection.

Summary

Chapter I described the statement of the problem and the purpose of the study. In addition, Chapter I presented the theoretical framework that will guide this study. Furthermore, information about the incidence of technological stress within other disciplines was also presented. Although the incidence of technological stress in other fields has been investigated, the issue of technological stress among nurse educators has not been addressed. Hence, this study described the technological stressors that Louisiana nurse educators experienced while teaching nursing theory courses. As greater insight into the technological stressors of nurse educators is gained, university administrators and schools of nursing will be able to adequately support and facilitate the adaptation of new technology by nurse educators and create a more rewarding work environment.
CHAPTER 2

REVIEW OF THE LITERATURE

The purpose of this chapter is to provide research findings, which will serve as a basis for this study. This chapter is organized into the following sections: overview of technology stress, factors related to the development of technological stress, technological stress among higher education faculty, and computer anxiety and the development of technological stress.

Overview of Technological Stress

The term, technostress, was first introduced in the 1980's by Broad. According to Broad, technostress “is a condition resulting from the inability of an individual or organization to adapt to the introduction and operation of new technology.” (1984, p. 754) Technostress manifests in several ways. An individual may exhibit physical symptoms such as repetitive strain injuries, carpel tunnel syndrome, or back problems resulting from poor machine design or ergonomics. An individual may also experience computer anxiety which manifests in several ways: temporary confusion as to how to use the technology, fear of being rushed or dehumanized by the computer or technology, or computerphobia or technophobia. As stated by Broad, the primary symptom of technostress is anxiety. An individual can exhibit this anxiety in many ways such as nightmares, headaches, resistance to learning about the new technology, and outright rejection of the technology. Furthermore, Broad suggested that there are several important variables that affect the probability of developing technostress. These variables include the age of the
user, past experience with technology, perceived control over new tasks, and organizational climate.

As suggested by Broad (1984), technostress has a negative impact on human performance by shifting a person’s work-congruent stress to an internal state of distress. This results in a reduced-ability to process information accurately, a slowing of the response time to computer-generated demands, and an interruption of normal work patterns. Technostress often begins as reduced performance which limits the usefulness of the technology. After new technology is introduced many employees show initial excitement and begin to experiment with the new technology; however, few will excel in using it. Later, these same employees become unable to adjust to new technology because of technostress. They begin to withdraw from using the technology and spend more time on non-technology tasks and social activities away from technology.

Another definition of technostress has been suggested by Davis-Millis (1998). She defined technostress as “a condition resulting from having to adapt to the introduction and operation of new technology, particularly when equipment, support, or the technology itself is inadequate” (1998, ¶ 15). Kupersmith (1992) suggested that individuals form mental models of how to operate the new technology and how different actions produce different effects. Once the technology has changed, as in the introduction of new technology, these mental models no longer work. When the new technology is more complex, the individual has a difficult time forming new models which can result in the development of technostress.
Technology Stress Research

Factors Related to the Development of Technological Stress

Gender and Ethnicity. Timmons (2000) conducted a study to explore computerphobia and its relationship to computer stress and selected demographic variables: age, gender, computer knowledge and computer experience, years using a computer, ethnicity, organizational level, and importance of computers to do one’s job. The main objective of the researcher was to explore the possibility of a relationship between computerphobia and computer stress.

The subjects consisted of full-time employees at a liberal arts college in Southern California. Questionnaires were mailed to 324 subjects, and a total of 80 useable questionnaires were returned, indicating a 25% response rate. According to Timmons (2000), the subjects were predominately Caucasian females. Over 98% of the subjects indicated that they utilize a computer as part of their job.

The results of this study indicated that there is no relationship between computer-related stress and computer dependency at work. Timmons (2000) suggested that people will not be more susceptible to computer-related stress even if their jobs demand the use of computers. Another finding of this study is that people who are more dependent on computers demonstrated fewer signs of computerphobia. The results of this study also indicated that computer-related stress is not related to an individual’s fear of the computer and their dependency on the use of a computer. Furthermore, the results showed that African Americans tend to experience more computer-related stress compared to other ethnic groups. This
finding should be explored further to see the reasons why African Americans tend to experience more computer-related stress.

Attitudes towards Technology and Gender Differences. Voakes et al. (2003) conducted a nationwide study to examine the impact of technological change on journalism and mass communication faculty. The researchers were specifically looking at the attitudes of faculty towards technological change and the stressors they were currently facing, particularly technological stress. In addition, the researchers investigated gender differences in the levels of technological stress and how administrators perceived stress in faculty lives.

A stratified random sample from the 30 largest journalism and mass communication programs was obtained, and the administrators were contacted for telephone interviews in the first phase of the study. In the second phase of the study, 595 members of a nationwide journalism and mass communication faculty organization were randomly selected. A telephone survey was conducted by the Indiana University Center for Survey Research. Four hundred and three faculty members participated in the survey, resulting in a 77% response rate. The participants were asked 92 questions that related to the participants’ background information, the nature and length of their work, computer technology and stress related to its use, technical assistance received, and stressors experienced by the faculty.

Results from the administrator phase of this study indicated that 64% of the programs had curricular changes in order to incorporate new technology. Thirty-two
percent of the administrators stated that they had spent more money than usual on technology in the preceding year.

Findings from the faculty phase of the study indicated that nearly all faculty members were using technology in their current position and most agreed on the importance of utilizing new technologies in teaching methodologies. The main uses were for word processing (99%; n = 399), internet browsing (98%; n = 395) and e-mail (97%; n = 391). The least use was for video editing (18%; n = 73). Further findings indicated that the participants have a great deal of confidence in learning new technologies. Conversely, three in 10 faculty members would rather do things as they have always done. Moreover, 67% (n = 270) reported that they receive quality assistance with their technological concerns, and 77% (n = 310) reported that they need more technology training. Related to technology-induced stress, only 25% (n = 15) of the administrators and faculty reported that they have no technology-induced stress. Keeping up with new databases for teaching and research and inadequate technical support caused stress for 72% (n = 290) of the faculty. The researchers then completed a factor analysis of the survey instrument which identified indices of six types of stressors: technology-related stress, time-related stress, teaching-related stress, alienation-related stress, promotion-related stress, and personal stress. The factor that indicated the highest level of stress was the time factor, followed by technology. Administrators rated time constraints as the highest stressor for faculty; however, they rated concerns about students and tenure and promotion as the second highest stressor. This is a significant finding if
administrators are underestimating the amount of stress faculty experience when utilizing technology.

Further analysis of data revealed five technology measures in which age made a significant difference. A negative correlation was noted between age and attitudes toward computer usage. The younger the faculty member the more positively they rated computer technology. A positive correlation between age and the stress from learning new technologies was also noted.

Another significant finding was a positive relationship between rank and technological stressors. This means that the associate professor experiences more technological stressors than an instructor. Moreover, the researchers noted that females whose teaching loads contained more skills courses were more likely to experience technology stress. Furthermore, the researchers concluded that the lower the perceived quality of technological support, the more difficult the access to technical support staff, and the greater need for technology training resulted in higher levels of technology-induced stressors.

**Gender Differences.** A related study by Ogan and Chung (2003) addressed the relationship between the increasing utilization of technology in the classroom and in research and the level of stress journalism and mass communication faculty are experiencing in their professional and personal lives. This study analyzed the data from a study presented previously conducted by Voakes et al. (2003). The present study investigated whether women used different technologies than men and whether they held different opinions about the impact of technology in their
professional lives. In addition, this study examined the reasons why women experienced greater amounts of stress than men in the previous study.

The researchers utilized a random sample of 595 journalism faculty members selected from a nationwide directory of journalism and mass communication faculty. A total of 403 faculty participated in the survey resulting in a 77% response rate. The survey was conducted via telephone and consisted of 92 items. Items included were related to demographic information and the nature of the respondents’ workload. The respondents were also asked 11 items that were related to technology issues in journalism and mass communication education. In addition, the respondents were asked five items related to their use of computer technologies and four questions about the effects of technological change on the respondents’ professional work. Furthermore, the respondents were asked specific questions related to measure their level of stress, their use of computer software, the amount of technical assistance they receive, feelings about their jobs, and their satisfaction or dissatisfaction with various aspects of their job. The researchers reported a reliability coefficient of the stress portion of the scale as .77.

Findings from this study showed that despite obtaining higher education degrees and tenure, female journalism mass communication faculty experienced high levels of stress with the use of technology and felt a sense of isolation from their colleagues. Another significant finding noted in this study was that female journalism and mass communication faculty have high levels of stress based on feelings of discrimination. The most significant finding from this study is that female journalism and mass communication faculty are not technologically challenged.
These subjects had more positive attitudes toward change and the use of technology than their male counterparts.

**Personality Traits.** Hudiburg, Pashaj, and Wolfe (1999) conducted a similar study to investigate which personality traits are related to computer-related stress and stress outcomes, such as somatic complaints and anxiety. No information about the study sample and sampling method was provided. The only information given was that the questionnaires were administered to a group of undergraduate computer users attending a southeastern United States university.

Results of this study indicated that there were no significant correlations between personality factors and computer-related stress. However, results indicated that Neuroticism and Extraversion moderated the relationship between computer-related stress and common stress reactions. The researchers suggested that this finding indicates that personality characteristics of the computer users affect the level of stress related to computer use.

**User-Friendly Technology.** Argabright (2002) conducted a study which examined the incidence of technological stress on consumer behavior. The study also empirically tested a model of technology acceptance and usage of user-friendly technology and the human interactions that contribute to technological stress. Participants included employees of a large aerospace enterprise (n = 327). Two surveys were administered via the company’s intranet. These included the Personality Battery of Technology Orientation and the Computer Hassles Scale. The researcher reported a Cronbach’s alpha coefficient greater than 0.7 on both instruments. After selecting a random sample, invitations to participate in the study
were sent via e-mail. A web link to the surveys was provided in the e-mail. The subjects had to enter their badge identification number in order to access the surveys. After two weeks, another e-mail soliciting participation was sent. The overall response rate was 100%.

Some significant findings of this study included a negative relationship between a product’s learnability and perceived technological stress. Users do not usually take the time to learn a product completely before using it which may account for technological stress. Another significant finding was a positive relationship between complexity of operating instructions and perceived technological stress. The less complex the technology is to operate the faster the user will be to adopt it, resulting in lower technological stress levels. The final significant finding of this study was subjective satisfaction with technology use. The more pleasant the equipment is to operate, the less likely that technological stress will occur.

Attitudes towards Computers. Ballance and Rogers (1991) explored computer-related stress, global stress, and attitudes towards computers. The subjects consisted of 186 two-year technical students in day and night classes in each of the following areas: English, Accounting, Electronics, and Business Data Processing. Instrumentation included the Perceived Stress Scale, the Computer Attitude Scale, and the Computer Technology Hassles Scale. No reliability and validity of the research instruments were provided by the authors; however, this information is available in other published studies.
Findings of the research indicated that both the total computer hassles score and the number of hassles marked on the Computer Technology Hassles Scale were moderately \( r = .20 \) related to the Perceived Stress scale. Furthermore, a relationship between the measure of computer-related stress and the subject’s attitude towards computers was also noted, suggesting that individuals with higher knowledge of computers may tend to experience more computer-related stress. The authors also reported that no significant relationships between academic achievement and the measure of stress, computer attitude, or computer hassles were noted.

**Requirement to Utilize Computers.** Another similar study by Ballance and Ballance (1992) investigated the incidence of computer-related stress among technical college students who are required to utilize computers in the classroom. Utilizing a survey design, the researchers collected data from three separate groups of students: students who used computers as an integral part of their coursework; students who used computers to review and practice course content; and students who did not use computers in their coursework \( (n=79) \).

The authors concluded that a student’s level of computer-related stress is not related to the use of computers in the classroom. The authors purported that the results affirmed previous studies by Hudiburg (1991), which indicated that computer-related stress is the result of the increased interaction with computer technology. The authors suggested that further studies be conducted to investigate whether increased levels of computer interaction are related to higher levels of computer-related stress.
Level of Computer Experience. A later study by Ballance & Ballance (1996) investigated the incidence of computer-related stress among a group of college students with varying levels of computer experience. The participants included 57 students from a two-year technical college. Participants were asked to complete the revised Computer Technology Hassles Scale developed by Hudiburg (1991) and an additional survey used to determine their level of computer experience. The students were then divided into groups based on their responses to this second survey, ranging from “no computer skills or limited computer skills,” to “high level computer skills.” The results of this study indicated that there were no statistically significant differences between the highly skilled and the unskilled computer users and their reported levels of computer related stress. These findings supported the findings from a previous study by Ballance and Ballance (1992).

Self-Concept. A similar study by Hudiburg and Necessary (1996) explored the relationship of an individual’s self-concept to their level of computer-related stress. The participants included two separate groups, college students taking computer courses (n=104) and college faculty and staff (n=88). The authors provided no information on how the sample was determined. Three separate questionnaires were used to collect data. These included Hudiburg’s Computer Hassles Scale, an instrument that consisted of 22 (12 somatization items and 10 anxiety items) items from the Symptoms Checklist-90, and the Revised Personal Attribute Inventory developed by Necessary and Parish. This instrument consists of 40 items (20 positive and 20 negative adjectives), and the respondents have to select 20 items that seem typical of how they view themselves.
Analysis of data indicated that there was no statistical difference in the reported severity of stressors between the two groups. Furthermore, there was no statistical difference in the mean somatization/anxiety ratings. However, a significant finding was that the faculty/staff group reported a higher self-concept than the student group. Moreover, the findings from this study suggested that self-concept can moderate the relationship between computer-related stress and stress outcomes (somatization/anxiety). However, this finding was only significant in the faculty/staff group. Therefore the authors purported that persons with a higher self-concept are less susceptible to computer-related stress and computer-related stress outcomes.

**Technological Stress among Higher Education Faculty**

*Technological Stress and Job Satisfaction.* Beam et al. (2003) conducted a study that examined how technology induced stressors affected journalism and mass communication faculty's job satisfaction and workplace exhaustion levels. The study sample consisted of a random sample of 524 members of the Association for Education in Journalism and Mass Communication. There were 402 respondents, indicating a 77% response rate. The researchers utilized a researcher-developed instrument to collect the data. Four scales were developed to collect data. These included the dimensions of job satisfaction, job dissatisfaction, job burnout, and technology-related stress. The findings from this study indicated that technology stressors could contribute to lower job satisfaction, higher job dissatisfaction, and higher job exhaustion for teachers of journalism and mass communication. The
participants indicated that technology stressors are more important in influencing job satisfaction than course load, tenure status, rank, or gender.

Kupersmith (2005) conducted an on-line survey examining the incidence of technological stress among library staff members. The survey was posted on the web for 10 days using Zoomerang© survey software and resulted in 92 completed survey responses from individuals who worked in academic, public, or private libraries, or library-related businesses. This survey was not a scientific survey; the sample was self-selected.

Kupersmith (2005) found that 59% of the respondents' level of technological stress had increased in the past five years. In addition, 65% of the respondents indicated that this type of stress is a serious problem for them. The respondents indicated some causes that led to the development of technological stress. These included: “information overload, networking problems, security issues, computer hardware and ergonomics, and vendor-produced databases” (Kupersmith, 2005, ¶ 4). The survey also requested information on strategies to manage and cope with technological stress. These included the need for individuals to be flexible and open to learning and the need for training and technological support provided by the organization.

