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COLLEGE OF NURSING

NURSING STUDENTS' PERCEPTIONS
OF USEFULNESS AND EASE OF USE OF
PERSONAL DIGITAL ASSISTANT TECHNOLOGY
IN THE CLASSROOM AND CLINICAL SETTING

By

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TABLE OF CONTENTS

List of Tables	vii
Abstract	viii
1. INTRODUCTION	1
Introduction	1
Statement of the Problem	1
Significance of Problem	1
Statement of the Purpose	2
Research Question	2
Operational Definitions	3
Conceptual Framework	3
Assumptions	4
Limitation	4
Summary	5
2. REVIEW OF LITERATURE	6
Introduction	6
Available Information	6
Assessing Attitudes	6
Providing Technical Training and Support	7
Influences for Usefulness and Ease of Use	8
Beneficial Outcomes	8
Summary	9
3. METHODOLOGY	10
Introduction	10
Research Design	10
Setting	10
Sample	10
Protection of Human Subjects	10
Instrumentation	11
Procedure	12
Data Analysis	12
Summary	13

4. PRESENTATION OF FINDINGS	14
Introduction	14
Results	14
Summary	17
5. DISCUSSION OF FINDINGS	19
Introduction	19
Discussion	19
Theoretical Review	20
Limitations	20
Strengths	21
Implications for Practice	21
Recommendations for Future Research	21
Summary	22
APPENDICIES	32
A Cover Letter	32
B Demographic Tool	35
C Measurement Scale for Perceived Usefulness and Perceived Ease of Use	37
D IRB Application	40
REFERENCES	47
BIOGRAPHICAL SKETCH	50

LIST OF TABLES

Table 1: Perceived PDA Usefulness	22
Table 2: Perceived PDA Ease of Use	23
Table 3: Pearson's Correlation of Usefulness and Ease of Use	24
Table 4: Kendall's Correlation of Usefulness and Ease of Use	25
Table 5: Statements Describing Positive Personal Attitudes Toward Computer Use	26
Table 6: Daily Access to the Internet	27
Table 7: Daily Access to Email	28
Table 8: Pearson's Correlation of Positive Attitude and Computer Use	29
Table 9: Kendall's Correlation of Positive Attitude and Computer Use	30

ABSTRACT

Personal Digital Assistants (PDAs) are handheld devices that combine computing, telephone/fax, Internet and networking features. PDAs can be loaded with all types of reference material to be utilized in many situations. Currently many schools of nursing are requiring students to purchase these devices in addition to other reference materials. Before integrating this technology into programs of nursing, it is important to gain understanding of student perceptions regarding usefulness and ease of use of PDA technology in the classroom and clinical setting, as well as general attitudes to computer use. The purpose of this study was to identify nursing students' perceptions of the usefulness and ease of use of PDAs in the classroom and clinical setting, and their overall attitudes toward computers. A convenience sample of 54 senior nursing students was obtained from a university in the southeastern Florida region. Data were obtained with the use of a demographic form and survey form. The overall findings, consistent with previous studies, indicated the students perceive PDA technology to be useful and easy to use. The overall attitude toward computer use was positive, with the majority of the students accessing the Internet 1-20 or more times daily. Continuing research on identifying student perceptions of the usefulness and ease of use of PDAs and attitudes toward computer use will benefit Colleges of Nursing who would like to integrate this technology into the classroom and clinical setting.

CHAPTER ONE INTRODUCTION

Introduction

The field of nursing is an ever-evolving one; to remain unchanged is to become stagnant. Our modes of learning have moved from field learning, in the times of Florence Nightingale, to today's vast availability of technology with immediate retrieval of information. Personal Digital Assistants (PDAs) are one of the technological tools available for learning. They are currently in use in many medical settings and implications for their use in undergraduate nursing programs are becoming evident. However, before becoming a prerequisite into a program of study, a baseline of usefulness and perceived ease of use should be established. The baseline information would be beneficial in order to plan training programs for integration of the PDA into nursing curriculum so that students will receive the maximum benefit of this technological advance in the classroom and clinical setting

Statement of Problem

PDAs at the bedside are in use by physicians, Nurse Practitioners (NPs) and Physician Assistants (PAs) as an aide that allows unprecedented timeliness for information and portability. PDAs have been shown to decrease medication errors due to illegible handwriting by identifying clear dosages and potential side effects, thereby increasing patient safety (Tooley & Mayo, 2003). Furthermore, PDAs have been viewed as a valuable tool in documentation and decision-making in the field of medicine (Rempher, Lasome & Lasome, 2003). The capability of these devices and the application for delivering information on demand, at the point of care, has the capability of making the PDA "as important for healthcare providers as the stethoscope." (Rempher et al., 2003, p. 364). The small size of the hand-held devices appeals to educators, who report that such machines are less disruptive to classes, and are physically easier for students to use than laptops (Rempher et al., 2003).

Generally, PDAs have proven to be useful in disciplines such as medicine, predominantly by physicians, NPs, and PAs, (Scordo, Yeager & Young, 2003). However, these devices are not required for use in most undergraduate programs. This study explored the advisability of the introduction of PDAs as a required component of the undergraduate nursing program of study. Questions considered were ease of use, usefulness, and population acceptance/attitudes of the PDA as an educational tool.

According to McLane (2005) "staff acceptance of and willingness to use a system have been found to be major determinants of system success."(p. 86). Following this concept, it becomes vital to understand perceived usefulness and perceived ease of use of PDAs as a prerequisite to their introduction into a program of study. However, a means to determine PDA use acceptance is needed prior to implementation to enable planners to influence the development of positive attitudes, perceptions and expectations, and to correct misinformation.

Significance of Problem

The use of PDAs by nursing students has been found to significantly reduce the error rate in clinical documentation and increase efficiency in delivery of care. The Institute of Medicine (IOM) believes that medical errors occur due to the failure of a planned action in the course of providing care. The IOM believes certain strategies should be implemented in order to prevent adverse events and provide a safe work environment. They believe teaching organizations can

assume a leadership role by developing and using technology for the education of novice health practitioners (IOM, 2000). According to Goss and Carrico (2002), PDAs are becoming increasingly popular, not solely for business and personal use but also for use in education. A study performed at Wright University, College of Nursing, Dayton Ohio, (Scordo et al., 2003) concludes that at all educational levels, PDAs are being used in the classroom for increasing students' organization, fostering collaboration, and maximizing portability of technology (Scordo et al., 2003). Many universities such as Wright University College of Nursing, Virginia State University School of Nursing and Florida State University College of Nursing are beginning to recommend or require nursing students to use PDAs, implying that PDAs are a valuable learning tool. In this information age, every professional from doctor to lawyer is expected, or required, to have instant access to the latest information of their profession; nursing is no exception. The American Association of Colleges of Nursing (AACN) recognizes that technology affords increased collaboration among nursing faculties in teaching, practice, and research (American Association of Colleges of Nursing, 2002). AACN also proposes that technology in nursing education may enhance the professional ability to educate nurses for practice, prepare future nurse educators, and advancing nursing science. This is in an era when the number of professional nurses, nurse faculty and nurse researchers is desperately low (AACN, 2002).

The National League for Nursing (NLN) states, "What is needed now is a dramatic reform and innovation in nursing education to create and shape the future of nursing practice" (National League for Nursing, 2003, p. 1). The NLN believes that all levels of nursing education should design evidence-base curricula that are flexible, responsive to students' needs, collaborative, and technology savvy (National League for Nursing, 2003).

Statement of Purpose

The purpose of this study was to identify nursing students' perceptions of the usefulness and ease of use of PDAs in the classroom and clinical setting and overall attitudes toward computers. In much of the literature utilized for the theoretical review of this research study, it was of importance to understand the participant's perceptions before implementing the use of technology. Research studies are needed to determine whether nursing students find using PDAs a helpful tool in ascertaining information at the point of care and in daily tasks related to nursing. In this time of booming technology, information is literally at the fingertips for nursing students more than it has ever been in the past. This study investigated an understanding of how nursing students perceive usefulness, ease of use and acceptance/attitudes of using PDAs in the classroom and clinical setting. "Generally, students should not be compelled to use a system they do not feel provides utility." (McLane, 2005, p. 86). The results of this investigation are a vital contribution to the body of literature relating to PDA use by nursing students. This study may be used to promote an understanding of whether or not it would be beneficial and efficacious to require nursing students to purchase PDAs as an educational tool. Therefore, the question then becomes, do students perceive PDAs to be beneficial and efficacious based on their perceptions and attitudes.

Research Questions

This study sought to answer three main questions relevant to perceptions of nursing students in regards to acceptance, usefulness and ease of use of PDAs in the classroom and clinical setting. The study surveyed one group of nursing students who may or may not have

currently owned a PDA, as determined by the demographic tool. The research questions answered by this study included:

1. What are the nursing students' perceptions of PDA usefulness as it relates to the classroom and clinical setting?
2. What are the nursing students' perceptions of ease of PDA use as it relates to the classroom and clinical setting?
3. What are the perceived attitudes of the nursing students regarding computers in their everyday life?

Operational Definitions

1. PDA: Personal Digital Assistant, a handheld device that combines computing, telephone/fax, Internet and networking features. A typical PDA can function as a cellular phone; fax sender, web browser and personal organizer. Unlike portable computers, most PDAs began as pen-based, using a stylus rather than a keyboard for input. This means that they also incorporated handwriting recognition features. Some PDAs can also react to voice input by using voice recognition technologies. PDAs of today are available in either a stylus, touch screen or keyboard versions.
2. Perceptions: Perceptions were measured using a Likert type scale in which the students rate topics of importance. These topics were rated according to the scale as strongly agree, agree, neither agree nor disagree, disagree and strongly disagree.
3. Perceived Usefulness: Defined here as "the degree to which a person believes that using a particular system would enhance his or her job performance." (Davis, 1989, p. 320). "A system high in perceived usefulness, in turn, is one for which a user believes in the existence of a positive use-performance relationship." (Davis, 1989, p. 320).
4. Perceived Ease of Use: Refers to "the degree to which a person believes that using a particular system would be free of effort." (Davis, 1989, p.320).
5. Nursing Student: A learner who is enrolled in a College of Nursing that at the culmination of the curriculum is eligible to take a state licensing examination for registered nurse status.

Conceptual Framework

The use of technology in health care is a reflection of what is happening on a much larger scale in our communities. We are in a period of history referred to as the Information Age; technology has changed our world. It is clear that electronic tools have not only made life easier, but they have become part of our culture. Furthermore, as a result of this ability to handle large amounts of information, we have experienced an information explosion. As a society, we have increased both our use and our production of information. As nurses living in this information driven society, we not only benefit from the availability of the information, but are also challenged to keep up with the information that is bombarding us from all directions (Bastable, 2003).

Sister Callista Roy's Theory of Adaptation (1976) is useful in the analysis of the efficacy of PDAs by nursing students.

Abiko (1999) found the following: In order for technology in general to promote man's adaptation to a changing environment, technology should also follow processes similar to those in nursing. Namely, technological projects should be carried out according to the assessment of

the adaptation level of the society to its environment, and according to the care (or action) plan made after the results of that assessment. Technology must then validate that it can in fact effect society's adaptation by way of evaluating the effectiveness of its approach. (p. 172).

In Roy's Theory of Adaptation, the person is an adaptive system interacting with three classes of stimuli (focal, contextual or residual) that arise from within a person, their external environment and adaptation level (Roy, 1976). According to Friedman, Bowden and Jones (2003), Roy sees nursing care as focused on the person's response to interactions with the external environment and to internal and external stimuli affecting adaptation. Nurses need to be able to clearly demonstrate their contributions to outcomes of care. Chinn and Jacobs (1987) demonstrated the importance of this by stating, "nurses are an integral part of the healthcare system, and defining the link between the qualities of nursing care delivered and positive client outcomes will demonstrate the value of those nursing contributions." Sophisticated technology will continue to make healthcare and health information more accessible and more meaningful to both healthcare consumers and healthcare professionals. People in health care disciplines are identifying creative ways to use emerging technology to enhance the process. Furthermore, Roy (1976) sees adaptation as an *ongoing purposive response*. Adaptive responses contribute to health, the process of being and becoming integrated; ineffective responses do not. Nurses must adapt to the new technology in order to provide the patients with the most up-to-date information at the point of care (Friedman et al., 2003).

Fawcett (1990) finds Roy's model is noted for its limitation to clients and says, "information on the nurse is implied." (p. 256). The process is described as beginning with a stimulus, using control processes (coping mechanisms--regulators and cognators), effectors (physiological functions, self-concept, role function, and interdependence) to yield an adaptive response Fawcett used Roy's model to study the effect of an educational pamphlet developed for C-Section patients. Also, Fawcett discusses a May 1997, study that was conducted in Arlington, VA, where nursing administrators used the theory to change their nursing assessment tools. By April 1980, they had the model in practice. Their research suggested that using this tool enhanced patient satisfaction and improved health outcomes. This can be directly linked to the introduction of new technology in the workplace or the alteration of an established system to obtain a more effective (and hopefully positive) outcome.

Assumptions

Assumptions in this study include:

1. The participants will answer the questionnaire truthfully.
2. The data provided by the students will be complete and include only registered nurse (RN) students who are senior nursing students at a university College of Nursing.

Limitations

The following are noted as limitations for this study:

1. Only Bachelor of Science nursing students in a limited geographical area were enrolled in this study, thus limiting the study's results and ability to generalize results to a larger population.
2. Self-reporting of data can create problems which can lessen the validity of responses {i.e. memory, selective recall, responding to make oneself look favorable} (Norwood, 2000).

3. The subject's willingness to respond to the questionnaire items as they have the choice whether to participate or not as fewer respondents would yield a narrower field from which to gather information for this study.

Chapter Summary

Due to the advancement in technology and development of ever-smaller Information Systems (IS), research is needed to determine the usefulness and ease of use of PDAs at the point of care for nursing students in the clinical setting. The purpose of this study was to identify nursing students' perceptions of the usefulness and ease of use of PDAs in the classroom and clinical setting and overall attitudes toward computers. The significance of integrating PDA technology into nursing education was supported largely by the IOM, AACN and NLN reports. The information would then be analyzed to determine the future requirements of PDAs utilization in the classroom and clinical setting. Additionally, Roy's Theory of Adaptation (1976) was utilized in making a connection between the introduction of PDAs to obtain health information in a timely manner to positively influencing health outcomes.

CHAPTER TWO REVIEW OF THE LITERATURE

Introduction

This chapter will include discussion of the theoretical framework and its significance for this study. The review of literature is directed towards a better understanding of how PDAs might be utilized and incorporated into classroom and clinical settings.

According to White, Goodwin, Breckinridge, et al. (2005) PDAs are generally viewed as an effective tool for delivery of patient care. As healthcare becomes ever more complex, reliance on memory alone for guidance in decision-making can be unreliable. Handheld technology provides instant information on patient data, treatment options and drug therapy. In combination with the clinician's superior clinical knowledge, point-of-care access to these types of information can improve the quality of care, save valuable time and potentially reduce medical errors (White et al., 2005).

Available Information

PDAs are an effective resource for students, especially for reference materials. (Miller, Shaw-Kokot, Boggin, et al., 2005). Miller et al. (2005) conducted an exploratory study that provides beginning support for the use of PDAs in undergraduate nursing education. The authors found the use of PDAs provided timesavings, reduction of errors, ease and acceptability of seeking current information at a patient's bedside. The authors believe if PDAs are integrated with the hospital computer system, as well as the physician's office, the PDA can be a valuable tool for all concerned. Within these parameters, the medical professional can readily access patient data and office staff can access information as needed (such as diagnostic codes for billing). (Miller et al., 2005). Information can be more easily shared among specialties as medical professionals can retrieve resource information instantly. In a less expansive situation, the handheld computer offers resource information to the medical professional. These include books to retrieve diagnostic information and up-to-date drug information, as well as other medical reference materials. The PDA also offers such basic functions as an address book, schedule and memo function. (Fischer, Lapinsky, Metha, et al. 2002). In the area of medical education management, electronic data collection is becoming increasingly important and in addition, a handheld computer procedure log for tracking student's procedural experience is viewed as an important tool to ensure an adequate educational experience (Fischer et al. 2002).

Eager, Stolworthy, and Suszka-Hilebrar (2000) concluded that, PDA use is advantageous to nursing in that it is capable of storing large databases, running custom-built applications, storing reference materials such as treatment protocols and procedure manuals and connecting to the internet or mail accounts. The authors further report that nurses bringing information to the point of care by the use of PDAs is an appropriate and viable alternative to current data gathering practices (Eager et al., 2000).

Assessing Attitudes

Maag (2006) conducted a study involving fifty-two Schools of Nursing in the United States to determine the attitude of nursing students toward Information Technology (IT). She stated "an individual's attitude is an integral part of the successful use of IT, computer systems and computer-based instruction." (p.112). The author surveyed the students then divided the

subjects by age, gender and the educational level. According to the author, the older group (22 or older), males, and graduate students demonstrated a higher level of confidence in their ability to learn technology but the data suggest that overall attitudes toward technology are favorable (Maag, 2006). The focus of the study was on student's attitudes concerning their confidence in using technology. The study found that nursing students in the United States generally demonstrate a positive attitude toward technology, but report "little or no" formal education in the field of technology is offered during nursing educational programs (Maag, 2006). Therefore, "there are direct implications for nurse educators, curriculum developers, and SON administrators." (Maag, 2006, p. 118)

In the fall of 2002, a study at Duke University School of Nursing was conducted to assess whether or not the infusion of PDA technology into their accelerated baccalaureate program would be successful. Students found that once the technology became a tool rather than an obstacle to overcome, they could find creative ways to facilitate their own learning (White et al., 2005). Faculty at Duke University found the tools to be useful for tracking each student's experiences, including identification of patient problems and needs, and what the student learned in a clinical encounter. Furthermore, faculty were better able to manage a clinical group and see that each student was exposed to the needed learning opportunities (White et al., 2005).