**Computer Anxiety and the Development of Technological Stress**

Predictors of Computer Anxiety. Rovai and Childress (2002-2003) conducted a study to investigate how resistance to the reduction of computer anxiety can be explained and reliably predicted. The subjects included 86 teacher education students enrolled in a six different sections of a computer literacy class (91%
response rate). The students were taught by four different instructors and were in the class for a total of 16 weeks. The subjects were asked to complete six self-reported questionnaires at the end of the course. These included the Computer Anxiety Scale (COMPAS), the Computer Anxiety Scale (CAS), primary author-developed Computer Knowledge Scale, Rotters Internal-External (IE) Control Scale, and the trait form of the Stait-Trait Anxiety Inventory Scale (STAIS). Reliability and validity for each instrument were reported in the study. The results of this study showed that significant predictors of posttest computer anxiety were related to the psychological makeup of the subject and their computer knowledge. Computer confidence was shown to be the strongest indicator, followed by trait anxiety, lack of computer knowledge, and computer liking. According to the researchers, computer usefulness, computer experience, and locus of control had no influence on posttest computer anxiety. The results of this study supported the findings of Timmons (2000) in that the more a subject knows about the computer, the less they will experience computer-related stress and computerphobia.

**Computer Performance and Gender.** Brosnan (1998) investigated the relationship between computer anxiety and selected computer performance variables, which included tasks self-efficacy, levels of current software and programming usage, and gender. Participants of the study included 25 male and 25 female second-year undergraduate students. The researcher provided no information on the sampling procedure. The participants completed the Computer Anxiety Rating Scale (CARS) prior to the testing phase of the study. The subjects were then taught how to navigate through an on-line database. The subjects were
then asked a series of questions to determine their level of computer self-efficacy and their levels of computer software and programming usage. The subjects’ completion of the questions was timed. The results of the study indicated that students who were less anxious were able to answer more questions and had higher self-efficacy levels. Furthermore, Bronsan stated that computer anxiety was related to performance outcome and self-efficacy was related to how the outcomes were achieved.

**Technology Instruction and Student Computer Experience.** Christensen (2002) presented results of a year-long study conducted at a large public elementary school in North Texas while it integrated computer technology in the teacher’s daily classroom instruction. The subjects consisted of 60 teachers from a suburban public elementary school who were receiving needs-based instruction on the integration of computer technology in the classroom. A comparison group of teachers who received only a district-provided technology in-service was also utilized in the study. Students were also asked to complete two sections of the questionnaire (computer importance and computer enjoyment). No information was given as to how many students were involved in the study and no demographic information on the students was presented. A researcher-developed Teachers’ Attitudes Toward Computers Questionnaire (TATCQ) was utilized to gather data from the experimental group and the comparison group. Reliability and validity of the instrument were provided by the researcher. Based on the findings from this study, there is a significant relationship between technology integration education and teachers’ attitudes towards computers. The results also indicated that technology instruction tends to increase
teachers’ computer enjoyment which in turn fosters computer enjoyment in the students. However, Christensen (2002) stated that a greater positive perception of computer importance by students leads to higher teacher computer anxiety levels. This is a significant finding because nurse educators today are teaching a group of students who are more computer-dependent and literate which may lead to more nurse educator computer-related anxiety.

**Age and Computer Anxiety.** Bozionelos (2001) implemented a similar study which purpose was two-fold: (1) compare computer experience with computer anxiety; (2) investigate differences in the incidence of computer anxiety among subjects who have had varying amounts of early exposure to computers. The study sample consisted of three separate groups. Sample One consisted of 228 (36 women and 192 men) British students attending advanced management courses in a British Management School. The mean age of this group was 32.26 years and the subjects had over 10 years of work experience and held undergraduate degrees in a variety of disciplines. Sample Two included 67 British individuals (51 women and 16 men) enrolled in a graduate course in management. The subjects in this group were in their late 20s and had about eight years of work experience. Sample Three consisted of 220 (148 women and 72 men) British undergraduate students from a variety of disciplines. These subjects were in their early 20s. The researchers chose these different groups in order to have subjects that differ in age and are at different stages of the same educational process.

The findings from this study indicated that the current generation of undergraduate students experienced more psychological discomfort with computers.
than individuals from the previous generation. This suggested that students who were raised in an era of widespread computer technology availability experienced more computer-related stress compared to individuals who were introduced to computers at a later stage in life. Moreover, the findings purported that individuals with high levels of computer anxiety will benefit most from more computer experience. This finding contradicted implications from previous studies by Ballance and Balance (1992, 1996).

**Learning Styles and Gender.** A similar study by Ayersman and Reed (1995/1996) investigated the effects of learning styles, programming, and gender on computer anxiety among undergraduate preservice teachers. The specific purposes of this study were the following: (1) determine whether programming instruction decreases computer anxiety; (2) examine differences in computer anxiety reductions related to learning styles; (3) look at programming performance scores related to individual learning styles; (4) investigate the relationship between gender and computer anxiety and performance measures.

The study sample consisted of 58 undergraduate education majors attending a Mid-Atlantic land-grant university. The subjects were required to complete a Computer Awareness Module (CAM) to establish proficiency in programming, computer architecture, and the general use of computers. These modules were offered at various times during a four-week period during one semester. All subjects received eight hours of instructional time. The CAM covered three primary areas of computing. The first aspect was programming which provided the students with a sense of communicating with the computer. The subjects were taught how to use the
keyboard, access files from a disk, and other general computing skills. The second aspect was computer architecture which informed the subjects about the components of the computer. The final aspect of the module provided the subjects with information on the uses of computers in educational settings. At the end of the instruction, a performance test was given to each subject which included multiple choice, short answer, and matching-type questions. The students were also required to construct a graphic image using low-resolution graphics. This allowed the researchers to measure computer proficiency of the subjects.

Findings from this study indicated that the participants’ computer anxiety decreased following programming instruction. Conversely, no significant differences were noted in computer anxiety among the four learning styles prior to programming instruction. Closer examination revealed, however, that the Divergers possessed the highest level of computer anxiety and the Convergers had the lowest level of computer anxiety. After programming instruction, the Assimilators’ computer anxiety levels significantly decreased; whereas, the Convergers had an increase in their computer anxiety scores. Another significant finding of this study is that female participants outperformed the males on the programming portion of the performance measure and on the written measure of performance.

**Relationship with Demographic Variables and Computer Anxiety.** Yang, Mohamed, and Beyerbach (1999) investigated the incidence of computer anxiety among vocational-technical teachers. The researchers specifically examined how computer-related experiences affect the relationship of computer anxiety to selective demographic variables. These variables were: learning style, age, gender, ethnic
origin, teaching area, education level, and school-type. The study sample was derived from a population of employed vocational-technical educators in Dade County, Florida. The subjects were selected utilizing a simple random sample, specifically a table of random numbers. By utilizing stratification based on the areas in which the teachers taught, the researchers ended up with a stratified random sample of 245 teachers drawn from a total population of 980 educators. The researchers reported a response rate of 80.8%.

The findings of this study indicated that computer experience does influence computer anxiety. After making statistical adjustments for computer-related experience through the use of an analysis of covariance, the researchers noted that the mean differences on computer anxiety decreased among the demographic variables. By making adjustment for computer-related experience, there was no significant relationship noted between computer anxiety and teaching area, age, and ethnic origin. The researchers found only two demographic variables to be significantly related to computer anxiety: educational level and school-type. Because of this finding, the researchers postulated that educators with more education experience may find it easier to gain confidence with computer technology than those with less educational experience.

Teaching Experience, Age, and Computer Experience. Harris and Grandgenett (1996) examined the correlation among teacher’s anxieties, demographics, and telecomputing activity. The study participants (n=300) were randomly drawn from a list of 8000 educators who subscribed to the Texas Educational Network (TENET). The researchers followed Dillman’s Total Research
Design which resulted in a useable response rate of 63% (n = 189). Furthermore, the researchers sent a diskette containing internet resources of interest to educators to those individuals who completed the questionnaires.

The researchers investigated the statistical correlations between subject attribute variables. The subject attribute variables included three anxiety measures (writing apprehension, oral communication apprehension, and computer anxiety) and three measures of experience (teaching experience, age, and telecomputing experience). In addition, the researchers collected data on the network use by the subjects for a 12-month period, which included the total number of network log-ins and total network on-line time. Writing apprehension was measured by the Daly-Miller Writing Apprehension Scale, whereas oral communication was measured by the Personal Report of Communication Apprehension. The Computer Opinion Survey was utilized to measure computer anxiety. The researchers did not provide any information on the reliability and validity of these instruments. However, the authors did state that the instruments were well-accepted, reliable, and well-validated.

The results of this study indicated a negative relationship between writing apprehension and network use. This suggested that participants who had high levels of writing apprehension logged onto the network less often. There was no significant relationship between network use and the other variables, oral communication apprehension and computer anxiety. Another significant finding from this study was that oral communication apprehension and computer anxiety were both related to
writing apprehension. Furthermore, the researchers discovered a positive relationship between telecomputing experience and greater on-line time.

**Summary**

This chapter has presented an extensive review of the current literature available on technology-induced stress and the related symptom of computer anxiety. Research on technostress and computer anxiety in students and faculty were presented. Furthermore, current literature related to the impact of technological advances in education was also presented. As previously stated, there has been no study located which describes the technological stressors of nurse educators teaching nursing theory courses.
CHAPTER III

METHODOLOGY

This descriptive-correlational study described the technological stressors of Louisiana nurse educators while teaching a nursing theory course. In addition, this study determined if a relationship exists between the demographic variables of age, gender, ethnic origin, educational level, years experience as nurse educator, academic rank, previous computer training, use of a computer at home, on-line teaching, participation in technology training, perceived administrative support for utilizing technology in nursing theory classes, and the nurse educators’ perceived technology stress. This chapter presents the research design and sample related to this study. Furthermore, the questionnaires that were used to collect data will be discussed. Additionally, the procedure for data collection and data analysis will be described.

Population and Sample

The target population for this study was defined as full-time nurse educators in baccalaureate degree nursing programs who were currently utilizing technology while teaching a nursing theory course. The accessible population was defined as the full-time nurse educators in 13 baccalaureate degree nursing programs in Louisiana who were currently utilizing technology while teaching a nursing theory course and who had taught at least one nursing theory course in a baccalaureate program during the six months prior to data collection. To establish a population frame, the researcher obtained a list of all baccalaureate nursing education programs in Louisiana from the Louisiana State Board of Nursing website. The
Louisiana State Board of Nursing is the regulatory agency for all registered nurses and nursing programs in the state of Louisiana. A list of full-time faculty teaching in 13 Louisiana baccalaureate degree programs was obtained from published faculty directories located on each school's web page. For subjects that are unable to be identified through this medium, the researcher contacted the Deans of the three Schools of Nursing which did not have a published list of faculty initially by e-mail. When the deans of these schools failed to respond to the initial e-mail, they were contacted again by fax. Only one dean responded and provided e-mail addresses of only four faculty members. The remaining faculty member names were obtained from the Louisiana State Board of Nursing. After the population frame of 311 nurse educators was established, a census sampling design of all Louisiana baccalaureate nurse educators was used.

**Setting**

Nurse educators from 13 baccalaureate schools of nursing located in the state of Louisiana were selected to participate in the study. The setting, nursing theory classrooms, varied in these schools of nursing. Traditionally, the nursing theory classroom is a room with desks or tables and chairs, a desk or podium for the educator, and a chalkboard or Smartboard®. The technology utilized in the study classrooms varied. If the theory course was taught via distance education, the setting varied dramatically. These settings included sites located off-campus that had teleconferencing capabilities or any other location that had internet capabilities.
Instrumentation

Two instruments were utilized to collect data for this study. Because no existing instrument which measured technological stressors experienced while teaching was located through a thorough review of the literature, a new instrument, The Nurse Educator Technostress Scale (NETS) was developed. This instrument was developed based on a review of the literature, existing technology and computer anxiety instruments, and expert input. This 35-item instrument was developed based on a review of the literature related to technostress and the Computer Technology Hassles Scale developed by Hudiburg (1991). The instrument was reviewed by an expert panel for content validity. In addition, a pilot test was conducted utilizing a comparative sample of five nursing educators who were teaching a nursing theory course in a Louisiana associate degree nursing program. Subjects were asked to think about the technology stressors they have experienced during the past six months while teaching nursing theory courses and then were asked to rate the severity of those stressors on a five-point anchored scale: (1) not at all; (2) little stress; (3) moderate stress; (4) stressful; (5) very stressful.

The second instrument, a demographic data instrument was also researcher-developed. The variables measured were: age; gender; ethnic origin; educational level; years of experience as a nurse educator; academic rank; previous computer training; use of a computer at home; use of technology in nursing theory classes; types of technology used in nursing theory classes; on-line teaching; additional compensation for incorporation of technology in nursing theory classes; and perceived administrative support for utilizing technology in nursing theory classes.
Procedures

Approval for the research was obtained from the Louisiana State University Institutional Review Board (IRB) and the study was granted approval number 2895 (See Appendix A). Dillman’s (2000) Total Design Method was utilized to collect data. According to Dillman (2000), in order to achieve an increased response rate on completed questionnaires, the researcher should adhere to certain protocols during data collection procedures. Dillman suggested that the researcher use a questionnaire that is short and easy to read. Additionally, the researcher should have five contact opportunities with the respondent. Four of the contacts are by mail and should include a pre-notice letter, the study questionnaire, a thank-you postcard, a second replacement questionnaire, and a final appeal for participation. The fifth contact involves personally requesting participation through a telephone call. The questionnaires should include a self-addressed, postage-paid envelope and the correspondence should be personalized. Dillman also suggested the use of prepaid token incentive, such as including a dollar bill with the original mailing. This study used all of Dillman’s suggestions other than the following: initial contacts were via e-mail and postal mail, and the participants were not given a prepaid token for participation. The questionnaires were made available on-line through an on-line survey delivery service called Zoomerang©. Zoomerang© allows the researcher to post survey instruments on a secured Internet web page. The researcher enters the e-mail addresses of the participants. When the survey is launched an e-mail composed by the researcher, which contains the internet link to access the survey, is sent to all participants. Only individuals who are given the internet link can
complete the survey and the software keeps a log of those who have completed and not completed the survey. This subscription service also allows the researcher the opportunity to download the data results in a spreadsheet file. The data can only be accessed by using a user-name and password.

Two hundred and eighty-five participants were e-mailed a cover letter, which explained the purpose of the study and a request for participation, along with an internet link to access the questionnaires. Furthermore, the cover letter contained instructions for completing the questionnaires and an assurance of confidentiality. In the introductory e-mail, participants were also given the opportunity to request by e-mail or phone whether or not they wanted a hard copy of the questionnaires to complete. Only one participant requested a paper version of the questionnaires. Paper versions of the questionnaires and cover letter were mailed using the United States Postal Service to the 26 participants for whom the researcher was unable to obtain their e-mail addresses. A self-addressed, stamped envelope was enclosed for the participants to return the completed questionnaires.

**Data Collection**

In order to collect data, the researcher e-mailed 285 participants, requesting their participation and informing them of the purpose of the study and the risks and benefits of participating. An internet link to access the questionnaires was also provided. Paper versions of the survey were mailed to 26 nurse educators from the three schools which the researcher was unable to obtain a list of e-mail addresses. A census of 311 nurse educators teaching in 13 Louisiana baccalaureate nursing programs were selected to participate in the study.
During the first wave of data collection, a total of five paper versions of the study were returned, and a total of 81 participants completed the on-line version. In order to achieve a high response rate, a reminder e-mail to solicit their participation was sent to the non-responders two weeks after the initial mailing and a reminder postcard was sent to the paper-version non-responders. This second wave of data collection resulted in four additional completed paper versions and 30 additional completed on-line versions. An additional questionnaire, cover letter, and self-addressed stamped envelope were mailed using the U.S. Postal Service to the non-responders four weeks after the initial mailing. This final wave of data collection resulted in a total of 60 questionnaires returned by U.S. mail. No participants completed the on-line version of the survey during the final wave of data collection.