In order to derive support for the use of PDAs in undergraduate nursing education, Miller et al. (2005), performed a comparative study conducted at Virginia State University School of Nursing with 14 month accelerated baccalaureate nursing students who were required to purchase the PDAs and 24 month baccalaureate nursing students who were not. The results for usefulness and effectiveness were mixed in that only 48% of the students believed the PDA to be useful or extremely useful (Miller et al., 2005). Nevertheless, in answering their most recent clinical or nursing question, 81% found the PDA resources to be useful or extremely useful (Miller et al., 2005). Despite these findings, students increased their knowledge and placed greater value on the credibility of the information source rather than on convenience (Miller et al., 2005). Also, student use of and satisfaction with this technology was found to be linked to speed of access and readability of the material (Miller et al., 2005).

Providing Information Technology Training and Support

Training and support are important because, as students become more familiar with the technology they may increase their use of technology. Maag (2006) recommends exposure to educational IT in undergraduate through graduate school with basic computer skills as a pre-requisite to admission. The author further admonishes "threading technology courses throughout the nursing curriculum, with the goal of better preparing students for this era of rapidly changing technological advancements, is paramount." (p. 118). Finally, "nursing graduates possessing a good sense of technology will be better prepared to interact with clinical information systems and clinical decision support systems." (Maag, 2006, p.112).

In a study by Miller et al. (2005), training sessions were incorporated into the course. The sessions were scheduled at the beginning of the semester because it was anticipated that students and faculty would need assistance. In the study, a survey was distributed to the students to evaluate the orientation program. The students indicated more time needed to be spent on teaching them how to download programs and help them understand how to set up their home computers (Miller et al., 2005).

Influences for Usefulness and Ease of Use

Requiring consistent use of the PDA by faculty and students is a challenge, however, convenient size and mobility of the PDA, as well as usefulness as a work management tool, are seen as huge benefits (White et al., 2005). Davis (1989) saw a need for the development of a valid tool of measurement of “key theoretical constructs (as) a research priority in the information system field” (p. 319). Davis developed measurements still in use today by building upon these foundations. He postulated, “all (of these theories) are supportive of the conceptual and empirical distinctions between usefulness and ease of use.”(p. 323). The research that Davis conducted pursued “better measures for predicting and explaining system use and the decision was made to develop measurements for perceived usefulness and perceived ease of use based on these constructs.” (p. 319). Davis hypothesized these two variables “to be fundamental determinants of user acceptance.” (p. 319). New multi-item measurement scales for perceived usefulness and perceived ease of use were developed, pre-tested and validated in two separate empirical studies. One of Davis’ most significant findings was the strength of perceived usefulness outweighing the perceived ease of use (Davis 1989). He found that difficulty of use might discourage the implementation of a particular system. However, he also found that no amount of ease of use would compensate for a system that does not perform a useful function. Adams, Nelson and Todd (1992) replicated the study and resultant measurements by performing two studies, which “demonstrate reliable and valid scales for measurement of perceived ease of use and usefulness.” (p. 227). The authors found the Davis (1989) scale to be valid and reliable. It was also determined that usefulness and ease of use were related to actual usage with usefulness being the major construct. The implication would be that to sacrifice the cost of functionality for ease of use is not advisable. (Adams et al., 1992). However, the author cautions that ease of use may influence the initial decision to adopt a particular system (Adams et al., 1992). The positive perceptions of the ease of use will increase as the user becomes more familiar with a system (Adams et al., 1992).

Beneficial Outcomes

According to White, et al. (2005), PDA use supports the development of strong student organizational skills. Additionally, the author finds that PDAs provide the student with evidenced-based information and data enhanced leadership skills such as empowerment (White et al., 2005). PDA use allows the student to quickly and efficiently access data while in the clinical setting, thereby providing immediate patient feedback to a variety of questions (White et al., 2005). The devices were found to be an effective learning and evaluation tool for use by students, especially in the clinical settings (White et al., 2005).

Huffstutler, Wyatt and Wright (2002) proposed that as students become familiar with technology, they will increase their use of the PDA and come to view the PDA as an effective tool to obtain information necessary to make safe, effective patient care decisions. Huffstutler, et al. (2002) surmised, “PDAs could resolve the longstanding problem related to outdated textbooks and contain cost by using free database applications available on the Internet.”(p. 272). The information is continuously updated on the Internet and can be uploaded at the students’ discretion. The University of Virginia faculty became convinced of the need for use of PDAs due to their rapid accessibility of the most recent information (Huffstutler et al., 2002). Additionally, its ease of use, portability and convenience played a key role in the decision to implement its use (Huffstutler et al., 2002).

Miller, et al. (2005) found that students made substantial use of their PDAs, while decreasing their reliance on textbooks and clinical faculty for answers. The Miller et al. (2005) study anticipated that the value and skill of seeking current information (through the use of PDAs) would increase if instituted in the undergraduate nursing programs. Miller stated this skill would be carried “into their professional practice.” (p. 19). Areas that were found to be of particular value to students and faculty were tracking documentation, tracking of medication administration, as well as care planning and research (Miller et al., 2005).

Scordo, et al. (2003) reviewed the introduction of PDAs throughout Acute Care Nurse Practitioner (ACNP) graduate training with an “emphasis on clinical and classroom application.” (p. 350). This study was conducted at Wright University, College of Nursing and Health in Dayton, Ohio. The study concluded that nursing productivity was increased by providing access to large amounts of clinical and reference materials. The PDA also allowed for prescription transmission directly to the pharmacy from the bedside and reduced time needed for documentation since information was transferred and retrieved from a hospital-wide medical system. Scordo et al. (2003) further noted that with system familiarity students are likely to use PDAs to track patient information and obtain information necessary to “make safe, effective patient-care decisions.” (p. 362).

An article by Eager et al. (2000) based on research conducted for an on-line forum regarding the emerging use of PDAs finds that nurses spend an average of 12% of their time on documentation of numerous forms, much of which is repetitious. Eager (2000) found, “The documentation is sometimes unusable due to illegibility” and “increased time with the patient results from decreased documentation time required, which is a benefit to the patient and nurse.” (p. 4).

Chapter Summary

Today, there is a paucity of information available for review on the subject of PDA use. Although the literature review is not exhaustive, the writer finds the available literature generally supports the use of PDAs by nursing students as a valuable tool in the learning experience. While acknowledging adjustments that students will need to make to encompass technology into the experience, the Davis (1989) and Adams et al. (1992) studies support the validity of usefulness and ease of use as constructs for this study. Other factors may have an influence on the construct regarding ease of use, such as user experience, type of system used and amount of finally.

CHAPTER THREE METHODOLOGY

Introduction

This chapter describes the methodology used in this study. Discussion on the study design, setting, sampling plan, instruments, procedure, and data analysis are outlined. Additionally, the protection of human subjects and ethical consideration are discussed. A chapter summary is included.

Research Design

This non-experimental, cross-sectional, descriptive design was chosen to examine student nurse perceptions of usefulness, ease of use and attitudes toward computers. The study is non-experimental in that there was no randomization of subjects and no manipulation of the independent variable or group membership. The student nurses perceptions were evaluated at a single point in time, thus yielding cross-sectional data. This research study examined the nursing students' perceptions of PDA usefulness and ease of use of PDAs as it relates to their use in the classroom and clinical setting. Also, examined were the attitudes of the nursing students toward the use of computers.

Setting

The study was conducted in a university setting where the researcher had access to senior nursing students in a baccalaureate program in the southeast United States. The College of Nursing chosen for this research has approximately 250 baccalaureate students and 100 graduate students who were currently enrolled.

Sample

The findings of the study are based on a convenience sample of 54 senior nursing students enrolled in a College of Nursing in the southeastern United States. The demographic make-up of study participants were senior baccalaureate nursing students between the ages of 18 and 65, different ethnic groups, and both genders. Criteria for inclusion in the study were students who were attending the university and who were senior nursing students.

Protection of Human Subjects

After obtaining IRB approval and faculty permission to approach the students, the researcher explained the purpose of the study to the students. Interested participants were given a letter explaining why they were chosen (Appendix A), a description of the questionnaire, the risks and benefits of participation, the participant's right to voluntarily participate, and assurance of confidentiality. Completion of the demographic form (Appendix B) and survey form (Appendix C) implied consent. There was no sharing of individual responses and subjects were given the assurance that responses would be kept confidential to the fullest extent allowed by law. Surveys were collected by the researcher at completion and stored in a locked drawer in the researchers home. All responses were separated and coded numerically without identifying information about the subjects, thereby assuming anonymity. Data was analyzed using SPSS software for statistics. Upon completion of the statistical analysis, the data was stored in a secure room at the College of Nursing. The data will be shredded at the end of a three-year period, (October, 2009). The only people having access to this information were the researcher, research advisor and a statistician. Paper and electronic data was generated and reported in aggregate form only.

The researcher was present to distribute the packets to the participants and monitor the study. The packets were numerically coded to assure participant confidentiality. Completed forms were kept in a locked file cabinet in the researcher's home and only the researcher, research advisor and statistician had access. The study was not controversial and did not generate public concern.

Instrumentation

Survey

The survey tool was distributed to all of the participants. The tool was an adaptation of a tool employed by Davis (1989) which was developed, tested, and administered to measure perceived usefulness, perceived ease of use and user acceptance of information technology. As early as the 1980's the field of Information Systems (IS) recognized the need for research into the perceived usefulness and perceived ease of use of computers or IS (Davis 1989). The tool was utilized in assessing students' perceptions regarding the usefulness, ease of use and overall attitude toward computer use. The tool is comprised of twelve questions using a Likert scale (Appendix C). The adapted survey consists of questions, specifically addressing PDA ease of use and usefulness in the classroom and clinical setting.

Reliability and Validity

Davis hypothesized perceived usefulness and perceived ease of use to be determinants of user acceptance (Davis, 1989). To prove their reliability and validity he conducted two separate studies in 1989. In study one, 120 system users were given a questionnaire to rate the usefulness and ease of use of two systems available at IBM Canada's Toronto Development Laboratory: PROFS electronic mail and XEDIT file editor (Davis 1989). Perceived usefulness attained Cronbach alpha reliability of .97 for both (Davis 1989). Perceived ease of use attained a reliability of .86 for electronic mail and .93 for XEDIT (Davis 1989). When Observations were pooled for the two systems; alpha was .97 for usefulness and .91 for ease of use (Davis 1989).

Convergent and discriminate validity were tested using MTMM analysis. For perceived usefulness, 90 montrait-heteromethod correlations were all significant at the .05 level. For ease of use, 86 out of 90, or 95.6%, of the montrait-heteromethod correlations were significant. Thus, the data supports the convergent validity of the two scales (Davis 1989).

"Discriminate validity is concerned with the ability of a measurement item to differentiate between objects being measured"(Davis, 1989, p. 327). For perceived usefulness, 1,800 comparisons for ease of use there were confirmed without exception. Of the 1,800 comparisons for ease of use, there were 58 exceptions (3%) (Davis 1989).

"Factorial validity is concerned with whether the usefulness and ease of use items form distinct constructs." (Davis, 1989, p. 327). Data were pooled across the two systems for a total of 184 observations. The results showed that the usefulness and ease of use using the MTMM analysis and factor analysis both support the construct validity (Davis 1989).

"The usefulness and ease of use scales were refined and streamlined based on results from study one and then subjected to a second round of empirical validation in Study two" (Davis, 1989, p. 328). "Cronbach alpha as .98 for perceived usefulness and .94 for perceived ease of use. Convergent validity was supported, with only two of 72 monotriat -heteromethod correlations falling below significance." (Davis, 1989, p. 331). "Factorial validity was assessed by factor analyzing the 12 scale items using principal components extraction and oblique rotation." (Davis, 1989, p. 331). Thus, as in Study one, Study two reflects favorably on the

convergent, discriminate, and factorial validity of the usefulness and ease of use scales (Davis 1989).

In 1992, Adams, Nelson, and Todd replicated Davis' previous study, and focused on evaluating the psychometric properties of the ease of use and usefulness scales. The results of the study demonstrated reliable and valid scales for measurement. While reaffirming Davis' scales as valid measures of the two constructs of perceived use and perceived ease of use of information systems, Adams, et al. (1992) cautions that other factors may influence these constructs and should be explored. The authors found factors thought to have an impact included user experience, and type of system used. Authors also suggested that usage may influence perceptions of ease of use (Adams et al., 1992). "Data presented in this study show that the scales are able to discriminate between technologies that support similar functions." (Adams et al., 1992, p. 236).

Demographic Tool

The demographic tool was administered to all participants. The study addresses if, and in what way PDAs can be integrated into a nursing undergraduate curriculum with efficiency. The demographic sheet included age, race, gender, and educational level and other questions of interest (see Appendix B).

Procedure

A letter was sent to the Florida State University Institutional Review Board (IRB) for approval of the study. Once approval to conduct the survey was obtained, a letter stating approval along with a detailed description of the study was sent to the Dean of the College of Nursing. The researcher approached the students in a classroom setting, with the instructor's permission, and gave them an explanation of the study in writing. At the beginning of the class, the researcher introduced herself to the class and explained why she was there. The students were then told they may leave at that time if they did not wish to participate in the survey, as it was voluntary. The remaining students were given a packet of information, which contained instructions for completing the demographic and survey forms, and the survey forms themselves. It took no longer than 15 minutes to complete the packet. All responses were separated and coded numerically without identifying information about the subjects. The completed surveys were transported to the researchers' home and placed in a locked file cabinet. The only people who had access to this information were the researcher, research advisor and statistician. Data was analyzed using SPSS software for statistics. Upon completion of the statistical analysis, the data was stored in a secure room at the College of Nursing. The data will be shredded at the end of a three-year period (October, 2009).

Data Analysis

Data were analyzed using SPSS software package for statistics. Paper and electronic data were generated and reported in aggregate form only. There was no sharing of individual responses and subjects were given the assurance that responses will be kept confidential to the fullest extent allowed by law. Descriptive statistics as well as correlations were used to analyze the data. The correlations tables display Pearson correlation, Kendal's tau_b correlation, coefficients, and significance values (Tables 3 & 4). The Pearson correlation coefficient is a measure of linear association between two variables. The values of the correlation coefficient range from -1 to 1. The sign of the correlation coefficient indicates the direction of the relationship (positive or negative). If the significance level is very small (less than 0.05) then the

correlation is significant and the two variables are linearly related. If the significance level is relatively large (for example, 0.50) then the correlation is not significant and the two variables are not linearly related. Kendall's tau-b uses the ranks of the data to calculate correlation coefficients. Kendall's tau-b measures the strength of the association between variables measured at the ordinal level. (Argyrous, 2000). Kendall's correlation was used in addition to Pearson's correlation because Kendall's will be valid even if the data do not meet the normality assumption. Pearson's assumes normality and can be invalid if the data are not from a normal distribution. Both are premeasures of association where both variables are measured at least at the ordinal level. "Unfortunately, there is no easy rule for deciding which is the best measure to use. In practice these measures usually point in the same direction, in so far as they will generally give similar answers." (Argyrous, 2000, p. 193-194). Pearson and Kendall tau_b were used for this study due the type of sample and level of measurement used.

Chapter Summary

The design for this study is non-experimental, cross-sectional, and descriptive. The sample was a convenience sample of BSN nursing students enrolled in a southeastern college in the United States. IRB approval was obtained from the participating university. The instrument for the study was a modification of the tool developed by Davis (1989). Descriptive statistics as well as Pearson and Kendall tau_b correlations were used to analyze the data. Analysis of the data collected helped determine whether or not nursing students perceived PDAs to have educational value in the classroom and clinical setting. Furthermore, the study sought to analyze nursing students attitudes toward computer use.

CHAPTER FOUR PRESENTATION OF THE FINDINGS

Introduction

This chapter addresses the statistical findings for this study, obtained from the investigation as they provide answers to the research questions. The statistical analyses used within this study provide descriptive demographic and survey information.

Results

The sample consisted of 54 BSN nursing students from a College of Nursing in the Southeast region of the United States. The mean age of the student participants was 22.65 years (minimum age=20, maximum age =35). Fifty (92.6%) of the students were female and four (7.4%) were male. Thirty-eight (70.4%) were Caucasian, 9 (16.7%) were African-American, 2 (3.7%) were Asian, 1 (1.9%) was a Pacific Islander, and 4 (7.4%) were Hispanic. Nineteen (35.2%) had high school diplomas, 22 (40.7%) had an Associates degree, 13 (24.1%) had a Bachelors degree; none had a GED or Master's degree. Forty-seven (87.0%) did not own a PDA and 7 (13.0%) did own a PDA.

Study participant's results for the question related to attitude toward computers were: "What is your personal attitude toward computers", 32 (59.3%) stated they could not live without my computer and 22 (40.7%) stated they use their computer but not to its fullest potential (Table 5). Results related to attitude toward computer use were: "How often do you access the Internet on your computer in a day", 35 (64.8%) stated 1-10, 17 (31.5%) stated 10-20, and 2 (3.7%) stated 20 or more, there were no responses for "none" (Table 6). "How often do you access email on your computer in a day", 48 (88.9%) stated 1-10, 5 (9.3%) stated 10-20, and 1 (1.9%) stated 20 or more, there were no responses for "none" (Table 7). According to McLane (2005), "Internet use provides an additional indicator of computer skills." (p. 88). This statement can be expounded upon by stating, an indicator of attitudes toward computers is its use.

Research Question One

The first research question examined the nursing student's perceptions of PDA usefulness as it relates to classroom and clinical setting (Table 1). For the statement "Using PDA technology in the classroom and clinical setting would enable me to accomplish tasks more quickly", 23 (42.6%) strongly agree, 25 (46.3%) agree, 5 (9.3%) neither agree nor disagree, 1 (1.9%) disagree and none strongly disagree. Of the statement, "Using PDA technology would improve my classroom and clinical setting performance", 13 (24.1%) strongly agree, 34 (63%) agree, 6 (11.1%) neither agree nor disagree, 1 (1.9%) disagree, and none strongly disagree. For the statement "Using PDA technology in the classroom and clinical setting would increase my productivity", 21 (38.9%) strongly agree, 26 (48.1%) agree, 5 (9.3%) neither agree nor disagree, 2 (3.7%) disagree, and none strongly disagree. For the statement "Using PDA technology would enhance my effectiveness in the classroom and clinical setting", 17 (31.5%) strongly agree, 32 (59.3%) agree, 4 (7.4%) neither agree nor disagree, 1 (1.9%) disagree, and none strongly disagree. For the statement, "Using PDA technology would make it easier to do my work in the classroom and clinical setting", 25 (46.3%) strongly agree, 19 (35.2%) agree, 9 (16.7%) neither agree nor disagree, 1 (1.9%) disagree, and none strongly disagree. For the statement "I would find PDA technology useful in the classroom and clinical setting", 26 (48.1%) strongly agree, 25

(46.3%) agree, 2 (3.7%) neither agree nor disagree, 1 (1.9%) disagree, and none strongly disagree.