The responses by each wave of data collection are presented in Table 1.

Table 1
Completed Questionnaires by Wave of Data Collection

<table>
<thead>
<tr>
<th>Wave</th>
<th>n (E-mail Questionnaires)</th>
<th>n (Mailed Questionnaires)</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>81</td>
<td>5</td>
</tr>
<tr>
<td>2</td>
<td>30</td>
<td>4</td>
</tr>
<tr>
<td>3</td>
<td>0</td>
<td>60</td>
</tr>
<tr>
<td>Total</td>
<td>111</td>
<td>69</td>
</tr>
</tbody>
</table>

The entire data collection process continued for a period of six weeks, and questionnaires received after April 23, 2005 were not entered into data analysis. The data collection process culminated in a total of 180 returned questionnaires resulting
in a 58% response rate. However, of these completed questionnaires, 61 participants indicated that they had not taught a baccalaureate nursing theory course in the past six months, which indicated a frame error. This resulted in a sample size of 250. Furthermore, four additional participants indicated that they did not utilize technology in their theory courses. One-hundred and fifteen usable questionnaires were included in data analysis, resulting in a 46% response rate.

**Non-Responders**

In order to determine if there were differences between responders and non-responders, 25 randomly selected non-responders were contacted per telephone and were asked to complete 10 questions randomly selected from the NET instrument. The data obtained through these phone surveys were compared to the data obtained from responders to determine if statistically significant differences existed between the responders and non-responders. An a’ priori decision was made that if no more than two survey items completed by the non-responders were statistically different from the responders, then it would be concluded that data from the follow-up phone calls to the non-responders were representative of the study participants. Data from 25 non-responders were obtained after it was determined that the subjects met study criteria: taught a baccalaureate nursing theory course in the past six months and were utilizing technology in the classroom. Independent samples t-tests were used to compare means of the 10 randomly selected NET items from the non-responders to the responders. Results indicated that there were no significant differences on any of the 10 NETS items among the responders and
non-responders. See Table 2 for presentation of t-test results for each of the ten randomly selected items.

Table 2
Independent T-test Findings of 10 Randomly Selected Nurse Educator Technostress Scale Items Comparing Louisiana Baccalaureate Nurse Educator Responders to Louisiana Baccalaureate Nurse Educator Non-Responders

<table>
<thead>
<tr>
<th>Scale Item</th>
<th>df</th>
<th>t</th>
<th>p</th>
</tr>
</thead>
<tbody>
<tr>
<td>Knowledge of computer technology</td>
<td>138b</td>
<td>1.084</td>
<td>.280</td>
</tr>
<tr>
<td>Computer hardware failure during class time</td>
<td>62.658c</td>
<td>1.063</td>
<td>.292</td>
</tr>
<tr>
<td>Not having needed software</td>
<td>89.771c</td>
<td>1.140</td>
<td>.257</td>
</tr>
<tr>
<td>Damage to storage media</td>
<td>82.456c</td>
<td>1.241</td>
<td>.218</td>
</tr>
<tr>
<td>Forget to save work</td>
<td>80.583c</td>
<td>1.828</td>
<td>.071</td>
</tr>
<tr>
<td>Hard drive crashes</td>
<td>90.434c</td>
<td>.486</td>
<td>.621</td>
</tr>
<tr>
<td>Too much spam e-mail</td>
<td>64.600c</td>
<td>1.613</td>
<td>.112</td>
</tr>
<tr>
<td>On-line course evaluations</td>
<td>51.160c</td>
<td>1.356</td>
<td>.181</td>
</tr>
<tr>
<td>Student access to technology during class time</td>
<td>138b</td>
<td>1.329</td>
<td>.186</td>
</tr>
<tr>
<td>Internet access during class time</td>
<td>41.531c</td>
<td>.599</td>
<td>.553</td>
</tr>
</tbody>
</table>

a. 05 Alpha level for the 2-Tailed Test of Significance
b. Homogeneity of variance assumed
c. Homogeneity of variance not assumed

Data Analysis

Descriptive and inferential statistics were utilized to analyze the data. The data analysis procedures will be described for each objective.
Research Objective One

The first objective was to describe nurse educators in the state of Louisiana on selected personal and professional characteristics. These characteristics included: age, gender, ethnic origin, educational level, years of experience as a nurse educator, academic rank, previous computer training, use of a computer at home, use of technology in nursing theory classes, types of technology used in nursing theory classes, participation in technology training, and perceived administrative support for utilizing technology in nursing theory classes.

The variables that were measured on a nominal scale, gender, ethnic origin, previous computer training, use of a computer at home, use of technology in nursing theory courses, types of technology used in nursing theory courses, on-line teaching, compensation for incorporation of technology in nursing theory classes, and perceived administrative support for utilizing technology in nursing theory classes were summarized using frequencies and percentages in categories. The variables that were measured on an ordinal scale included age, academic rank, educational level, and years of experience as a nurse educator. These variables were summarized as frequencies and percentages in categories.

Research Objective Two

Objective two was to describe the technology stressors that Louisiana baccalaureate nurse educators experience while teaching nursing theory courses. The variable, technological stressors as measured by responses to the NETS, was measured on an interval scale and was summarized with means and standard deviations.
Research Objective Three

Objective three was to determine if a relationship exists between the Louisiana nurse educators’ perceived technology stress as measured by the overall mean score of the NETS instrument and the demographic and professional characteristics, age, gender, ethnic origin, educational level, years of experience as a nurse educator, academic rank, use of a computer at home, previous computer training, on-line teaching, additional compensation for incorporation of technology in nursing theory classes, and perceived administrative support for utilizing technology in nursing theory classes. This objective was accomplished by utilizing the One-way Analyses of Variance (ANOVA) procedure to determine if differences existed in the technological stress score by categories of each of the following variables: age, gender, ethnic origin, educational level, years of experience as a nurse educator, academic rank, use of a computer at home, previous computer training, on-line teaching, additional compensation for incorporation of technology in nursing theory classes, and perceived administrative support for utilizing technology in nursing theory classes. A One-way ANOVA is utilized to compare the means of two or more levels of a given variable through the calculation of the $F$ statistic (Hinkle, Wiersma, & Jurs, 2003). A One-way ANOVA is a procedure which breaks down the variance into between group variability and within group variability. A One-way ANOVA is an appropriate statistical procedure to use when comparing means of one dependent variable and one categorical independent variable (Hinkle et al., 2003). One of the assumptions of a One-way ANOVA is that the population variances in all cells of the design are equal, which is called homogeneity of variance (Hinkle et al., 2003).
Homogeneity of variance is determined through the calculation of the Levene’s Test for Equality of Variance. The assumption of homogeneity of variance is assumed to be present when the Levene’s statistic is greater than the .05 level of significance.

**Research Objective Four**

Objective four was to determine if a model existed which explained a significant portion of the variance in technological stress as measured by the Nurse Educator Technostress Scale from the following demographic characteristics:

- age
- gender
- ethnic origin
- educational level
- years of experience as a nurse educator
- academic rank
- previous computer training
- use of a computer at home
- on-line teaching
- compensation for incorporation of technology in nursing theory classes
- perceived administrative support for utilizing technology in nursing theory classes

This objective was accomplished through the use of a multiple regression analysis. According to Hinkle et al. (2003), a multiple regression analysis is a statistical procedure which involves predicting a criterion value (technological stressors) from
examining relationships among selected predictor values (demographic variables). A multiple regression analysis can examine how a group of independent variables in combination influence the dependent variable (Hinkle et al., 2003). Therefore, a multiple regression analysis was an appropriate statistical test to use to determine the relationship among the dependent variable, technological stressors, and selected independent variables. In addition, it assisted in determining if a model existed which explained a significant portion of the variance in the dependent variable, technological stressors.

The variables were entered into the multiple regression in a stepwise fashion utilizing the probability of F to enter the model of .05 and the probability of F to be removed from the model of .010. A stepwise data entry method was an appropriate technique to use for this data set. Stepwise data entry methods allow the variables to be entered one by one into the model based on the independent variable’s relationship with the dependent variable. After the first variable is entered into the model, the next variable entered will be the variable with the highest partial correlation with the dependent variable with the effects of the other independent variable removed (Pedhazur, 1997). In order for the model to be significant, the model should contain independent variables that are highly related to the dependent variable, but not related to other independent variables. If this occurs, collinearity exists (Pedhazur, 1997). Variables which increased the explained variance by at least one percent were entered into the regression equation as long as the regression model remained significant.
Collinearity diagnostic techniques were utilized to identify the redundancy or overlap among the independent variables. Redundant or highly correlated independent variables can affect the standard errors of the regression coefficients and make a significant regression line appear non-significant (Pedhazur, 1997). There is evidence that collinearity exists when there is a sign change for a regression coefficient when a new variable is added and the $R^2$ is significant, but none of the parameters are significant. Identifying collinearity aids the researcher in identifying the individual effects of the predictor variables on the criterion variable.

Partial correlation values, variation inflation factors (VIF), and tolerance values (TOL) were examined in order to maximize the predictability of the multiple regression analysis. According to Pedhazur (1997), a partial correlation is the relationship between two variables after removing the overlap of the third variable completely from both variables. The first variable to enter the regression analysis is the variable that has the highest relationship with the dependent variable. The next variable to enter the regression analysis is the variable that has the highest partial correlation with the dependent variable with the effects of the first variable removed. This variable will result in the greatest increase in $R^2$ and accounts for the greatest amount of the remaining variance in the dependent variable after the effects of the first predictor variable has been removed.

Variance inflation factor values (VIF) measure the impact of collinearity among the independent variables in a multiple regression analysis (Pedhazur, 1997). VIF indicates the degree to which collinearity among the predictor variables degrades the precision of an estimate. Large VIF values indicate that there is
collinearity between the independent variable and the remaining independent variables. Large VIF values also indicate a large standard error of the regression coefficient in question. VIF values greater than 10 indicate serious problems in the data set.

Another index used to examine collinearity is tolerance levels. Tolerance levels look at the accuracy of the computations due to rounding errors which may arise from collinear relationships (Pedhazur, 1997). Smaller tolerance levels, especially levels less than .01, indicate greater computational problems that arise from rounding errors and high collinearity among the independent variables.

When calculating the multiple regression analysis, the demographic variables were treated as independent variables. The categorical independent variables were dummy-coded and were entered in a step-wise fashion due to the exploratory nature of this study. When dummy coding variables, the researcher is creating dichotomous variables where each level of a categorical variable is contrasted to a specified reference level (Pedhazur, 1997). Each level of categorical variables is assigned a number or code to represent the categorical variable. The assigned number or code does not represent quantity or rank; it merely represents group membership. Memberships, natural or contrived, are created for the purpose of to help explain, or predict variance of the dependent variable. Dummy variables can be used with any categorical variables. Dummy-coding variables allow the researcher to examine group effects (Pedhazur, 1997).

Each variable was examined for normality, homoscedasticity, and for the presence of outliers or influential data points. According to Pedhazur (1997), an
outlier is a data point that is distinct from the rest of the data points. In order to
detect outliers, standardized residuals were calculated. Residual values greater than
+/- 2.0 were examined and a decision was made to either delete or allow the subject
to remain in the data set. Furthermore, standardized residuals were plotted against
the dependent variable to check for the assumption of homoscedasticity. An
influential data point is a case which exerts influence on the regression line and can
affect the estimated parameters used to create the regression line (Pedhazur, 1997).
Leverage points can act as a lever and can pull the regression line up or down to
meet the leverage point and are a function solely of scores on the independent
variable. Leverage points (h) were calculated for each data point and compared to a
calculated maximum parameter. Cook’s D was another index that was used to
identify an influential observation which may have influenced the independent or the
dependent variable (Pedhazur, 1997). Each data point was examined for large
Cook’s D values relative to the other cases. Each influential point was examined and
a decision was made to either delete the subject or allow the subject to remain in the
data set.

Summary

In order to describe the technological stressors of nurse educators while
teaching nursing theory courses, two questionnaires were utilized. These two
questionnaires were the researcher-developed demographic data form and the
NETS. These questionnaires were e-mailed to a census of 311 Louisiana nurse
educators teaching in baccalaureate degree programs. Responses from these
questionnaires were summarized and analyzed through the use of descriptive and inferential statistics.
CHAPTER IV
RESULTS AND FINDINGS

The purpose of this study was to describe the technological stressors that Louisiana baccalaureate nurse educators faced while teaching nursing theory courses. In addition, this study sought to determine if a relationship existed between the demographic variables of age, gender, ethnic origin, educational level, years of experience as a nurse educator, academic rank, previous computer training, use of a computer at home, use of technology in nursing theory classes, types of technology used in nursing theory classes, on-line teaching, compensation for incorporation of technology in nursing theory classes, perceived administrative support for utilizing technology in nursing theory classes and the nurse educators’ perceived technology stress. Furthermore, this study sought to determine if a model which explained a significant portion of the variance, technological stressors existed.

Data collection was conducted over a period of six weeks during March and April 2005. A census sample of 311 Louisiana baccalaureate nurse educators was selected to participate in the study. An on-line survey software system was used for data collection. An e-mail requesting participation was sent to the participants along with an internet link to complete the surveys. A paper version of the surveys was mailed to the participants (n = 26) for whom the researcher had not been able to obtain e-mail addresses. Dillman’s (2000) Total Design Method was used to address non-responders. A follow-up e-mail was sent to the non-responders two weeks after the initial mailing. A follow-up postcard was sent to the paper version participants also two weeks after the initial mailing. Four weeks after the first mailing, a packet
containing another request for participation, surveys, and a self-addressed envelope was sent to the non-responders. The total number of Louisiana baccalaureate nurse educators responding to the surveys after follow-up procedures was 180 resulting in a 55% response rate. However, of these completed questionnaires, 61 participants indicated that they had not taught a baccalaureate nursing theory course in the past six months, which indicated a frame error, and four participants indicated that they did not utilize technology in their theory courses. This resulted in 115 usable questionnaires (46% response rate).

This chapter describes the demographic characteristics of the subjects (age, gender, ethnic origin, educational level) and the professional characteristics of the subjects (years of experience as a nurse educator, academic rank, previous computer training, use of a computer at home, use of technology in nursing theory classes, types of technology used in nursing theory classes, on-line teaching, compensation for incorporation of technology in nursing theory classes, perceived administrative support for utilizing technology in nursing theory classes). This chapter also presents the results from measurements of the Nurse Educator Technostress Scale.

**Research Objective One**

Describe baccalaureate nurse educators in the state of Louisiana on the following personal and professional characteristics:

- age
- gender
- ethnic origin
• educational level
• years of experience as a nurse educator
• academic rank
• previous computer training
• use of a computer at home
• use of technology in nursing theory classes
• types of technology used in nursing theory classes
• on-line teaching
• compensation for incorporation of technology in nursing theory classes
• perceived administrative support for utilizing technology in nursing theory classes.

Age. The participants were first described on the variable, age. The participants were asked to indicate their age by responding to the following categories: less than 25; 25-34; 35-44; 45-54; and 55 years and older. The largest group (n = 47, 40.9%) of the participants indicated that their age was between 45 to 54 years. No participants indicated that their age was less than 25 years of age. The age as reported by the participants is presented in Table 3.

<table>
<thead>
<tr>
<th>Age in Years</th>
<th>n</th>
<th>Percentage</th>
</tr>
</thead>
<tbody>
<tr>
<td>Under 25</td>
<td>0</td>
<td>0.0</td>
</tr>
</tbody>
</table>

(Table continued)
Gender. The sample was also described on the variable, gender. The majority (n = 111, 96.5%) of the subjects were female, whereas, 3.5% (n = 4) were male.

Ethnic Origin. Respondents were additionally described on the variable, ethnic origin. The majority of the participants (n = 97, 84.3%) reported their race as Caucasian. Two participants reported their race as “other,” one “Cajun” (n = 1) and the other “Black Hispanic” (n = 1) respectively. The ethnicity of the participants is presented in Table 4.

Table 4
Ethnicity Reported by Louisiana Baccalaureate Nurse Educators Utilizing Technology While Teaching Nursing Theory Courses

<table>
<thead>
<tr>
<th>Ethnic Origin</th>
<th>n</th>
<th>Percentage</th>
</tr>
</thead>
<tbody>
<tr>
<td>Caucasian</td>
<td>97</td>
<td>84.3</td>
</tr>
<tr>
<td>African American</td>
<td>11</td>
<td>9.6</td>
</tr>
<tr>
<td>Hispanic</td>
<td>4</td>
<td>3.5</td>
</tr>
<tr>
<td>Other</td>
<td>2^a</td>
<td>1.7</td>
</tr>
<tr>
<td>Native American</td>
<td>1</td>
<td>0.9</td>
</tr>
<tr>
<td>Asian/Pacific Islander</td>
<td>0</td>
<td>0.0</td>
</tr>
</tbody>
</table>

(Table continued)
Regarding the variable, educational level, the majority of the participants \((n = 81, 70.4\%)\) indicated that their highest level of education obtained was a Master’s of Science degree in nursing. Thirty-two participants \((27.8\%)\) indicated that they had obtained a doctoral degree and two participants \((1.8\%)\) indicated that they had obtained post-master’s certificates as nurse practitioners.

Years of Experience as Nurse Educator. The participants were asked to indicate the number of years of experience as nurse educator using the following categories: less than five years, 5 -10, 11-20, 21-30, and over 30 years. Thirty-nine \((33.9\%)\) of the participants indicated that they had been a nurse educator for 11-20 years. The years of experience as a nurse educator as reported by the participants is presented in Table 5.

Table 5
Years of Experience as Nurse Educator as Reported by Louisiana Baccalaureate Nurse Educators Utilizing Technology While Teaching Nursing Theory Courses

<table>
<thead>
<tr>
<th>Years of Experience</th>
<th>(n)</th>
<th>Percentage</th>
</tr>
</thead>
<tbody>
<tr>
<td>Less than 5</td>
<td>22</td>
<td>19.1</td>
</tr>
<tr>
<td>5-10</td>
<td>21</td>
<td>18.3</td>
</tr>
<tr>
<td>11-20</td>
<td>39</td>
<td>33.9</td>
</tr>
<tr>
<td>21-30</td>
<td>22</td>
<td>19.1</td>
</tr>
<tr>
<td>Over 30</td>
<td>11</td>
<td>9.6</td>
</tr>
</tbody>
</table>

\(^a\) Cajun \((n = 1)\); Black Hispanic \((n = 1)\)
Academic Rank. Additionally, the participants were described on the variable academic rank. The largest group of the participants (n = 56, 48.8%) reported that their academic rank was assistant professor. The academic rank of the participants is presented in Table 6.

Table 6
Academic Rank as Reported by Louisiana Baccalaureate Nurse Educators Utilizing Technology While Teaching Nursing Theory Courses

<table>
<thead>
<tr>
<th>Academic Rank</th>
<th>n</th>
<th>Percentage</th>
</tr>
</thead>
<tbody>
<tr>
<td>Instructor</td>
<td>34</td>
<td>29.6</td>
</tr>
<tr>
<td>Assistant Professor</td>
<td>56</td>
<td>48.8</td>
</tr>
<tr>
<td>Associate Professor</td>
<td>15</td>
<td>13.0</td>
</tr>
<tr>
<td>Professor</td>
<td>10</td>
<td>8.7</td>
</tr>
<tr>
<td>Other</td>
<td>0</td>
<td>0.0</td>
</tr>
<tr>
<td><strong>Total</strong></td>
<td>115</td>
<td>100.1</td>
</tr>
</tbody>
</table>

*Total does not equal to 100% due to rounding

Previous Computer Training. The respondents were asked to indicate whether or not that had participated in any type of basic computer training class. The majority of the respondents (n = 89, 77.4%) reported that they had previous computer training whereas, 22.6% (n = 26) indicated that they had not participated in any type of basic computer training. In addition, of the respondents who reported that they had participated in computer training, 67.4% (n = 60) indicated that this
training prepared them to incorporate technology in their nursing theory courses.

Through open-ended responses, the participants were asked to indicate what types of previous computer training they had participated in. The individual responses were categorized. The types of computer training reported by the participants included: computer software training classes ($n = 27$); university-provided computer training ($n = 23$); college-level introductory computer class ($n = 9$); graduate-level computer course ($n = 5$); non-credit computer course ($n = 4$); and school of nursing computer training ($n = 3$). Eighteen participants failed to respond to this open-ended question. Individual participant responses are reported in Appendix G.

Use of a Computer at Home. Respondents were additionally described on the variable, use of a computer at home. The majority ($n = 114, 99.2\%$) of the respondents indicated that they used a computer at home and only one participant ($0.8\%$) reported not using a computer at home. The respondents’ reported uses of a computer at home are reported in Table 7. Additionally, the respondents were asked to indicate how they used a computer at home. Other uses of a computer at home reported by participants included on-line teaching ($n = 40$), shopping ($n = 8$), on-line gaming ($n = 5$), data analysis ($n = 3$), and completing work for doctoral studies ($n = 5$).

<table>
<thead>
<tr>
<th>Use of Computer</th>
<th>$n^a$</th>
<th>Percentage$^b$</th>
</tr>
</thead>
<tbody>
<tr>
<td>Word processing</td>
<td>110</td>
<td>95.7</td>
</tr>
</tbody>
</table>

(Table continued)
Preparing lectures/activities for theory course 109 94.8
Internet browsing 108 93.9
Personal e-mail 107 93.0
Work e-mail 99 86.1
On-line bill paying 54 47.0
Other 49 42.6
Spreadsheets 41 35.7
Money management 25 21.7

Total n = 114
Percentage of participants that use a computer at home. Total percentage does not equal 100% due to multiple choice response.
Other uses of a computer at home include: on-line teaching (n = 40); data analysis (n = 3); on-line gaming (n = 5); Class BlackBoard site (n = 1); on-line shopping (n = 8); Microsoft Office Publisher (n = 1); on-line computer testing (n = 1); reviewing educational materials (n = 1); research (n = 2); business management (n = 1); sewing (n = 1); music (n = 2); creative writing (n = 5); doctoral studies (n = 5); tax preparation (n = 1); on-line computer testing (n = 1); home recipe menu management (n = 2); chat room (n = 1)

Types of Technology Used in Theory Courses. Additionally, the participants were asked to indicate the types of technology used while teaching nursing theory courses. The technology used most frequently by Louisiana baccalaureate nurse educators while teaching nursing theory courses was the presentation software, PowerPoint© (n = 109, 93.9%). Table 8 presents the types of technology used by the subjects while teaching nursing theory courses.
Table 8
Types of Technology Used in Nursing Theory Courses as Reported by Louisiana Baccalaureate Nurse Educators

<table>
<thead>
<tr>
<th>Types of Technology Used</th>
<th>n</th>
<th>Percentage\textsuperscript{a}</th>
</tr>
</thead>
<tbody>
<tr>
<td>PowerPoint©</td>
<td>108</td>
<td>93.9</td>
</tr>
<tr>
<td>E-mail</td>
<td>92</td>
<td>80.0</td>
</tr>
<tr>
<td>BlackBoard©</td>
<td>88</td>
<td>76.5</td>
</tr>
<tr>
<td>Word Processing</td>
<td>80</td>
<td>69.6</td>
</tr>
<tr>
<td>Over-head projectors</td>
<td>54</td>
<td>47.0</td>
</tr>
<tr>
<td>Computer-Assisted Instruction</td>
<td>53</td>
<td>46.1</td>
</tr>
<tr>
<td>Smart Board</td>
<td>27</td>
<td>23.5</td>
</tr>
<tr>
<td>Video Recorders</td>
<td>23</td>
<td>20.0</td>
</tr>
<tr>
<td>WebCT©</td>
<td>17</td>
<td>14.8</td>
</tr>
<tr>
<td>Personal Digital Assistant (PDA)</td>
<td>12</td>
<td>10.4</td>
</tr>
<tr>
<td>Videoconferencing</td>
<td>11</td>
<td>9.6</td>
</tr>
<tr>
<td>Newsgroups</td>
<td>5</td>
<td>4.3</td>
</tr>
<tr>
<td>Other</td>
<td>0</td>
<td>0.0</td>
</tr>
</tbody>
</table>

\textsuperscript{a} Percentage of the total participants that responded. Percentage does not equal 100% due to multiple choice answers.
\textsuperscript{b} Total n = 115

**On-line Teaching.** Participants were additionally asked whether they taught an on-line nursing theory course. The majority (\textit{n} = 80, 69.6\%) of the respondents indicated that they did not teach courses on-line and only 30.4\% of the participants indicated that they did teach courses on-line.
Compensation for Incorporation of Technology. Additionally, the participants were asked to indicate if they received any additional compensation or “perks” for incorporation of technology in theory courses. Ninety-eight percent of the respondents (n = 113) indicated that they did not receive additional compensation for incorporating technology in theory courses and only 2% of the respondents indicated that they did receive additional compensation for incorporating technology into their theory courses.

Administrative Support for Incorporation of Technology. Participants were asked if they perceived that their administration supported their use of technology in the classroom. The majority (n = 68, 59.1%) of the respondents reported that they believed that their administration supported the use of technology in nursing theory courses, whereas 40.9% perceived that their administration did not support their efforts to utilize technology in nursing theory courses. The respondents who perceived that their administration supported their efforts to utilize technology were asked to indicate in what ways their administration supported the use of technology in their nursing theory courses. The participants utilized open-ended responses on the questionnaire indicating how administration supported the incorporation of technology within their institution. Some of the survey respondents provided multiple responses to this survey item. Each of these responses was categorized. These categories included: providing technology in-service training (n = 16), access to technological support and computer help desks (n = 20), allowing time off to attend technology in-services (n = 4), and providing needed technology equipment and software (n = 14). Individual participant responses are reported in Appendix H.
Research Objective Two

Describe the technology stressors that Louisiana baccalaureate nurse educators experience while teaching nursing theory courses as measured by the Nurse Educator Technostress Scale.

Responses to the NETS were measured on an interval level of measurement. Means and standard deviations for each question and an overall mean score were calculated. Reliability of the NETS was examined through the calculation of Cronbach’s alpha. According to Santos (1999, ¶ 7), “Cronbach’s alpha is an index of reliability associated with the variance accounted for by the true score of the underlying construct.” Cronbach’s alpha of the NETS instrument was determined to be .957, which according to George and Mallery (2003), Cronbach scores greater than .7 are considered to be acceptable coefficients, while scores greater than .9 are considered to be excellent.

Based on the results, Louisiana baccalaureate nurse educators experience mild technological stress while teaching nursing theory courses (Mean = 2.45, SD = .768). This finding was determined by using the following researcher-developed interpretive scale: 1 – 1.49 = no technological stress; 1.50 – 2.49 = mild technological stress; 2.50 – 3.49 = moderate technological stress; 3.50 – 4.49 = severe technological stress; and 4.50 – 5.00 = very severe technological stress. Furthermore, nurse educators rated computer hardware failure during class (Mean = 3.22, SD = 1.44) as causing the most technological stress, whereas, internet access during class preparation was rated as causing the least amount of stress (Mean 1.90, SD = .990). The means of each item of the NETS instrument is presented in
Table 9. However, a factor analysis of the NETS was not conducted since 175 completed questionnaires were not obtained during data collection and the sample size was not adequate to perform a factor analysis.

Table 9
Mean Scores of Nurse Educator Technostress Scale Items

<table>
<thead>
<tr>
<th>Scale Item</th>
<th>Mean</th>
<th>SD</th>
</tr>
</thead>
<tbody>
<tr>
<td>Computer hardware failure during class</td>
<td>3.22</td>
<td>1.43</td>
</tr>
<tr>
<td>Too much spam e-mail</td>
<td>3.16</td>
<td>1.37</td>
</tr>
<tr>
<td>Technology support during class time</td>
<td>2.79</td>
<td>1.33</td>
</tr>
<tr>
<td>Computer hardware failure during course preparation</td>
<td>2.70</td>
<td>1.53</td>
</tr>
<tr>
<td>Availability of technical support during course preparation</td>
<td>2.65</td>
<td>1.24</td>
</tr>
<tr>
<td>Loss of data during course preparation</td>
<td>2.64</td>
<td>1.37</td>
</tr>
<tr>
<td>Fear of computer viruses</td>
<td>2.64</td>
<td>1.12</td>
</tr>
<tr>
<td>Outdated computer technology</td>
<td>2.63</td>
<td>1.35</td>
</tr>
<tr>
<td>Need to learn new software</td>
<td>2.63</td>
<td>1.04</td>
</tr>
<tr>
<td>Knowledge of computer setup during class time</td>
<td>2.62</td>
<td>1.14</td>
</tr>
<tr>
<td>Fear of unauthorized access to files</td>
<td>2.62</td>
<td>1.17</td>
</tr>
<tr>
<td>Computer software failure during course preparation</td>
<td>2.60</td>
<td>1.16</td>
</tr>
<tr>
<td>Ability to incorporate technology into course</td>
<td>2.50</td>
<td>1.10</td>
</tr>
</tbody>
</table>

(Table continued)
<table>
<thead>
<tr>
<th>Issue</th>
<th>Mean</th>
<th>SD</th>
</tr>
</thead>
<tbody>
<tr>
<td>Work-group network failure during class</td>
<td>2.50</td>
<td>1.27</td>
</tr>
<tr>
<td>Computer software failures during class</td>
<td>2.49</td>
<td>1.34</td>
</tr>
<tr>
<td>Work-group network failure during course preparation</td>
<td>2.43</td>
<td>1.28</td>
</tr>
<tr>
<td>Not having needed software during course preparation</td>
<td>2.42</td>
<td>1.24</td>
</tr>
<tr>
<td>Knowledge of computer technology</td>
<td>2.40</td>
<td>1.02</td>
</tr>
<tr>
<td>Damage to storage media</td>
<td>2.38</td>
<td>1.38</td>
</tr>
<tr>
<td>Internet access during class time</td>
<td>2.37</td>
<td>1.20</td>
</tr>
<tr>
<td>Pressure to use technology</td>
<td>2.35</td>
<td>1.02</td>
</tr>
<tr>
<td>On-line course evaluations</td>
<td>2.31</td>
<td>1.06</td>
</tr>
<tr>
<td>Knowledge of technology in classroom</td>
<td>2.28</td>
<td>1.01</td>
</tr>
<tr>
<td>Access to technology during class time</td>
<td>2.26</td>
<td>1.10</td>
</tr>
<tr>
<td>Computer technology makes me feel stressed</td>
<td>2.23</td>
<td>1.04</td>
</tr>
<tr>
<td>Forget to save work</td>
<td>2.22</td>
<td>1.24</td>
</tr>
<tr>
<td>Software is user friendly</td>
<td>2.18</td>
<td>0.93</td>
</tr>
<tr>
<td>Feel anxious using technology in classroom</td>
<td>2.14</td>
<td>1.03</td>
</tr>
<tr>
<td>Student knowledge of technology</td>
<td>2.10</td>
<td>1.05</td>
</tr>
<tr>
<td>Access to computer technology during course preparation</td>
<td>2.06</td>
<td>1.01</td>
</tr>
<tr>
<td>Use of Personal Digital Assistants (PDAs) to organize course schedule</td>
<td>2.03</td>
<td>1.21</td>
</tr>
<tr>
<td>Student access to technology</td>
<td>1.92</td>
<td>0.87</td>
</tr>
</tbody>
</table>

(Table continued)
Availability of internet access during course preparation 1.90 .99

Scale items: 1 = no stress, 2 = little stress, 3 = moderate stress, 4 = stressful, 5 = very stressful

**Research Objective Three**

Determine if a relationship exists between Louisiana nurse educators’ perceived technology stress as measured by the Nurse Educator Technostress Scale and the following demographic variables:

- age
- gender
- ethnic origin
- educational level
- years of experience as a nurse educator
- academic rank
- previous computer training
- use of a computer at home
- on-line teaching
- compensation for incorporation of technology in nursing theory classes
- perceived administrative support for utilizing technology in nursing theory classes

This objective was accomplished through the calculation of one-way ANOVAs to determine if differences existed between the levels of the independent variables and the NETS overall mean. The assumption of homogeneity of variance was met for each ANOVA test. Results indicated that no significant differences
existed between the demographic and professional variables (age, gender, ethnic origin, educational level, years of experience as a nurse educator, academic rank, previous computer training, use of a computer at home, on-line teaching, and compensation for incorporation of technology in nursing theory classes) and the independent variable, NETS overall mean. Results are reported in Appendix G. Results indicated that there were significant differences, $F = 14.941 (1, 113), p < .001$, in the NETS mean score by the variable, perceived administrative support. The complete analysis of variance findings for the variable, perceived administrative support is presented in Table 10. Results indicated that the mean NETS score tended to be lower when the participants perceived that their administration supported the use of technology in their nursing theory courses.