Research Question Two

The second research question examined nursing student's perceptions of PDA ease of use as it relates to the classroom and clinical setting (Table 2). For the statement "Learning to operate PDA technology would be easy", 13 (24.1%) strongly agreed, 30 (55.6%) agree, 6 (11.1%) neither agree nor disagree, 5 (9.3%) disagree, and none strongly disagree. For the statement "I would find it easy to get a PDA to do what I want", 7(13%) strongly agree, 30 (55.6%) agree, 12 (22.2%) neither agree nor disagree, 5 (9.3%) disagree and none strongly disagree. For the statement "My interaction with PDA technology would be clear and understandable", 11(20.4%) strongly agree, 30 (55.6) agree, 10 (18.5%) neither agree nor disagree, 3(5.6%) disagree, and none strongly disagree. For the statement "I would find PDA technology to be flexible to interact with", 9 (16.7%) strongly agree, 32 (59.3) agree, 10 (8.5%) neither agree nor disagree, 3 (5.6) disagree, and none strongly disagree. For the statement "It would be easy for me to become skillful at using PDA technology", 15 (27.8%) strongly agree, 28 (51.9%) agree, 7 (13%) neither agree nor disagree, 4 (7.4%) disagree, and none strongly disagree. For the statement "I would find PDA technology easy to use", 14 (25.9%) strongly agree, 29 (53.7%) agree, 8 (14.8%) neither agree nor disagree, 3 (5.6%) disagree, and none strongly disagree.

Correlation Analysis for Questions One and Two

Pearson Data (Table 3). "Using PDA technology in the classroom and clinical setting would enable me to accomplish tasks more quickly": for the statement, for the statement, "I would find it easy to get PDA technology to do what I want it to do", there was a positive correlation of .274, $p = .045$; "I would find PDA technology to be flexible to interact with", there was a positive correlation of .422, $p = .001$; for the statement, "It would be easy for me to become skillful at using PDA technology", there was a positive correlation of .280, $p = .041$; for the statement, "I would find PDA technology easy to use", there was a positive correlation of .328, $p = .015$.

"Using PDA technology would improve my classroom and clinical performance": for the statement, "Learning to operate PDA technology would be easy for me", there was a positive correlation of .280, $p = .040$; for the statement, "My interaction with PDA technology would be clear and understandable", there was a positive correlation of .276, $p = .044$; for the statement, "I would find PDA technology to be flexible to interact with", there was a positive correlation of .486, $p = .000$; for the statement, "It would be easy for me to become skillful at using PDA technology", there was a positive correlation of .308, $p = .024$; for the statement, "I would find PDA technology easy to use", there was a positive correlation .325, $p = .016$.

"Using PDA technology in the classroom and clinical setting would increase my productivity": for the statement, "I would find it easy to get PDA technology to do what I want it to do", there was a positive correlation of .313, $p = .021$; for the statement, "I would find PDA technology to be flexible to interact with", there was a positive correlation of .409, $p = .002$; for the statement, "It would be easy for me to become skillful at using PDA technology", there was a positive correlation of .319 $p = .019$; for the statement, "I would find PDA technology easy to use", there was a positive correlation .276, $p = .044$.

“Using PDA technology would enhance my effectiveness in the classroom and clinical setting”: for the statement, “I would find it easy to get PDA technology to do what I want it to do”, there was a positive correlation of .286, $p = .036$; for the statement, “My interaction with PDA technology would be clear and understandable”, there was a positive correlation of .331, $p = .014$; for the statement, “I would find PDA technology to be flexible to interact with”, there was a positive correlation of .475, $p = .000$; for the statement, “It would be easy for me to become skillful at using PDA technology”, there was a positive correlation of .340, $p = .012$; for the statement, “I would find PDA technology easy to use”, there was a positive correlation of .324, $p = .017$.

“Using PDA technology would make it easier to do my work in the classroom and clinical setting”: for the statement, for the statement, “I would find it easy to get PDA technology to get it to do what I want it to do”, there was a positive correlation of .315, $p = .020$; for the statement, “My interaction with PDA technology would be clear and understandable”, there was positive correlation of .308, $p = .024$; for the statement, “I would find PDA technology t be flexible and easy to interact with”, there was a positive correlation of .398, $p = .003$; for the statement, “It would be easy for me to become skillful at using PDA technology”, there was a positive correlation of .387, $p = .004$; for the statement, “I would find PDA technology easy to use” there was a positive correlation of .351, $p = .009$.

“ I would find PDA technology useful in the classroom and clinical setting”: for the statement, “I would find it easy to get PDA technology to do what I want it to do”, there was a positive correlation of .322, $p = .018$; for the statement, “My interaction with PDA technology would be clear and understandable”, there was positive correlation of .294, $p = .031$; for the statement, “I would find PDA technology t be flexible and easy to interact with”, there was a positive correlation of .412, $p = .002$; for the statement, “It would be easy for me to become skillful at using PDA technology”, there was a positive correlation of .372, $p = .006$; for the statement, “I would find PDA technology easy to use”, there was a positive correlation of .465, $p = .000$.

Kendall Data (Table 4). “Using PDA technology in the classroom and clinical setting would enable me to accomplish tasks more quickly”: for the statement, “I would find PDA technology to be flexible to interact with”, there was a positive correlation of .386, $p = .002$; for the statement, “I would find PDA technology easy to use”, there was a positive correlation of .271, $p = .029$.

“Using PDA technology would improve my classroom and clinical setting performance”: for the statement, “I would find PDA technology to be flexible to interact with”, there was a positive correlation of .441, $p = .000$; for the statement, “It would be easy for me to become skillful at using PDA technology”, there was a positive correlation of .240, $p = .053$; for the statement, “I would find PDA technology easy to use”, there was a positive correlation of .253, $p = .041$.

“Using PDA technology in the classroom and clinical setting would increase my productivity”: for the statement, “I would find it easy to get PDA technology to do what I want it to do”, there was a positive correlation of .275, $p = .026$; for the statement, “I would find PDA technology to be flexible to interact with”, there was a positive correlation of .372, $p = .003$; for the statement, “It would be easy for me to become skillful at using PDA technology”, there was a

positive correlation of .299, $p = .015$; for the statement, “I would find PDA technology easy to use”, there was a positive correlation of .241, $p = .051$.

“Using PDA technology would enhance my effectiveness in the classroom and clinical setting”: for the statement, “I would find it easy to get PDA technology to do what I want it to do”, there was a positive correlation of .243, $p = .051$; for the statement, “My interaction with PDA technology would be clear and understandable”, there was a positive correlation of .280, $p = .025$; for the statement, “I would find PDA technology to be flexible to interact with”, there was a positive correlation of .454, $p = .000$; for the statement, “It would be easy for me to become skillful at using PDA technology”, there was positive correlation of .283, $p = .023$; for the statement, “I would find PDA technology easy to use”, there was a positive correlation of .265, $p = .034$.

“Using PDA technology would make it easier for me to do my work in the classroom and clinical setting”: for the statement, “I would find it easy to get PDA technology to do what I want it to do”, there was a positive .286, $p = .019$; for the statement, “My interaction with PDA technology would be clear and understandable”, there was a positive correlation of .260, $p = .034$; for the statement, “I would find PDA technology to be flexible to interact with”, there was a positive .369, $p = .003$; for the statement, “It would be easy for me to become skillful at using PDA technology”, there was a positive correlation of .356, $p = .004$; for the statement, “I would find PDA technology easy to use”, there was a positive 322, $p = .009$.

“I would find PDA technology useful in the classroom and clinical setting”: for the statement, “I would find it easy to get PDA technology to do what I want it to do”, there was a positive correlation of .295, $p = .019$; for the statement, “I would find PDA technology to be flexible to interact with”, there was a positive correlation of .375, $p = .003$; for the statement, “It would be easy for me to become skillful at using PDA technology”, there was a positive correlation of .317, $p = .012$; for the statement, “I would find PDA technology easy to use”, there was a positive correlation of .436, $p = .001$.

Correlational Analysis of Research Question Three

The third question examined nursing student’s attitudes toward use of computers. There was a positive correlation of .443 for attitudes toward computers and daily Internet access using Pearson’s Correlation (Table 8) denoting as positive attitudes increase computer use increase; with a p-value of 0.01 showing statistical significance. Using Kendall’s tau_b (Table 9) there was also a positive correlation of .495, as attitudes toward computers increased daily Internet access increased, a p-value of .000 was found to be statistically significant.