Table 10
Analysis of Variance Illustrating Differences in the Variable, Perceived Administrative Support as Reported by Respondents of the Nurse Educator Technostress Scale

<table>
<thead>
<tr>
<th>Source</th>
<th>SS</th>
<th>df</th>
<th>MS</th>
<th>$F^a$</th>
<th>$p^b$</th>
</tr>
</thead>
<tbody>
<tr>
<td>Between groups</td>
<td>7.860</td>
<td>1</td>
<td>7.860</td>
<td>14.941</td>
<td>&lt;.001</td>
</tr>
<tr>
<td>Within groups</td>
<td>59.443</td>
<td>113</td>
<td>.526</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Total</td>
<td>67.302</td>
<td>114</td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

$^a$One-way analysis of variance

$^b$.05 Alpha Level for 2-Tailed Test of Significance
Research Objective Four

Determine if a model exists which explains a significant portion of the variance in technological stress as measured by the Nurse Educator Technostress Scale from the following demographic characteristics:

- age
- gender
- ethnic origin
- educational level
- years of experience as a nurse educator
- academic rank
- previous computer training
- use of a computer at home
- on-line teaching
- compensation for incorporation of technology in nursing theory classes
- perceived administrative support for utilizing technology in nursing theory classes

In order to accomplish this objective, a multiple regression analysis was conducted to determine if a model exists which explains Louisiana baccalaureate nurse educators’ technological stress. Prior to analysis, each variable was analyzed for normality. Results indicated that the variable, gender was positively skewed (Skewness = 3.957, Kurtosis = 13.909) which corresponds to the fact that the majority of the participants were female (n = 103, 94.5%). Furthermore, the variable, receive additional compensation was also determined to be not normally distributed
(Skewness = -9.055, Kurtosis = 82.0). Because this variable was measured on a
nominal scale, transformation of the variable was not appropriate. The dependent
variable, NETS mean (Mean = 2.45, SD = .768) was normally distributed (Skewness
= .224, Kurtosis = -.792) as indicated by the normal curve pattern displayed in the
histogram in Figure 1. Figure 2 depicts the spread of the standardized residuals for
the dependent variable, Nurse Educator Technostress Mean, which indicates that
the standardized residuals are normally distributed (Mean = 1.18, SD = .996). A
scatter plot depicting unstandardized predicted values and standardized residuals,
revealed a non-random pattern.

Figure 1
Histogram Depicting Normal Distribution of Nurse Educator Technostress Scale
Mean
For the variables, age, gender, ethnicity, educational level, academic rank, and years of nursing education experience, each category was dummy-coded in order to enter these variables into the multiple regression analysis. A new dichotomous variable was created for each level of the variables minus one level. For the category of age, four new variables were created. These included: age 25-34, 35-44, 45-54, and 55 years and older. For the variable, gender, two categories were created one for females and one for males. For the variable, ethnicity, three new categories were created. These categories were African American, Caucasian, and Hispanic. The variable, educational level was coded into two separate categories: master's and doctorate. The variable, academic rank was coded into three new categories: instructor, assistant professor, and associate professor. Finally, the variable, years of nursing education experience was coded into four new variables: 5-10, 11-20, 21-30, and over 30 years of experience. Each subject was entered into the data set as belonging to a group or not belonging to a group.
The study variables were examined for evidence of collinearity by scrutinizing VIF values and TOL values. In this study, no collinearity issues were present among the variables. TOL values ranged from .946 to 1.0 and VIF values ranged from 1.00 to 1.057.

The data set was examined for outliers using standardized residual values, studentized residuals, and studentized deleted residuals. Four possible outliers were identified with standardized residual values greater than 2.0; studentized residuals greater than $t_{cv} 1.980$, and studentized deleted residuals greater than $t_{cv} 1.980$. The data set was examined for the presence of influencers based on the following formula: $h_i > 2(k+1)/N$. No cases were identified as potential influencers based on a leverage cutoff of .4348. Furthermore, no influencers were detected based on large Cook's D values, relative to the other cases. Therefore, it was assumed that there were no influential cases in the data set.

Prior to the deletion of the four detected outliers, perceived administrative support was the only variable which entered into the regression equation. The nature of the impact of this variable is that when Louisiana Baccalaureate nurse educators perceived that their administration supported the incorporation of technology in their theory courses, they tended to have a lower level of technological stress. The overall regression analysis was significant ($F = 14.157$, $p < .001$) and explained 12% of the overall variance in the dependent variable, nurse educator technostress score as indicated by the One-way Analysis of Variance Analysis (ANOVA). See Table 11 for ANOVA results. See Table 12 for presentation of regression findings. All regression coefficients were significant at the .05 level. See Table 13 for the presentation of
regression equation coefficients. Furthermore, the descriptives for the independent variables which did not enter into the regression equation are presented in Table 14.

Table 11
Significance of Perceived Administrative Support in Predicting Louisiana Baccalaureate Nurse Educator’s Technological Stress

<table>
<thead>
<tr>
<th>Predictor</th>
<th>df</th>
<th>SS</th>
<th>MS</th>
<th>F^a</th>
<th>p^b</th>
</tr>
</thead>
<tbody>
<tr>
<td>Perceived Admin Support^c</td>
<td>1</td>
<td>7.489</td>
<td>7.489</td>
<td>14.157</td>
<td>&lt;.001</td>
</tr>
<tr>
<td>Between Groups</td>
<td>110</td>
<td>58.185</td>
<td>.529</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Within Groups</td>
<td>111</td>
<td>65.674</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Total</td>
<td>111</td>
<td>65.674</td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

^a One-way Analysis of Variance  
^b 0.05 Alpha Level for the 2-Tailed Test of Significance  
^c Perceived Administrative Support

Table 12
Regression Analysis Predicting Louisiana Baccalaureate Nurse Educators’ Technological Stress

<table>
<thead>
<tr>
<th>Model</th>
<th>R</th>
<th>R^2</th>
<th>Adjusted R^2</th>
<th>SEE^a</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>.342b</td>
<td>.117</td>
<td>.109</td>
<td>.72529</td>
</tr>
</tbody>
</table>

^a Standard Error of the Estimate  
^b Predictors: Constant, Perceived Administrative Support

Table 13
Standardized Regression Coefficients, t Values, Significance Levels for Model Predicting Louisiana Baccalaureate Nurse Educators’ Technological Stress

<table>
<thead>
<tr>
<th>Variable</th>
<th>Unstandardized Coefficient</th>
<th>S.E.^a</th>
<th>Beta</th>
<th>t</th>
<th>p</th>
</tr>
</thead>
<tbody>
<tr>
<td>Constant</td>
<td>2.759</td>
<td>.106</td>
<td></td>
<td>26.083</td>
<td>&lt;.001 (Table continued)</td>
</tr>
<tr>
<td>Variable</td>
<td>Beta In</td>
<td>t</td>
<td>p</td>
<td>Partial Correlation</td>
<td>Tolerance</td>
</tr>
<tr>
<td>-------------------</td>
<td>---------</td>
<td>--------</td>
<td>----</td>
<td>---------------------</td>
<td>-----------</td>
</tr>
<tr>
<td>Age 25-34</td>
<td>-.139</td>
<td>-1.558</td>
<td>.122</td>
<td>-.148</td>
<td>.999</td>
</tr>
<tr>
<td>Age 35-44</td>
<td>-.053</td>
<td>-.584</td>
<td>.561</td>
<td>-.056</td>
<td>.996</td>
</tr>
<tr>
<td>Age 45-54</td>
<td>.056</td>
<td>.618</td>
<td>.538</td>
<td>.059</td>
<td>.999</td>
</tr>
<tr>
<td>Age 55 +</td>
<td>.059</td>
<td>.659</td>
<td>.511</td>
<td>.063</td>
<td>.997</td>
</tr>
<tr>
<td>Female</td>
<td>.053</td>
<td>.591</td>
<td>.556</td>
<td>.057</td>
<td>.999</td>
</tr>
<tr>
<td>Male</td>
<td>-.053</td>
<td>-.591</td>
<td>.556</td>
<td>-.057</td>
<td>.999</td>
</tr>
<tr>
<td>African American</td>
<td>-.160</td>
<td>-1.796</td>
<td>.075</td>
<td>-.170</td>
<td>.992</td>
</tr>
<tr>
<td>Caucasian</td>
<td>.071</td>
<td>.785</td>
<td>.434</td>
<td>.075</td>
<td>.999</td>
</tr>
<tr>
<td>Hispanic</td>
<td>.028</td>
<td>.307</td>
<td>.759</td>
<td>.029</td>
<td>.996</td>
</tr>
<tr>
<td>Master’s Degree</td>
<td>.104</td>
<td>1.148</td>
<td>.253</td>
<td>.109</td>
<td>.981</td>
</tr>
<tr>
<td>Doctoral Degree</td>
<td>-.078</td>
<td>-.870</td>
<td>.386</td>
<td>-.083</td>
<td>.992</td>
</tr>
<tr>
<td>Teaching &lt;5 years</td>
<td>-.026</td>
<td>-.290</td>
<td>.773</td>
<td>-.028</td>
<td>.997</td>
</tr>
<tr>
<td>Teaching 6-10 years</td>
<td>.042</td>
<td>.460</td>
<td>.646</td>
<td>.044</td>
<td>.996</td>
</tr>
</tbody>
</table>

*a Standard Error  
*b Perceived administrative support  

Table 14  
Excluded Variables, Standardized Coefficients, t Values, Significance Levels, Partial Correlations, and Tolerance Levels for the Regression Equation Predicting Louisiana Baccalaureate Nurse Educator’s Technological Stress
The cases identified as potential outliers were deleted one by one, and the regression analysis was recalculated. The variable, perceived administrative support was the only independent variable to enter the model. The overall model remained significant ($F = 21.455, p < .001$) with all potential outliers removed from the data set. The variance explained by the model increased to 16%. Based on these findings, it was determined that model 4 was the better predictor model because of the increase in $R^2$ and the decrease in the standard error of the estimate. Table 15 presents multiple regression results after each outlier was deleted. Of the identified outliers, three subjects had NETS means that ranged from 3.83 to 4.26, which was
considerably higher than the overall mean (2.45). These subjects were Caucasian, had a master’s degree, and had less than 10 years of experience teaching in nursing education. These subjects ranged in age from 35 to 54 years of age. Of these four subjects, only one of the subjects had a considerably lower NETS mean of 1.24. This subject was Caucasian, aged 35 to 44 years, had a master’s degree, and had taught in nursing education for 11 to 20 years.

Table 15
Regression Models Predicting Louisiana Baccalaureate Nurse Educators’ Technological Stressors after Removal of Outliers

<table>
<thead>
<tr>
<th>Model</th>
<th>R²</th>
<th>R²</th>
<th>Adjusted R²</th>
<th>SEE</th>
</tr>
</thead>
<tbody>
<tr>
<td>1c</td>
<td>.342</td>
<td>.117</td>
<td>.109</td>
<td>.72529</td>
</tr>
<tr>
<td>2d</td>
<td>.327</td>
<td>.107</td>
<td>.009</td>
<td>.71434</td>
</tr>
<tr>
<td>3e</td>
<td>.350</td>
<td>.123</td>
<td>.115</td>
<td>.70312</td>
</tr>
<tr>
<td>4f</td>
<td>.400</td>
<td>.160</td>
<td>.152</td>
<td>.66598</td>
</tr>
</tbody>
</table>

*a Predictors: Constant, Perceived Administrative Support
*b Standard Error of the Estimate
*c Subject 34 deleted
*d Subjects 34 & 51 deleted
*e Subjects 34, 51, & 60 deleted
*f Subjects 34, 51, 60, & 107 deleted
CHAPTER V

SUMMARY OF FINDINGS, CONCLUSIONS, AND RECOMMENDATIONS

The purpose of this study was to describe the technological stressors that Louisiana baccalaureate nurse educators experience while teaching nursing theory courses. Furthermore, this study sought to determine if a model existed which explained a significant portion of the variance of the dependent variable, nurse educator’s technological stress. Technological stress as defined by Broad (1984, p. 16) is “a modern disease of adaptation caused by an inability to cope with new technologies in a healthy manner.” The following research objectives were explored in this study:

1. Describe baccalaureate nurse educators in the state of Louisiana on the following personal and professional characteristics:
   - age
   - gender
   - ethnic origin
   - educational level
   - years of experience as a nurse educator
   - academic rank
   - previous computer training
   - use of a computer at home
   - use of technology in nursing theory classes
   - types of technology used in nursing theory classes
   - on-line teaching
• compensation for incorporation of technology in nursing theory classes
• perceived administrative support for utilizing technology in nursing theory classes.

2. Describe the technology stressors that Louisiana baccalaureate nurse educators experience while teaching nursing theory courses as measured by the Nurse Educator Technostress Scale.

3. Determine if a relationship exists between Louisiana nurse educators’ perceived technology stress as measured by the Nurse Educator Technostress Scale and the following demographic variables:
   • age
   • gender
   • ethnic origin
   • educational level
   • years of experience as a nurse educator
   • academic rank
   • previous computer training
   • use of a computer at home
   • use of technology in nursing theory classes
   • types of technology used in nursing theory classes
   • on-line teaching
   • compensation for incorporation of technology in nursing theory classes.
4. Determine if a model exists which explains a significant portion of the variance of technological stress as measured by the Nurse Educator Technostress Scale from the following demographic characteristics:

- age
- gender
- ethnic origin
- educational level
- years of experience as a nurse educator
- academic rank
- previous computer training
- use of a computer at home
- on-line teaching
- compensation for incorporation of technology in nursing theory classes
- perceived administrative support for utilizing technology in nursing theory classes

**Procedures**

The target population was defined as full-time baccalaureate nurse educators who had taught a baccalaureate nursing theory course in the previous six months and were currently using technology in the classroom. The accessible population was defined as full-time nurse educators teaching in 13 Louisiana baccalaureate nursing degree programs. A list of faculty names and e-mails was obtained from the
faculty directories on each school’s web page. For those unable to be obtained in this manner, a list of names and school addresses was obtained from the Louisiana State Board of Nursing. A census of 311 nurse educators teaching in 13 Louisiana baccalaureate nursing programs were selected to participate in the study. Two researcher-developed instruments were used to collect data: the Nurse Educator Technostress Scale and a demographic data form. Content validity was established by a panel of experts prior to data collection. The entire data collection process continued for a period of six weeks, and questionnaires received after April 23, 2005 were not entered into data analysis. The data collection process culminated in a total of 180 returned questionnaires resulting in a 58% response rate. However, of these completed questionnaires, 61 participants indicated that they had not taught a baccalaureate nursing theory course in the past six months, which indicated a frame error, and four additional participants indicated that they did not utilize technology in their theory courses. This resulted in 115 usable questionnaires indicating a 46% response rate.

**Summary of Findings**

**Research Objective One**

Findings for Research Objective One indicated that the responding faculty were predominately in the age category of 45-54 years (n = 47, 40.9%). The sample was primarily female (n = 111, 96.5%) and indicated their ethnic origin as white (n = 97, 84.3%). The largest group of the respondents indicated that they had been a nurse educator for 11-20 years (n = 39, 33.9%), their highest educational degree obtained was at the master’s level (n = 81, 70.4%), and their academic rank was
assistant professor (n = 56, 48.8%). The study participants were also asked if they had completed any basic computer training. The majority of the participants indicated that they had completed a basic computer training class (n = 89, 77.4%) and 67.4% percent (n = 60) indicated that this training prepared them for using technology in the classroom. The participants were additionally described on the use of a computer at home. The majority of the respondents (n = 114, 99.2%) indicated that they used a computer at home. Additionally, the participants were asked to indicate the types of technology used in the classroom. The technology used most frequently by Louisiana baccalaureate nurse educators while teaching nursing theory courses was the presentation software, PowerPoint© (n = 108, 93.9%). Moreover, the majority (n = 80, 69.6%) of the respondents indicated that they did not teach courses on-line and that they did not receive additional compensation for utilizing technology in the classroom (n = 113, 98.3%). Furthermore, the majority (n = 68, 59.1%) of the participants reported that they believed that their administration supported the use of technology in nursing theory courses. Participants indicated through multiple open-ended responses that their administration supported their use of technology in the class room by providing technology in-service training (n = 24), access to computer help desk and technological support (n = 28), updated technology hardware and software (n = 20), and by allowing time off to attend technology in-service training (n = 4).

**Research Objective Two**

Louisiana baccalaureate nurse educators’ technological stress was measured by the researcher-developed Nurse Educator Technological Stress Scale. The
respondents were asked to rate their level of technological stress utilizing the following anchored scale: (1) not at all; (2) little stress; (3) moderate stress; (4) stressful; (5) very stressful. Findings from this study indicate that Louisiana Baccalaureate Nurse Educators are experiencing technological stress while using technology in the classroom as indicated by the mean technological stress score (Mean = 2.45, SD = .768). Furthermore, nurse educators rated computer hardware failure during class (Mean = 3.22, SD = 1.44) as causing the most technological stress, whereas, internet access during class preparation was rated as causing the least amount of stress (Mean 1.90, SD = .990).

**Research Objective Three**

Research Objective Three sought to determine if there was a relationship between Louisiana Baccalaureate Nurse Educators’ technological stress as measured by the NETS and the following demographic and selected variables: age, gender, ethnicity, educational level, years teaching in nursing education, previous computer training, use of a computer at home, teaching an on-line course, additional compensation for using technology in the classroom, and perceived administrative support. One-way ANOVAs were calculated to determine if significant differences existed between the NETS mean and the selected variables. Findings revealed that there were no significant differences between the NETS mean and the following variables: age, gender, ethnicity, educational level, years teaching in nursing education, previous computer training, use of a computer at home, teaching an on-line course, additional compensation for using technology in the classroom. In addition, findings from this study also found a significant difference between the
Research Objective Four

Research Objective Four sought to determine if a model existed which explained a significant portion of the variance of the dependent variable, nurse educators’ technological stress from the following demographic variables and selected variables: age, gender, ethnic origin, educational level, years of experience as a nurse educator, academic rank, previous computer training, use of a computer at home, participation in technology training, and perceived administrative support for utilizing technology in nursing theory classes. This objective was accomplished through the use of multiple regression analysis. A model explaining a significant portion of the variance in the dependent variable was found ($F = 21.455$, $p < .001$). Findings revealed that the variable perceived administrative support was the only significant variable to enter the model and explained 16% of the variance in the dependent variable, nurse educators’ technological stress.

Conclusions

Conclusion One

Baccalaureate nursing education in Louisiana has an aging faculty and is facing a shortage of nurse educators due to retirement. This is supported by findings from this study in that the largest group of the participants were 45-54 years of age ($n = 47$, 40.9%). This finding is supported by Trossman (2002) who stated that the average age of faculty in baccalaureate and graduate nursing programs in the year 2000 was 50 years of age. In addition, Louisiana baccalaureate nurse educators are
experienced in nursing education. This is based on the finding that the largest group of the study participants had indicated they had taught in nursing education for 11–20 years (n = 39, 33.9%). Furthermore, 29% (n = 33) indicated that they had taught in nursing education for 21–30 years. Louisiana baccalaureate nurse educators are experienced in using computer technology. This is evidenced by the finding that 99.2% (n = 114) of the participants reported using a computer at home. Some of the reported uses included personal e-mail, work e-mail, internet browsing, and preparing lectures for theory courses.

**Conclusion Two**

Louisiana baccalaureate nurse educators are experiencing mild technological stress. This conclusion is supported by the mean score of the NETS (Mean = 2.45, SD = .768). This finding was determined by using the following researcher-developed scale: 1 – 1.49 = no technological stress; 1.50 – 2.49 = mild technological stress; 2.50 – 3.49 = moderate technological stress; 3.50 – 4.49 = severe technological stress; and 4.50 – 5.00 = very severe technological stress. The study participants rated “computer hardware failure during class time” as the most stressful factor contributing to technological stress (Mean = 3.22, SD = 1.44). This finding is similar to the findings of Beam et al. (2003) who reported that journalism and mass communication faculty were also experiencing technological stress. Readily accessible technological support and having up-to-date and functional equipment is necessary in order to reduce the likelihood of nurse educators experiencing technological stress.
Conclusion Three

There is no relationship between the demographic variables, age, gender, ethnic origin, and educational level and Louisiana baccalaureate nurse educators’ technological stress. This finding supports the findings from a previous study conducted by Yang et al. (1999), which examined the relationship between computer anxiety and selected demographic variables. Yang et al. (1999) found no significant relationships between age, teaching area, and ethnic origin. However, the researchers did find a relationship between educational level and the development of computer anxiety; those educators with a higher educational level experienced less computer anxiety. In addition, the finding that ethnicity was not related to the development of technostress does not support a previous study by Timmons (2000). Timmons found that African Americans experienced more computer-related stress compared to other ethnic groups. This finding should be investigated further with a larger sample of African Americans to determine if this ethnic group does experience greater levels of technological stress.

There is no relationship between the variable, academic rank and the NETS mean. This finding supports previous results from Kupersmith (2005) and Beam et al. (2003). However, Voakes et al. (2003) found that a relationship existed between academic rank and journalism and mass communication educators’ technological stress. Journalism and mass communication educators who were at the academic rank of associate professor had higher levels of technological stress compared to those at assistant professor and full professor.
Conclusion Four

The variable, perceived administrative support was a significant predictor of Louisiana baccalaureate nurse educators’ technological stress. If baccalaureate nurse educators perceive that their administration supports the use of technology in the classroom, they will experience a lower level of technological stress. The majority of the participants in this study reported that they perceived their administration did support their efforts to utilize technology in the classroom \( (n = 68, 59.1\%) \) through providing access to technological support and up-to-date equipment. This finding supports previous research by Kupersmith (2005). Kupersmith (2005) found lower reported levels of technological stress when administration provided adequate technological support and training. Moreover, Beam et al. (2003) and Voakes et al. (2003) also found that the perceived quality of the technology support available to faculty was negatively related to the level of technological stress. This finding is important for university administrators especially during the current shortage of nurse educators. By providing continuous access to technical support and updated technology for course preparation and for use in the classroom, administrators can provide an atmosphere that is supportive of technology usage. As stated by Trossman (2002), the current nurse education workforce is aging and few nurses are qualified to take their place. Universities should consider creating a technology orientation for new staff members to familiarize these new employees with the educational technologies available. Furthermore, universities should have dedicated technical support staff for each department who are available in person and by phone when issues involving technology arise. Moreover, university budgets
should allow for the development of technology centers where educators can receive hands-on assistance for technology issues related to teaching and professional development. If administrators can provide a work environment free of technological stress, the current nurse educator workforce will have increased job satisfaction and will be less inclined to leave their current teaching positions. Furthermore, universities will be more likely to attract and retain new nurse educators if a technological-stress free environment is evident.

**Recommendations for Future Research**

Because of the low percentage of variance explained by the regression model, other variables are responsible for predicting baccalaureate nurse educators' technological stress. Qualitative research can be conducted to explore the technological stressors experienced by baccalaureate nurse educators. Due to the significance of the variable, perceived administrative support in this study, future research should be conducted to investigate specific variables which measure administrative support.

The majority of the participants in this study were Caucasian. Therefore, future research should include subjects of varying ethnic origin to determine if this variable is a significant predictor of nurse educators' technological stress. In addition, the majority of the participants were female. This variable should also be reexamined to determine if gender is a significant predictor of nurse educators’ technological stress. In this study, data collection was conducted during the middle of a semester. The technological stress of the nurse educators in this study may have been lower since the participants had been using the technology for six weeks.
Data collection for future research should be conducted at the beginning of a semester to determine if differences exist among nurse educators' technological stress at the beginning of a semester and at the middle of a semester.

The increase in distance education courses requires nurse educators to use more technology in their educator role. However, the majority of the participants in this study reported that did not teach courses at a distance. Research should be conducted to investigate the incidence of technological stress among nurse educators who are teaching courses at distance sites.

Furthermore, nurse educators are exposed to a multitude of technology in the clinical setting while teaching clinical nursing courses. Nurse educators are required to be experienced in the use of medical technologies in order to teach students how to care for patients in the hospital setting. These technologies which are often updated include computerized patient charting, intravenous infusion pumps, blood glucose meters, and electrocardiogram monitors. Studies which examine the incidence of technological stress among nurse educators' teaching in the clinical setting should be conducted. Furthermore, research should be conducted to determine if differences exist between the technological stress experienced while teaching in the classroom and the technological stress experienced in the clinical setting.

Rapid increases in the development of educational technologies warrant the need for this study to be repeated in two years to examine the impact of these changes on nurse educators' technological stress. Furthermore, with the impending
nurse educator shortage, future studies should examine the effect of this shortage on nurse educators’ technological stress.
REFERENCES


APPENDIX A

APPROVED INSTITUTIONAL REVIEW BOARD APPLICATION
APPLICATION FOR EXEMPTION FROM INSTITUTIONAL OVERSIGHT

Unless they are qualified as meeting the specific criteria for exemption from Institutional Review Board oversight, ALL LSU research/projects involving human subjects, or samples or data obtained from humans, directly or indirectly, with or without their consent, must be approved or exempted in advance by the LSU IRB. This Form helps the PI determine if a project may be exempted, and is used to request an exemption.

Instructions: Complete this form.

Exemption Applicant: If it appears that your study qualifies for exemption send:

(A) Two copies of this completed form,
(B) a brief project description (adequate to evaluate risks to subjects and to explain your responses to Parts A & B),
(C) copies of all instruments to be used. If this proposal is part of a grant proposal include a copy of the proposal and all recruitment material.
(D) the consent form that you will use in the study

to: ONE screening committee member (listed at the end of this form) in the most closely related department/discipline or to IRB office.

If exemption seems likely, submit it. If not, submit regular IRB application help is available from Dr. Robert Mathews, 578-8692, irb@lsu.edu or any screening committee member.

Principal Investigator Mary S. Burke, RN, MSN Student? Y Y/N
Ph: (225) 667-3051 E-mail mburke3@lsu.edu Dept/Unit School of Human Resource Education and Workforce Development

If Student, name supervising professor Dr. Krisanna Machtmes Ph: (225) 578-2464
Mailing Address 34985 Sarah Lane Denham Springs, LA 70706 Ph: (225) 667-3051
Project Title Technical Stressors of Louisiana Baccalaureate Nurse Educators

Agency expected to fund project Student Funded
Subject pool (e.g. Psychology Students) Baccalaureate Nurse Educators
Circle any "vulnerable populations" to be used: (children <18; the mentally impaired, pregnant women, the aged, other). Projects with incarcerated persons cannot be exempted.

I certify my responses are accurate and complete. If the project scope or design is later changed I will resubmit for review. I will obtain written approval from the Authorized Representative of all non-LSU institutions in which the study is conducted.

PI Signature Mary S. Burke Date 3/1/05 (no per signature)
Part A: DETERMINATION OF "RESEARCH" and POTENTIAL FOR RISK

This section determines whether the project meets the Department of Health and Human Services definition of "research" and if not, whether it nevertheless presents more than "minimal risk" to humans that makes IRB review prudent and necessary.

1. Is the project a systematic investigation designed to develop or contribute to generalizable knowledge?

(Nota systematic investigation includes research development, testing and evaluation; therefore some instructional development and service programs will include a "research" component).

☑ YES

☐ NO

2. Does the project present physical, psychological, social or legal risks to the participants reasonably expected to exceed those risks normally experienced in daily life or in routine diagnostic physical or psychological examination or testing? You must consider the consequences if individual data inadvertently become public.

☐ YES Stop. This research cannot be exempted—submit application for IRB review.

☐ NO Continue to see if research can be exempted from IRB oversight.

3. Are any of your participants incarcerated?

☐ YES Stop. This research cannot be exempted—submit application for IRB review.

☑ NO Continue to see if research can be exempted from IRB oversight.

4. Are you obtaining any health information from a health care provider that contains any of the identifiers listed below?

A. Names

B. Address: street address, city, county, precinct, ZIP code, and their equivalent geocodes. Exception for ZIP codes: The initial three digits of the ZIP Code may be used, if according to current publicly available data from the Bureau of the Census: (1) The geographic unit formed by combining all ZIP codes with the same three initial digits contains more than 20,000 people; and (2) the initial three digits of a ZIP code for all such geographic units containing 20,000 or fewer people is changed to '000'.

91
LSU IRB
REQUEST FOR WAIVER OF INFORMED CONSENT

FROM:
Name: Mary S. Burke
Department: School of Human Resource Education and Workforce Development

TO:
Robert C. Mathews, Chairman
Institutional Review Board for Research with Human Subjects

DATE:
March 3, 2005

RE:
IRB# E2895

TITLE: Technological Stressors of Louisiana Baccalaureate Nursing Educators

I am requesting waiver of written Informed Consent because:

(a) The consent document would create the principal risk of participating in the study.