Chapter Summary

This chapter provided the statistical analysis and descriptive information for the research questions that guided the study. Although the majority of the students did not own PDAs, the majority of the sample group agreed that PDA technology would be both useful and easy to use in the classroom and clinical setting. The assumption would be that students could benefit from their use in the classroom and clinical setting. According to the findings of Pearson’s and Kendall’s test, both agreed there were positive correlations between attitudes toward computers and Internet access and that there was statistical significance. Additionally, both test showed positive correlations between attitudes toward computer use and email access but there was no statistical significance. This study reflected on the areas of importance to the nursing students

thus allowing educators insight into curriculum design focus for introducing PDA technology into the classroom and clinical setting.

CHAPTER FIVE DISCUSSION OF THE FINDINGS

Introduction

Technology is everywhere in today's society and it is imperative that nurses embrace the idea of incorporating this technology into the clinical and classroom setting. The earlier students begin to assimilate the use of PDA technology into their professional lives, the easier it will be for them to accept its use for the present rather than in the future. An explorative quantitative non-experimental, cross-sectional descriptive design was employed. Methods involved were surveys to collect demographic information, computer use and quantitative Likert scale instrument to measure perceived usefulness and ease of use of PDAs. Data collection and analysis were conducted to determine if the nursing students perceive that PDAs are useful and easy to use in the classroom and clinical setting.

Discussion

The mean age of the students was 22.65 years ($SD = 2.404$). It was a positive finding that 81.5% to 94.4 % of the students either strongly agreed or agreed that PDAs would be useful in the classroom and clinical setting, and 68.6% to 79.7% of the students either strongly agreed or agreed that PDAs would have ease of use in the classroom or clinical setting. These findings correlate with those of Davis (1989) in that perceived usefulness outweighed ease of use. The findings of students' perceptions, 38.9% strongly agreed and 87% agreed that PDA technology would increase their productivity also supports the findings of Scordo et al. (2003) that nursing productivity was increased by providing large amounts of clinical and reference materials.

In examining Kendalls' correlations of learning to operate PDA technology and all usefulness statements, there were many instances of positive correlations but no significance. When compared to usefulness and productivity there was a negative correlation, however it was not significant. Only when using Pearson's correlation did learning to operate and performance have a positive correlation and significance level of 0.05.

Using Pearson's, the ease of use statement, "easy to get PDA technology to do what I want", correlated positively to all usefulness statements and was significantly correlated to "accomplishing tasks more quickly", "productivity", "enhance effectiveness", "easier to do work" and "usefulness" at the 0.05 level. Using Kendall's, "easy to get PDA technology to do what I want" correlated positively to all usefulness statements (productivity, easier to do my work and usefulness) at the 0.05 level.

Using Kendall's and Pearson's, "interaction would be clear and understandable" positively correlated to all usefulness statements but with Pearson's, "performance improvement", "enhance effectiveness", "easier to do my work", and "usefulness" were significant at the 0.05 level. "Enhance effectiveness" and "easier to do my work" were significant at the 0.05 level for Kendall's.

Both Pearsons and Kendalls found "flexibility" had the most significance at the 0.01 level and was positively correlated to all statements regarding usefulness.

Using Pearson's, "becoming skillful" and "easy to use", positively correlated to all usefulness statements at the 0.05 level for "accomplishing tasks more quickly", "performance",

“productivity” and “enhance effectiveness”. Significance at the 0.01 level was demonstrated for “easier to do my work” and “usefulness”.

Using Kendall’s, “becoming skillful” correlated positively to all usefulness statements with “easier to do my work” at the 0.01 level and “enhance effectiveness”, “productivity”, and “usefulness” had significance at the 0.05 level. “Easy to use” was positively correlated to all usefulness statements with significance level of 0.01 for “easier to do my work” and “usefulness” as well as significance at 0.05 level for “accomplish tasks more quickly”, “productivity”, “performance” and “enhance effectiveness”.

Simply put, overall the correlations were positive and had statistical significance indicating that probability is at least less than 5 out of 100 that it a chance occurrence. Beginning support for the use of PDAs in the classroom and clinical setting based on the attitudes of the students and their perceptions of the usefulness and ease of use of the PDAs is provided by this study. As in Maag (2006), this current study found that students generally demonstrated a positive attitude toward PDA use and these findings are similar to Davis’ (1989) and Adams et al. (1992), in that students perceive PDA technology to be useful and easy to use in the classroom and clinical setting. Nevertheless, they seemed to have the greatest reservations with regard to learning to operate PDA technology; thus supporting the need for training to be incorporated into the curriculum.

Theoretical Review

Roy’s Adaptation Theory (1976) was selected to serve as the framework for this study because it focuses on one’s ability to adapt to focal, contextual and residual stimuli in an ever changing environment. Abiko (1999) connects the theory of adaptation to technology by stating, “ The concept of adaptation to changing environment stated by Roy might also be important for technology in general. The goal of technology should also be to promote man’s adaptation to the changing environment surrounding him in order to maintain the integrity of the individual.” (p. 171). Furthermore, Abiko (1999) proposed the designated relationship between nursing and technology to be client or patient to consumer, nurse to technologist, and nurse to technology. According to Roy (1976),”Man is a biophysical being in constant interaction with a changing environment. ...To cope with this changing environment, man has certain innate and acquired mechanisms. These mechanisms are biologic, psychologic and social in origin.” (p. 11). To this end, the use of PDA technology to enhance students’ access to reference materials can promote patient’s adaptation their changing environment.

Limitations

There were limitations encountered throughout the study. The first limitation encountered by the researcher was that only BSN students in a limited geographical area were enrolled in this study, thus limiting generalizability. Self-reporting of the data could have created problems, which could lessen validity of responses {i.e., memory, selective recall, responding to make oneself look favorable} (Norwood, 2000). Also, the majority of the responders were white, females under the age of 22, also limiting generalizability. The presence of instructors may have influenced student’s responses and willingness to participate even though they were told their participation would not be reflected in their grade. Another limitation was paucity of information on the subject of student perceptions of usefulness and ease of use of PDAs in the classroom and clinical setting. Additionally as in Davis (1989), “It should be emphasized that

perceived usefulness and ease of use are people's subjective appraisal of performance and effort, respectively, and do not necessarily reflect objective reality." (p. 335)".

Strengths

One of the strengths of the study is that it did not seem to matter if the students owned PDAs or did not own PDAs in their perceptions of the usefulness and ease of use. Overall, the students believe PDAs would be useful and it would be easy for them to learn to use them. This finding is positive because one of the main concerns in the literature was not enough training prior to requiring the use of the PDAs by the students. If students perceive they could learn to use the PDAs easily and do so, the learning curve could conceivably be small; however ongoing support is needed.

Implications for Nursing Practice

This study has implications in nursing education and in the work place. The nurse, as a member of the Healthcare team, can achieve the goal of health promotion and acceptance through active participation and communication. Utilizing the PDA in the classroom and clinical setting as an adjunct to other teaching and learning devices, will assist the student in becoming familiar with many health related topics, documenting, use of reference material and time management. In turn, the student will be able to quickly and easily access information at the point of care, and access information to educate the patient and family according to their needs. The PDA will help give the students confidence knowing they have many reference materials, literally, in their pocket to be accessed at any time. Having this added confidence may decrease anxiety levels, which may enhance learning. As noted in McLeod et al. (2003), the interns relied on the PDAs for reference materials more than the residents, who used the PDA more as a time manager (i.e., calendars, emailing etc.). This study demonstrated when students become more comfortable with their knowledge base they are less likely to utilize PDAs; Inversely, it shows as novices, that students are more likely to need and use the devices in the classroom and clinical setting.

According to Adams et al. (1992), "a heavy emphasis on ease of use, particularly at the cost of functionality, is not advisable." (p. 237). However, it is opinion of the researcher that training, should be incorporated into the curriculum. Student perceptions of ease of use would increase understanding of the PDA thereby increasing the usefulness of the technology. In turn, as this correlation increased, the student would have been provided a tool of reference, which indeed provided utility. More importantly, having this resource at the point of care could conceivably create increasingly positive patient outcomes.

Recommendations for Future Research

This study adds to the body of literature for PDA use in nursing education. Findings of this study demonstrate there have been several areas regarding PDA use in the classroom and clinical setting to warrant further research. Further research could indicate/explore faculty perceptions of the usefulness and ease of use of PDAs in the classroom and clinical setting, as well as attitudes toward computer use in general. Other studies could explore how the students utilize the PDAs for patient education. It would be interesting to compare how the students perceived they were able to meet patient educational needs utilizing the PDA. Patient education is of paramount importance to nurses and the PDA is just another tool of reference for them to utilize at the point of care. Further studies could include a longitudinal study that follows students after graduation and to find if they still perceive PDAs as useful.

Questions related to Internet and email access should be deleted and replaced with questions that would more accurately represent attitudes toward computer use related to educational purposes. A suggestion might be “How often do you access computerized Information Systems in a day (or week) for educational purposes.”

Two additional questions could be added to the survey: “Do you have experience with PDA technology?” and “For what reasons do you use your computer?” The later of these two questions would allow the researcher to delineate between those students who use the computer for work or education purposes from those who use the computer for entertainment. The addition of these questions would assist the researcher to extrapolate more accurate findings related to attitudes. Also, it would be beneficial to provide pre and post surveys to explore whether or not there was an increase in ease of use after having had training; it would be a positive finding if perceptions of usefulness increased as well.