Or

(b) The research presents no more than minimal risk of harm to subjects and involves no procedures for which written consent is normally required outside of the research context.

*** A copy of the script you will use for oral consent should be included with this form. This script should contain the necessary elements for written informed consent (see http://app022.lsu.edu/osp/osp.nsf/$content/LSU%20IRB%20Documents/$File/checklist.txt)
APPENDIX B

LETTER TO THE DEANS
January 31, 2005

Dear Dean 

I am PhD student at Louisiana State University School of Human Resource Education and Workforce Development conducting dissertation research on the technological stressors faced by Louisiana baccalaureate nurse educators while incorporating technology in nursing theory courses. I am requesting your permission to survey the nursing faculty members at your institution. The survey will be completed on-line and would only require five to ten minutes of your faculty member’s time. The responses will be maintained confidential. Because nurse educators are being overwhelmed from the demands to incorporate technology in their teaching methodologies, they are at risk for experiencing technological stress. The results from this study could provide a knowledge base related to the technological stressors of nurse educators. Moreover, results from this study could support the need for a university-sponsored technology orientation and continuous technological support in order to reduce the incidence of technological stress among nurse educators.

In order to contact your faculty members, I need a list of names and e-mail addresses of the faculty members teaching theory courses in the baccalaureate curriculum. Please feel free to contact me at (225) 921-5182 or (225) 765-2324 or Dr. Krisanna Machtmes at (225) 578-2464 for any questions or concerns you may have about the study.

The results from this study will be available August 2005. If you would like information about the results, please contact me at the above numbers. Thank you for your time and assistance.

Sincerely,

Mary S. Burke, MSN, RN, CCRN
PhD candidate
Louisiana State University School of Human Resource Education and Workforce
APPENDIX C

INITIAL LETTER TO NURSE EDUCATORS
Dear Nurse Educator,

I am a doctoral student at Louisiana State University and also a faculty member at Southeastern Louisiana University School of Nursing. I am conducting dissertation research on the technological stressors experienced by baccalaureate nurse educators. Nurse educators have been impacted by the rapid changes in technology in recent years. Nurse educators are now communicating via e-mail, conducting literature searches via the internet, completing student academic advising on-line, and using computer technology in the classroom. However, nurse educators today are also faced with increasing workloads due to faculty shortages and the demand from administration and students to teach traditional courses in a non-traditional manner. As a result of this interaction with technology, nurse educators may experience technological stressors.

This study will attempt to describe the technological stressors that Louisiana baccalaureate nurse educators experience while teaching nursing theory courses. Participation in this study is voluntary and you may withdraw at any time. Although there will be no immediate benefits to you for participating in this study, the findings could provide useful information about the technological stressors that nurse educators experience while incorporating technology into nursing theory courses. Furthermore, the results could provide support of the need for faculty technology training and access to technical support. Your answers to the questionnaires will remain confidential. There are two questionnaires to complete, which should only take about 15 – 20 minutes of your time. A self-addressed stamped envelope to return the completed survey is enclosed for your convenience.

Completion of the questionnaires will serve as your consent to participate in the study. Please feel free to contact me at (225) 667-3051 or (225) 765-2324 or Dr. Krisanna Machtmes, graduate faculty advisor at (225) 578-2464 for any questions or concerns you may have about the study.

The results from this study will be available August 2005. If you would like information about the results, please contact me at the above numbers. Thank you in advance for your participation in this study.

Sincerely,

Mary S. Burke, MSN, RN, CCRN
PhD candidate
Louisiana State University School of Human Resource Education and Workforce Development
APPENDIX D

RESEARCH INSTRUMENTS
Nurse Educator’s Technostress Scale

Directions: Please respond to the following statements relating to technology issues experienced by faculty utilizing technology while teaching theory courses. Think about your feelings related to computer technology in the past six months and respond to the statements using the following scale (1) no stress; (2) little stress; (3) moderate stress; (4) stressful; (5) very stressful. Please circle the number that most corresponds to the stress you experience.

(A) Technology issues related to course planning and development:

<table>
<thead>
<tr>
<th></th>
<th>No stress</th>
<th>Little stress</th>
<th>Moderate Stress</th>
<th>Stressful</th>
<th>Very Stressful</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>Access to computer technology during course preparation</td>
<td>1</td>
<td>2</td>
<td>3</td>
<td>4</td>
</tr>
<tr>
<td>2</td>
<td>The computer software is user friendly</td>
<td>1</td>
<td>2</td>
<td>3</td>
<td>4</td>
</tr>
<tr>
<td>3</td>
<td>Knowledge of computer technology</td>
<td>1</td>
<td>2</td>
<td>3</td>
<td>4</td>
</tr>
<tr>
<td>4</td>
<td>Pressure to use technology in course</td>
<td>1</td>
<td>2</td>
<td>3</td>
<td>4</td>
</tr>
<tr>
<td>5</td>
<td>Availability of technical support</td>
<td>1</td>
<td>2</td>
<td>3</td>
<td>4</td>
</tr>
<tr>
<td>6</td>
<td>Computer hardware failures</td>
<td>1</td>
<td>2</td>
<td>3</td>
<td>4</td>
</tr>
<tr>
<td>7</td>
<td>Computer software failures</td>
<td>1</td>
<td>2</td>
<td>3</td>
<td>4</td>
</tr>
<tr>
<td>8</td>
<td>Loss of data</td>
<td>1</td>
<td>2</td>
<td>3</td>
<td>4</td>
</tr>
</tbody>
</table>

Please continue the survey on the next page
9. Outdated computer technology
   | No stress | Little stress | Moderate Stress | Stressful | Very Stressful |
   | 1         | 2            | 3               | 4         | 5             |

10. Not having needed computer software
    | No stress | Little stress | Moderate Stress | Stressful | Very Stressful |
    | 1         | 2            | 3               | 4         | 5             |

11. Work-group network failure
    | No stress | Little stress | Moderate Stress | Stressful | Very Stressful |
    | 1         | 2            | 3               | 4         | 5             |

12. Damage to storage media
    | No stress | Little stress | Moderate Stress | Stressful | Very Stressful |
    | 1         | 2            | 3               | 4         | 5             |

13. Forget to save work
    | No stress | Little stress | Moderate Stress | Stressful | Very Stressful |
    | 1         | 2            | 3               | 4         | 5             |

14. Need to learn new software
    | No stress | Little stress | Moderate Stress | Stressful | Very Stressful |
    | 1         | 2            | 3               | 4         | 5             |

15. Hard drive crashes
    | No stress | Little stress | Moderate Stress | Stressful | Very Stressful |
    | 1         | 2            | 3               | 4         | 5             |

16. Availability of Internet access
    | No stress | Little stress | Moderate Stress | Stressful | Very Stressful |
    | 1         | 2            | 3               | 4         | 5             |

17. Use of personal data assistant to keep track of course assignments, tests, etc.
    | No stress | Little stress | Moderate Stress | Stressful | Very Stressful |
    | 1         | 2            | 3               | 4         | 5             |

18. Too much unsolicited (spam) e-mails
    | No stress | Little stress | Moderate Stress | Stressful | Very Stressful |
    | 1         | 2            | 3               | 4         | 5             |

19. Fear of computer viruses
    | No stress | Little stress | Moderate Stress | Stressful | Very Stressful |
    | 1         | 2            | 3               | 4         | 5             |

Please continue the survey on the next page
20. Fear of unauthorized access to your saved information (personal documents, tests, assignments, etc)

No stress Little stress Moderate Stress Stressful Very Stressful
1 2 3 4 5

21. On-line course evaluation methods

No stress Little stress Moderate Stress Stressful Very Stressful
1 2 3 4 5

22. Ability to incorporate computer technology into a unit of study

No stress Little stress Moderate Stress Stressful Very Stressful
1 2 3 4 5

(B) Technological stressors experienced during course delivery:

23. Computer technology makes me feel stressed

No stress Little stress Moderate Stress Stressful Very Stressful
1 2 3 4 5

24. Feel anxious when faced with utilizing computer technology in classroom

No stress Little stress Moderate Stress Stressful Very Stressful
1 2 3 4 5

25. Student access to course materials

No stress Little stress Moderate Stress Stressful Very Stressful
1 2 3 4 5

26. Students’ knowledge of computer technology

No stress Little stress Moderate Stress Stressful Very Stressful
1 2 3 4 5

27. Access to computer technology during class time

No stress Little stress Moderate Stress Stressful Very Stressful
1 2 3 4 5

28. Computer hardware failure

No stress Little stress Moderate Stress Stressful Very Stressful
1 2 3 4 5

29. Computer software failure

No stress Little stress Moderate Stress Stressful Very Stressful
1 2 3 4 5

Please continue the survey on the next page
30. Knowledge of computer technology utilized in classroom

<table>
<thead>
<tr>
<th>No stress</th>
<th>Little stress</th>
<th>Moderate Stress</th>
<th>Stressful</th>
<th>Very Stressful</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>2</td>
<td>3</td>
<td>4</td>
<td>5</td>
</tr>
</tbody>
</table>

31. Technical support during class time

<table>
<thead>
<tr>
<th>No stress</th>
<th>Little stress</th>
<th>Moderate Stress</th>
<th>Stressful</th>
<th>Very Stressful</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>2</td>
<td>3</td>
<td>4</td>
<td>5</td>
</tr>
</tbody>
</table>

32. Knowledge of how to setup computer technology in classroom

<table>
<thead>
<tr>
<th>No stress</th>
<th>Little stress</th>
<th>Moderate Stress</th>
<th>Stressful</th>
<th>Very Stressful</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>2</td>
<td>3</td>
<td>4</td>
<td>5</td>
</tr>
</tbody>
</table>

33. Internet access in classroom

<table>
<thead>
<tr>
<th>No stress</th>
<th>Little stress</th>
<th>Moderate Stress</th>
<th>Stressful</th>
<th>Very Stressful</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>2</td>
<td>3</td>
<td>4</td>
<td>5</td>
</tr>
</tbody>
</table>

34. Work-group network failure

<table>
<thead>
<tr>
<th>No stress</th>
<th>Little stress</th>
<th>Moderate Stress</th>
<th>Stressful</th>
<th>Very Stressful</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>2</td>
<td>3</td>
<td>4</td>
<td>5</td>
</tr>
</tbody>
</table>

35. Loss of data

<table>
<thead>
<tr>
<th>No stress</th>
<th>Little stress</th>
<th>Moderate Stress</th>
<th>Stressful</th>
<th>Very Stressful</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>2</td>
<td>3</td>
<td>4</td>
<td>5</td>
</tr>
</tbody>
</table>

**Demographic Information**

**DIRECTIONS:** Please place a √ by your corresponding answer to the following questions.

1. What is your age (as of your last birthday)?
   a. _____ under 25
   b. _____ 25-34 years
   c. _____ 35-44 years
   d. _____ 45-54 years
   e. _____ 55 years and older

2. What is your gender?
   a. _____ Male
   b. _____ Female

Please continue the survey on the next page.
3. What is your ethnic background?
   a. ____ African American
   b. ____ Asian/Pacific Islander
   c. ____ Caucasian
   d. ____ Hispanic
   e. ____ Native American
   f. ____ Other, Please Specify ____________________

4. What is your level of education?
   a. _____ Master’s
   b. _____ Doctorate
   c. _____ Other, Please Specify ____________________

5. How many years have you worked in nursing education (including the current year)?
   a. _____ less than 5 years
   b. _____ 5 to 10 years
   c. _____ 11 to 20 years
   d. _____ 21 to 30 years
   e. _____ over 31 years

6. What is your academic rank?
   a. ____ Instructor
   b. ____ Assistant Professor
   c. ____ Associate Professor
   d. ____ Professor
   e. ____ Other, Please Specify

7. Have you taught a baccalaureate nursing theory course within the past six months?
   a. _____ Yes
   b. _____ No

If you answered no to question #7, you do not need to answer any more questions. Thank you for participating in this study. Your responses are very important in understanding the technological stressors that nurse educators experience while teaching nursing theory courses. Please return the completed survey in the enclosed self-addressed stamped envelope.

Please continue the survey on the next page.
8. Have you had any type training class that has taught you how to operate a computer and use e-mail and office productivity software such as word processing and presentation software?
   a. _____ Yes
   b. _____ No
   c. What type(s) of training? (Please explain) ____________________

9. If you have participated in computer training, do you feel that the training you received adequately prepared you for utilizing technology in your nursing theory courses?
   a. _____ Yes
   b. _____ No

10. Do you currently use a computer at home?
    a. _____ Yes
    b. _____ No

   If you answered no to question #10, please skip to question #12.

11. In what ways do you use a computer at home? (Please check all that apply)
    a. _____ Personal e-mail
    b. _____ Work e-mail
    c. _____ Internet browsing
    d. _____ On-line bill paying
    e. _____ Money management (using Quicken, Microsoft Money, etc)
    f. _____ Word processing
    g. _____ Preparing lectures/activities for theory course
    h. _____ Other, please specify _________________________

12. Are you currently utilizing technology (such as video-conferencing, video-recorders, BlackBoard©, Presentations using an In-Focus machine, etc.) in your teaching methodology?
    a. _____ Yes
    b. _____ No

   If you answered no to question #12, you do not need to answer any more questions. Thank you for your participation. Your responses are very important in understanding the technological stressors that nurse educators experience while teaching nursing theory courses. Please return the completed survey in the enclosed self-addressed stamped envelope.

Please continue the survey on the next page.
13. What types of technology do you currently utilize in your theory courses? (Please check all that apply)
   a. _____ Videoconferencing
   b. _____ Newsgroups
   c. _____ Email
   d. _____ Over-head projectors
   e. _____ Video Recorders
   f. _____ Computer-Assisted Instruction
   g. _____ Smart Board
   h. _____ Personal Digital Assistant (PDA)
   i. _____ Powerpoint
   j. _____ BlackBoard©
   k. _____ WebCT©
   l. _____ Word Processing
   m. _____ Other, please specify ___________________________

14. Are you currently teaching an on-line course?
   a. ____ Yes
   b. ____ No

15. Do you receive additional compensation or other “perks” for utilizing technology in your theory courses?
   a. ____ Yes
   b. ____ No

16. Do you feel that your administration supports your effort to utilize technology while teaching theory courses (such as time off for technology training, on-site technological support, technological support help desk, updated technology, in-service training on new technology, etc.)?
   a. ____ Yes
   b. ____ No
   c. If yes, how does your administration support your efforts?

____________________________________________________

____________________________________________________

Please continue the survey on the next page.
17. The results of this study will be available after August, 2005. If you would like a copy of the results, please provide your contact information below.

Name: ______________________
Address: ____________________
                                   ____________________
E-mail: ______________________

Thank you for your time and completion of this survey. Your responses are very important in understanding the technological stressors that nurse educators experience while teaching nursing theory courses.

Please return the completed survey in the enclosed self-addressed stamped envelope.
APPENDIX E

FOLLOW-UP POSTCARD SENT TO STUDY PARTICIPANTS
Dear Nurse Educator,

Several weeks ago, you received an invitation to complete a survey regarding the technological stressors that you experience while teaching nursing theory courses. I have not received your input as of yet. Your completion of this survey is important in understanding the technological stressors of Louisiana baccalaureate nurse educators. I would really appreciate it if you would take a few minutes out of your busy schedule to complete the survey. If you need another copy of the instrument, you may contact me at (225) 667 – 3051 or e-mail, mburke3@lsu.edu, and I will send you one.