It would be of interest to explore patient perceptions regarding students using PDAs at the point of care. Many times, what is taught at the bedside is information the healthcare provider finds to be of importance. The PDAs could conceivably give the student more confidence in asking patients what information they would like to know regarding their illness.

Chapter Summary

This chapter has discussed the findings of the study, theoretical framework, limitations, assumptions, strengths, implications for nursing practice, and recommendations for future research. The results summarized that students would find PDAs useful and easy to use in the classroom and clinical setting. The students’ attitudes toward computer use compared to daily use of computers were also found to be statistically significant. As previously stated the researcher is unsure the two questions related to computer access accurately represented attitudes toward computer use.

Continued research on identifying student’s perceptions of usefulness and ease of use of PDAs in the classroom and clinical setting are needed. This study’s results have added to the nursing knowledge base in relation to using PDAs as adjuncts to existing learning/teaching tools. As supported by the conceptual framework, technology is important to have in place in order to perpetuate positive health outcomes and adaptive responses of patients. As White et al. (2005) states, “It is important that nursing graduates know how to embrace the tools that microtechnology is bringing into daily patient care operations, and using PDAs in baccalaureate nursing education is an effective way to accomplish this.” (p. 154)

Table 1
Usefulness

Questions	Strongly Agree	Agree	Neither Agree Or Disagree	Disagree	Strongly Disagree
Using PDA technology in the classroom and clinical setting would enable me to accomplish tasks more quickly	23 (42.6%)	25 (46.3%)	5 (9.3%)	1 (1.9%)	0
Using PDA technology would improve my classroom and clinical setting performance	13 (24.1%)	34 (63%)	6 (11.1%)	1 (1.9%)	0
Using PDA technology in the classroom and clinical setting would increase my productivity	21 (38.9%)	26 (48.1%)	5 (9.3%)	2 (3.7%)	0
Using PDA technology would enhance my effectiveness in the classroom and clinical setting	17 (31.5%)	32 (59.3%)	4 (7.3%)	1 (1.9%)	0
Using PDA technology would make it easier to do my work	25 (46.3%)	19 (35.2%)	9 (16.7%)	1 (1.9%)	0
I would find PDA technology useful in the classroom and clinical setting	26 (48.1%)	25 (46.3%)	2 (2.3%)	1 (1.9%)	0

Table 2
Ease of Use

Question	Strongly Agree	Agree	Neither Agree or Disagree	Disagree	Strongly Disagree
Learning to operate PDA technology would be easy	13 (24.1%)	30 (55.6%)	6 (11.1%)	5 (9.3%)	0
I would find it easy to get a PDA to do what I want	7 (13%)	30 (55.6%)	12 (22.2%)	5 (9.3%)	0
It would be easy for me to become skillful at using PDA technology	15 (27.8%)	28 (51.9%)	7 (13%)	4 (7.4%)	0
I would find PDA technology to be flexible to interact with	7 (16.7%)	32 (59.3%)	10 (8.5%)	3 (5.6%)	0
My interaction with PDA technology would be clear and understandable	11 (20.4%)	30 (55.6%)	10 (18.5%)	3 (5.6%)	0
I would find PDA technology easy to use	14 (25.9%)	29 (53.9%)	8 (14.8%)	3 (5.6%)	0

Table 3
Pearson's Correlation of Use and Usefulness

		LEARNING WOULD BE EASY FOR ME	EASY TO GET TO DO WHAT I WANT IT TO DO	INTER-ACTION WOULD BE CLEAR AND UNDER- STANDABLE	FLEXIBLE TO INTERACT WITH	EASY FOR ME TO BECOME SKILLFUL	EASY TO USE
ENABLE ME TO ACCOMPLISH TASKS MORE QUICKLY	Pearson Correlation	.150	.274(*)	.251	.422(**)	.280(*)	.328(*)
	Sig. (2- tailed)	.278	.045	.067	.001	.041	.015
IMPROVE MY PERFORMANCE	Pearson Correlation	.280(*)	.228	.276(*)	.486(**)	.308(*)	.325(*)
	Sig. (2- tailed)	.040	.097	.044	.000	.024	.016
INCREASE MY PRODUCTIVITY	Pearson Correlation	.048	.313(*)	.191	.409(**)	.319(*)	.276(*)
	Sig. (2- tailed)	.732	.021	.166	.002	.019	.044
ENHANCE MY EFFECTIVENESS	Pearson Correlation	.088	.286(*)	.331(*)	.475(**)	.340(*)	.324(*)
	Sig. (2- tailed)	.528	.036	.014	.000	.012	.017
MAKE IT EASIER TO DO MY WORK	Pearson Correlation	.158	.315(*)	.308(*)	.398(**)	.387(**)	.351(**)
	Sig. (2- tailed)	.253	.020	.024	.003	.004	.009
FIND USEFUL	Pearson Correlation	.141	.322(*)	.294(*)	.412(**)	.372(**)	.465(**)
	Sig. (2- tailed)	.309	.018	.031	.002	.006	.000

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

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

Table 4
Kendall's Correlation Usefulness and Ease of Use

		LEARNING WOULD BE EASY FOR ME	EASY TO GET TO DO WHAT I WANT IT TO DO	INTER- ACTION WOULD BE CLEAR AND UNDER- STAND- ABLE	FLEXIBLE TO INTERACT WITH	EASY FOR ME TO BECOME SKILLFUL	EASY TO USE
ENABLE ME TO ACCOMPLISH TASKS MORE QUICKLY	Correlation Coefficient	.051	.232	.198	.386(**)	.224	.271(*)
	Sig. (2-tailed)	.680	.061	.111	.002	.071	.029
IMPROVE MY PERFORMANCE	Correlation Coefficient	.209	.173	.211	.441(**)	.240	.253(*)
	Sig. (2-tailed)	.092	.161	.088	.000	.053	.041
INCREASE MY PRODUCTIVITY	Correlation Coefficient	-.015	.275(*)	.160	.372(**)	.299(*)	.241
	Sig. (2-tailed)	.906	.026	.195	.003	.015	.051
ENHANCE MY EFFECTIVENESS	Correlation Coefficient	.037	.243	.280(*)	.454(**)	.283(*)	.265(*)
	Sig. (2-tailed)	.768	.051	.025	.000	.023	.034
MAKE IT EASIER TO DO MY WORK	Correlation Coefficient	.091	.286(*)	.260(*)	.369(**)	.356(**)	.322(**)
	Sig. (2-tailed)	.455	.019	.034	.003	.004	.009
FIND USEFUL	Correlation Coefficient	-.002	.295(*)	.222	.375(**)	.317(*)	.436(**)
	Sig. (2-tailed)	.985	.019	.079	.003	.012	.001

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

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

Table 5
 Statements Describing Positive Personal Attitudes Toward Computer Use

	Frequency	Percent	Valid Percent	Cumulative Percent
Valid I COULD NOT LIVE WITHOUT MY COMPUTER	32	59.3	59.3	59.3
I USE MY COMPUTER BUT NOT TO MY FULLEST POTENTIAL	22	40.7	40.7	100.0
Total	54	100.0	100.0	

Table 6
Daily Access of the Internet

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	1-10	35	64.8	64.8	64.8
	10-20	17	31.5	31.5	96.3
	20 OR MORE	2	3.7	3.7	100.0
	Total	54	100.0	100.0	

Table 7
Daily Access of Email

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	1-10	48	88.9	88.9	88.3
	10-20	5	9.3	9.3	98.1
	20 OR MORE	1	1.9	1.9	100.0
	Total	54	100.0	100.0	

Table 8
Positive Attitude and Computer Use

		WHAT STATEMENT WOULD BEST DESCRIBE YOUR PERSONAL ATTITUDE TOWARD COMPUTERS	d6r	HOW OFTEN DO YOU CURRENTLY ACCESS THE INTERNET ON YOUR COMPUTER IN A DAY	HOW OFTEN DO YOU ACCESS YOUR EMAIL ON YOUR COMPUTER IN A DAY
WHAT STATEMENT WOULD BEST DESCRIBE YOUR PERSONAL ATTITUDE TOWARD COMPUTERS	Pearson Correlation	1	-1.000(**)	-.443(**)	-.083
	Sig. (2-tailed)		.000	.001	.551
	N	54	54	54	54
d6r	Pearson Correlation	-1.000(**)	1	.443(**)	.083
	Sig. (2-tailed)	.000		.001	.551
	N	54	54	54	54
HOW OFTEN DO YOU CURRENTLY ACCESS THE INTERNET ON YOUR COMPUTER IN A DAY	Pearson Correlation	-.443(**)	.443(**)	1	.538(**)
	Sig. (2-tailed)	.001	.001		.000
	N	54	54	54	54
HOW OFTEN DO YOU ACCESS YOUR EMAIL ON YOUR COMPUTER IN A DAY	Pearson Correlation	-.083	.083	.538(**)	1
	Sig. (2-tailed)	.551	.551	.000	
	N	54	54	54	54