Thank you in advance for your participation.

Sincerely,

Mary S. Burke, MSN, RN, CCRN
APPENDIX F

THIRD LETTER SENT TO PARTICIPANTS
April 4, 2005

Dear Nurse Educator,

Several weeks ago, you received an invitation to participate in a research study on the technological stressors experienced by baccalaureate nurse educators. I have not yet received your input and data collection will soon be ending. Your responses to the survey are very important in understanding the technological stressors experienced by Louisiana baccalaureate nurse educators. Although there will be no immediate benefits to you for participating in the study, these findings could provide useful information about the technological stressors that nurse educators experience while incorporating technology into nursing theory courses. Furthermore, these results could provide support of the need for faculty technology training and access to technical support. Your answers to the questionnaires will remain confidential. There are two questionnaires to complete, which should only take about 15 – 20 minutes of your time. A self-addressed stamped envelope is enclosed for your convenience.

Please feel free to contact me at (225) 667-3051 or (225) 765-2324 or Dr. Krisanna Machtmes, graduate faculty advisor at (225) 578-2464 for any questions or concerns you may have about the study. The results from this study will be available August 2005. If you would like information about the results, please contact me at the above numbers. Thank you in advance for your participation in this study.

Sincerely,

Mary S. Burke, MSN, RN, CCRN
PhD candidate
Louisiana State University School of Human Resource Education and Workforce Development
APPENDIX G

TYPES OF COMPUTER TRAINING AS REPORTED BY LOUISIANA BACCALAUREATE NURSE EDUCATORS
Table 16
Types of Computer Training As Reported by Louisiana Baccalaureate Nurse Educators

<table>
<thead>
<tr>
<th>Response</th>
<th>n</th>
</tr>
</thead>
<tbody>
<tr>
<td>PowerPoint, distance learning methodologies, videoconferencing</td>
<td>1</td>
</tr>
<tr>
<td>Methodologies, BlackBoard training</td>
<td></td>
</tr>
<tr>
<td>Very basic computer instruction</td>
<td>1</td>
</tr>
<tr>
<td>Was a computer science as well as nursing major</td>
<td>1</td>
</tr>
<tr>
<td>Word, Word Perfect, BlackBoard, Smartboard</td>
<td>1</td>
</tr>
<tr>
<td>Basic BlackBoard class</td>
<td>4</td>
</tr>
<tr>
<td>In-service through the University</td>
<td>1</td>
</tr>
<tr>
<td>Continuing education course, self-directed instruction</td>
<td>1</td>
</tr>
<tr>
<td>PowerPoint course at facility, computer literacy course in college</td>
<td>1</td>
</tr>
<tr>
<td>Training at previous employers on Word and Excel</td>
<td>1</td>
</tr>
<tr>
<td>Classes on WebCT</td>
<td>1</td>
</tr>
<tr>
<td>Basic course on word processing</td>
<td>1</td>
</tr>
<tr>
<td>Went to classes on own time</td>
<td>1</td>
</tr>
<tr>
<td>Microsoft Office, PowerPoint</td>
<td>1</td>
</tr>
<tr>
<td>Hands-on introduction to BlackBoard, e-mail, training through</td>
<td>1</td>
</tr>
<tr>
<td>Learning Resource Coordinator for School of Nursing</td>
<td></td>
</tr>
<tr>
<td>Basic, intermediate, and advanced training on e-mail, BlackBoard</td>
<td>1</td>
</tr>
<tr>
<td>Training at university faculty center for excellence</td>
<td>2</td>
</tr>
<tr>
<td>E-mail, Word Perfect, PowerPoint, BlackBoard</td>
<td>1</td>
</tr>
<tr>
<td>Microsoft Word, WebCT</td>
<td>1</td>
</tr>
</tbody>
</table>

(Table continued)
<table>
<thead>
<tr>
<th>Training Type</th>
<th>Count</th>
</tr>
</thead>
<tbody>
<tr>
<td>Basic computer training class</td>
<td>2</td>
</tr>
<tr>
<td>Classes provided by Computer Sciences and off-campus class</td>
<td>1</td>
</tr>
<tr>
<td>Eudora, Excel, and BlackBoard</td>
<td>1</td>
</tr>
<tr>
<td>Several computer technology courses (continuing education &amp; University sponsored)</td>
<td>1</td>
</tr>
<tr>
<td>Continuing education</td>
<td>2</td>
</tr>
<tr>
<td>Introduction to BlackBoard</td>
<td>2</td>
</tr>
<tr>
<td>In-services and college courses</td>
<td>1</td>
</tr>
<tr>
<td>SPSS &amp; PowerPoint</td>
<td>1</td>
</tr>
<tr>
<td>Word, PowerPoint, &amp; BlackBoard</td>
<td>1</td>
</tr>
<tr>
<td>Required technology courses in PhD program</td>
<td>3</td>
</tr>
<tr>
<td>In-service by University</td>
<td>1</td>
</tr>
<tr>
<td>Basic college courses</td>
<td>2</td>
</tr>
<tr>
<td>Microsoft Word, BlackBoard, Excel, group e-mail, PowerPoint</td>
<td>1</td>
</tr>
<tr>
<td>Small courses for basic computer use</td>
<td>1</td>
</tr>
<tr>
<td>BlackBoard &amp; WebCT</td>
<td>1</td>
</tr>
<tr>
<td>Basic computer courses, Excel, and PowerPoint</td>
<td>1</td>
</tr>
<tr>
<td>“All that I needed for the job”</td>
<td>1</td>
</tr>
<tr>
<td>In-house education on BlackBoard</td>
<td>1</td>
</tr>
<tr>
<td>“Our college is the leader of the University in on-line and BlackBoard education”</td>
<td>1</td>
</tr>
<tr>
<td>PowerPoint, Excel, BlackBoard</td>
<td>1</td>
</tr>
<tr>
<td>Courses offered on Campus (word processing, PowerPoint, use of Excel</td>
<td>1</td>
</tr>
</tbody>
</table>

(Table continued)
BlackBoard through faculty excellence 1
Use of BlackBoard, minor presentation software 1
Undergraduate & master’s level course 1
Building web site, data analysis, BlackBoard use 1
Graduate course, non-credit continuing education course 1
Campus-sponsored instruction (BlackBoard, SmartBoard) 1
Microsoft Word, basic Windows, BlackBoard 1
Computer Intro when in first major 1
Word, Basic, Excel, BlackBoard, and Outlook Express 1
BlackBoard and e-mail 1
School of Nursing departmental computer utilization update 1
On-campus faculty education 3
Microsoft Word, Excel, BlackBoard courses 1
BlackBoard & PowerPoint 2
“My son” 1
Brief in-service 1
PeopleSoft training 1
Post-master’s level computer course 1
Classes on using IBM, Word, PowerPoint, BlackBoard 1

Total 71b

a Total number of respondents who reported participating in computer training = 89
b 18 participants did not respond to this item
APPENDIX H

PERCEIVED ADMINISTRATIVE SUPPORT AS REPORTED BY LOUISIANA BACCALAUREATE NURSE EDUCATORS
Table 17  
Perceived Administrative Support as Reported by Louisiana Baccalaureate Nurse Educators

<table>
<thead>
<tr>
<th>Response</th>
<th>n</th>
</tr>
</thead>
<tbody>
<tr>
<td>In-services on new technology, support from IT staff</td>
<td>2</td>
</tr>
<tr>
<td>On-site technological support, in-service training</td>
<td>3</td>
</tr>
<tr>
<td>Training</td>
<td>1</td>
</tr>
<tr>
<td>Training, in-service</td>
<td>1</td>
</tr>
<tr>
<td>Providing classes, support</td>
<td>1</td>
</tr>
<tr>
<td>In-service training, IT staff support on-site, updated hardware/software</td>
<td>1</td>
</tr>
<tr>
<td>Allows prep days at home</td>
<td>1</td>
</tr>
<tr>
<td>Makes equipment available, minimal technological support, in-service</td>
<td>1</td>
</tr>
<tr>
<td>Offering courses &amp; allowing time off to attend</td>
<td>1</td>
</tr>
<tr>
<td>New computers if available</td>
<td>1</td>
</tr>
<tr>
<td>Training is available, computer and technological support are available</td>
<td>1</td>
</tr>
<tr>
<td>Faculty development seminars and courses for personal advancement</td>
<td>1</td>
</tr>
<tr>
<td>Attempt to keep equipment up to date, encourage participation in training, On-going BlackBoard training and support</td>
<td>1</td>
</tr>
<tr>
<td>Support if time permits</td>
<td>1</td>
</tr>
<tr>
<td>Time off, on-site technological support, technological support help desk, Updated technology</td>
<td>1</td>
</tr>
<tr>
<td>“I have computer support readily available”</td>
<td>1</td>
</tr>
<tr>
<td>On-site technological support, on-line teaching in-service paid by Administration</td>
<td>1</td>
</tr>
<tr>
<td>Updated software/hardware, technological support</td>
<td>1</td>
</tr>
</tbody>
</table>

(Table continued)
| On-site training, help desk, computer technician to periodically address Problems | 1 |
| Classes available through faculty development | 1 |
| Large computer support group, new equipment & programs | 1 |
| Readily available technological support & continuing education is encouraged | 1 |
| Technological support help desk, “Our learning resource coordinator is absolutely great in assisting us” | 1 |
| Time to attend training, help desk, updated technology, in-service training On new products/technology | 1 |
| University provides basic resources, support is given verbally | 1 |
| Wonderful technological support, “smart” classrooms, mobile units with Computer, PowerPoint, and document camera | 1 |
| Can go to training and have training in-house | 1 |
| Support people, sometimes reimbursed for costs of training | 1 |
| Technological support desk | 1 |
| On-site IT support, training when requested | 1 |
| Help desk, technological support | 1 |
| Full-time computer staff person | 1 |
| Tries to supply needed equipment | 1 |
| Inservices, Learning Resource Center available to help | 1 |
| Updated technology | 2 |
| Hardware/software, technological support | 1 |
| On-site technological support, help desk, updated technology | 2 |
| Updated technology, in-service training | 3 |

(Table continued)
Technological support, courses on BlackBoard, off-campus courses 1
Help desk, training 1
Updated software, easy access to computer service representatives 1
Training, full-time technological support, encouragement, updated computer hardware/software 1
Provides equipment 1
“Very committed to technology” 1
“Merit for increase use of technology in course” 1

Total 52b

aNNumber of participants who indicated that their administration supported their efforts to incorporate technology in nursing theory courses = 68
b16 participants did not respond to this survey item
APPENDIX I

ANALYSIS OF VARIANCE OF OVERALL MEANS OF REPORTED NURSE EDUCATOR TECHNOSTRESS SCORES BETWEEN LEVELS OF THE INDEPENDENT VARIABLES AGE, GENDER, ETHNICITY, EDUCATIONAL LEVEL, YEARS EXPERIENCE AS A NURSE EDUCATOR, ACADEMIC RANK, PREVIOUS COMPUTER TRAINING, USE OF A COMPUTER AT HOME, ON-LINE TEACHING, AND ADDITIONAL COMPENSATION FOR INCORPORATION OF TECHNOLOGY INTO THEORY COURSES
Table 18
Analysis of Variance of Overall Means of Reported Nurse Educator Technostress Scores Between the Levels of the Independent Variables Age, Gender, Ethnicity, Educational Level, Years Experience as Nurse Educator, Academic Rank, Previous Computer Training, Use of a Computer at Home, On-line Teaching, and Additional Compensation for Incorporation of Technology into Theory Courses

<table>
<thead>
<tr>
<th>Independent Variable</th>
<th>df</th>
<th>F&lt;sup&gt;a&lt;/sup&gt;</th>
<th>p&lt;sup&gt;b&lt;/sup&gt;</th>
</tr>
</thead>
<tbody>
<tr>
<td>Age</td>
<td>3</td>
<td>1.348</td>
<td>.263</td>
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<tr>
<td>Gender</td>
<td>1</td>
<td>.228</td>
<td>.634</td>
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<td>Ethnicity</td>
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<td>.616</td>
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<td>Educational Level</td>
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<td>.895</td>
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<tr>
<td>Years Experience as Nurse Educator</td>
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<td>1.461</td>
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<tr>
<td>Academic Rank</td>
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<td>.807</td>
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<tr>
<td>Previous Computer Training</td>
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<td>.010</td>
<td>.919</td>
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<tr>
<td>Use of a Computer at Home</td>
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<td>.000</td>
<td>.983</td>
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<tr>
<td>On-line Teaching</td>
<td>1</td>
<td>.007</td>
<td>.933</td>
</tr>
<tr>
<td>Additional Compensation for Incorporation of Technology</td>
<td>1</td>
<td>.443</td>
<td>.507</td>
</tr>
</tbody>
</table>

<sup>a</sup>One-way Analysis of Variance
<sup>b</sup>.05 Alpha level for the 2-Tailed Test of Significance
VITA

Mary Ann Stark Burke was born on July 21, 1966, in Baton Rouge, Louisiana. She is the daughter of Ruby Dedon Stark and the late Charles A. Stark, Sr. She graduated from Silliman Institute in 1984 and attended Southeastern Louisiana University. In May 1988, she received a Bachelor of Science degree in nursing from the University of Southern Mississippi. She is married to Don Michael Burke and has a daughter, Peyton Elizabeth.

After working for two years as a staff nurse, Mary realized the need for further education. She enrolled in Southeastern Louisiana University and graduated in December 1994 with a Master of Science degree in psychosocial nursing. Her research interests included women’s health topics and her master’s thesis was entitled “Psychosocial Stressors and Coping Mechanisms of Infertile Women and Women with One Biological Child.” On December 16, 2005, the degree of Doctor of Philosophy will be conferred during the fall commencement ceremony at Louisiana State University.

She is currently certified in critical care nursing by the American Association of Critical Care Nurses. She is also certified in Advanced Cardiac Life Support by the American Heart Association. She has completed the Adult Trauma Nursing Curriculum certification and the Pediatric Emergency Nurse Curriculum certification through the Emergency Nurses Association.

Mary began her nursing career as a staff nurse at the Medical Center of Baton Rouge working on a medical-surgical-oncology unit. In January of 1989, she attended a critical care nursing course and transferred to the intensive care unit. She
has worked as a nurse in the Post-Anesthesia Care Unit, Adult Intensive Care Unit, and the Cardiovascular Intensive Care Unit in several hospitals. She currently maintains her nursing skills by working per diem in the Emergency Room at Lane Memorial Hospital in Zachary, Louisiana. In January of 1995, Mary began teaching full-time in the baccalaureate nursing program at Southeastern Louisiana University. She currently teaches two on-line courses, a nursing management theory and a profession nursing issues course. She also teaches an advanced concepts clinical lab. In addition, she teaches on-line courses in the RN-BSN program at the University of Phoenix.

Mary has been a poster presenter at several state and national conferences. She has also been a speaker on the topic of using technology in the classroom at a local conference, sponsored by Southeastern Louisiana University School of Nursing and was selected to present a workshop on “Communication, Conflict, and Team Building” for the nurse managers at Lane Memorial Hospital.

She is a member of the American Nurses Association, Sigma Theta Tau International Honor Society of Nursing, and the American Association of Critical Care Nurses. She has served on the scholarship panel and the abstract review panel for the American Association of Critical Care Nurses. In addition, she has served as the nominating committee chair for the Rho Zeta Chapter of Sigma Theta Tau International Honor Society of Nursing.