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

Table 9
Positive Attitude and Computer Use

		WHAT STATEMENT WOULD BEST DESCRIBE YOUR PERSONAL ATTITUDE TOWARD COMPUTERS	d6r	HOW OFTEN DO YOU CURRENTLY ACCESS THE INTERNET ON YOUR COMPUTER IN A DAY	HOW OFTEN DO YOU ACCESS YOUR EMAIL ON YOUR COMPUTER IN A DAY	
Kendall's tau_b	WHAT STATEMENT WOULD BEST DESCRIBE YOUR PERSONAL ATTITUDE TOWARD COMPUTERS	Correlation Coefficient	1.000	-1.000(**)	-.495(**)	-.161
		Sig. (2-tailed)	.	.000	.000	.238
		N	54	54	54	54
	d6r	Correlation Coefficient	-1.000(**)	1.000	.495(**)	.161
		Sig. (2-tailed)	.000	.	.000	.238
		N	54	54	54	54
	HOW OFTEN DO YOU CURRENTLY ACCESS THE INTERNET ON YOUR COMPUTER IN A DAY	Correlation Coefficient	-.495(**)	.495(**)	1.000	.491(**)
		Sig. (2-tailed)	.000	.000	.	.000
		N	54	54	54	54
	HOW OFTEN DO YOU ACCESS YOUR EMAIL ON YOUR COMPUTER IN A DAY	Correlation Coefficient	-.161	.161	.491(**)	1.000
		Sig. (2-tailed)	.238	.238	.000	.
		N	54	54	54	54

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

APPENDIX A
COVER LETTER

APPENDIX A
Cover Letter
Nursing Student's Perceptions of the Usefulness
and ease of Use of Personal Digital
Assistant Technology in the Classroom
and Clinical Setting

Dear Participant.

I am a graduate student in the Master of Science Program/ College of Nursing, at Florida State University under the direction of Dr. Linda Sullivan. I am conducting a research study to determine the usefulness and ease of use of PDA technology for nursing students in the classroom and clinical setting.

I am requesting your participation, which will involve completing a demographic form and a questionnaire. The entire process should take longer than 15 minutes. Your participation in this study is voluntary. If you choose not to participate or to withdraw from the study at any time, there will be no penalty; it will not affect your grade. The results of the research study may be published, but your name will not be used. The questionnaire is anonymous. The results of the study may be published but your name will not be known.

All responses will be separated and coded numerically without identifying information about you. Data will be analyzed using SPSS software package for statistics. Paper and electronic data will be generated and reported in aggregate form only. There will be no sharing of individual responses and you are given the assurance that responses will be kept confidential to the fullest extent allowed by law. Surveys will be collected by the researcher at completion and stored in a in a locked drawer in the researchers home. Upon completion of the statistical analysis, the data will be stored in a secure room at the College of Nursing. The data will be shredded at the end of a three-year period, Oct. 2009. The only people who will have access to this information will be the researcher, committee chair and a statistician. Results will be provided upon request.

If you agree to take part in this study, there may or may not be direct benefit to you. It is hoped the information learned from this study on usefulness and ease of using a PDA will promote an understanding of whether or not it would be beneficial and efficacious to require nursing students to purchase PDA's as an educational tool for undergraduate nursing students. This research maybe significant in providing research data that is relevant to the nursing education community.

If you have any questions concerning the research study, please call me at 850-762-4926 or email me at mic02c@garnet.acns.fsu.edu or you may call Dr. L. Sullivan at 850-644-5351 or email her at lsullivan@nursing.fsu.edu.

If you have questions about your rights as a subject/participant in this research, or if you feel you have been placed at risk, you can contact the Chair of the Human Subjects Committee, Institutional Review Board, through the Office of the Vice President for Research, at (850) 644-8633.

Sincerely,

Melissa Chamberlain RN, BSN

APPENDIX B
DEMOGRAPHIC TOOL

APPENDIX B
Demographic Tool

Please complete this form and hand it in separately from the questionnaire.

1. Age: _____
2. Gender: _____
3. Race: _____
4. Educational Level (Place and X at the level you have attained)
GED _____
High School _____
Associates _____
Bachelors _____
Master _____
5. Do you currently own a PDA
a. yes___ b. no___
6. What statement would best describe your personal attitude toward computers?
_____ I could not live without my computer

_____ I use my computer but not to fullest potential

_____ I could take it or leave it

_____ I do not even think about computers
7. How often do you currently access the Internet on your computer in a day?
_____ none
_____ 1-10
_____ 10-20
_____ 20 or more
8. How often do you access your email on your computer in a day?
_____ none
_____ 1-10
_____ 10-20
_____ 20 or more

APPENDIX C
MEASUREMENT SCALES FOR PERCEIVED
USEFULNESS AND PERCEIVED EASE OF USE

APPENDIX C
Measurement Scale for Perceived
Usefulness and Perceived Ease of Use

Please complete the following questions using the following scale and hand in separately from the demographic form.

Strongly agree	agree	neither	disagree	strongly disagree
1	2	3	4	5

Perceived Usefulness

1. Using PDA Technology in the classroom and clinical setting would enable me to accomplish tasks more quickly.

2. Using PDA Technology would improve my classroom and clinical setting performance.

3. Using PDA Technology in the classroom and clinical setting would increase my productivity.

4. Using PDA Technology would enhance my effectiveness in the classroom and clinical setting.

5. Using PDA Technology would make it easier to do my work in the classroom and clinical setting.

6. I would find PDA Technology useful in the classroom and clinical setting.

Perceived Ease of Use

1. Learning to operate PDA Technology would be easy for me.

2. I would find it easy to get PDA Technology to do what I want it to do.

3. My interaction with PDA Technology would be clear and understandable.

4. I would find PDA Technology to be flexible to interact with.

5. It would be easy for me to become skillful at using PDA Technology.

6. I would find PDA Technology easy to use.

APPENDIX D
IRB APPLICATION

APPENDIX D
IRB Application
Florida State University
Human Subjects Application
to the Institutional Review Board
for Research involving Human Subjects

The Federal Government and University policy require that the use of human subjects in research be monitored by the Institutional Review Board (IRB). The following information must be provided when humans are used in research studies, whether internally funded, extramurally funded or unfunded. Research in which humans are used may not be performed in the absence of IRB approval.

PLEASE COMPLETE AND SUBMIT PAGES 1 AND 2 plus YOUR ANSWERS TO THE QUESTIONS (on page 3) IN TYPEWRITTEN FORM TO: HUMAN SUBJECTS COMMITTEE, Mail Code 2763, or

2035 E. Paul Dirac Drive, Box 16
100 Sliger Bldg., Innovation Park
Tallahassee, FL 32310

Researcher: Melissa Chamberlain Date: 07/25/2006
Project Title: Nursing Students Perceptions of the Usefulness and Ease of Use of Personal Digital Assistants in the Classroom and Clinical Setting

Project Period (starting/ending dates): 12/05 to 12/06

Position in University (faculty, etc.) If student, please indicate: Student
FSU Faculty Advisor: Dr. Linda Sullivan Committee Chair
Department: School of Nursing
Telephone: 850-762-4926(H)
E-Mail Address: mic02c@garnet.acns.fsu.edu
Mailing Address
27442 NE CR 69A
Altha Fl 32421

Project is (please check one): dissertation teaching X thesis other
Project is: X unfunded funded (if funded, please complete the following):

Funding Agency (actual/potential): 1. _____

Contract/Grant No. (OMNI No.) (IF Applicable): _____

FOR EVALUATION OF YOUR PROJECT, PLEASE CHECK THE FOLLOWING WHICH APPLY:

	Mentally or Physically Challenged Subjects	X	Subjects studied at FSU
	Children or Minor Subjects (under 18 years old)		Subjects studied at non-FSU location(s)
	Prisoners, Parolees or Incarcerated Subjects	X	Students as Subjects
	Filming, Video or Audio Recording of Subjects		Employees as Subjects
X	Questionnaires or Survey(s) to be administered		Pregnant Subjects
	Review of Data Banks, Archives or Medical Records		Fetal, placental or surgical pathology tissue(s)
	Oral History		Involves Blood Samples (fingerpicks/venipuncture, etc.)
	Subjects' major language is not English		Subjects to be paid
	Involves Deception (if yes, fully describe at Question No. 7)		
	Exclusion of Women or Children Subjects (must explain why they are being excluded)		

This document is available in alternative format upon request by calling (850) 644-8633
Human Subjects Application (rev. 11-99)

Survey Techniques: Check applicable category if the only involvement of human subjects will be in one or more of the following categories:

- _____ Research on normal educational practices in commonly accepted educational settings
- _____ Research involving educational tests (cognitive, diagnostic, aptitude, achievement)
- X Research involving survey or interview procedures (if checked, please see below)
- _____ Research involving the collection or study of existing data, documents, records, specimens

If research involves use of survey or interview procedures to be performed, indicate:

1. Responses will be recorded in such a manner that human subjects cannot be identified, by persons other than the researcher, either directly or through identifiers linked to the subjects.

yes no

2. Would subject's responses, if they became known outside the research, reasonably place the subject at risk of criminal or civil liability or be damaging to the subject's financial standing or employability.

yes no

3. The research deals with sensitive aspects of the subject's own behavior, such as illegal conduct, drug use, sexual behavior, or use of alcohol.

yes no

Does Research Involve Greater Than Minimal Risk to Human Subjects?

Yes No

(If yes, explain in full at Question No. 2)

“Minimal Risk” means that the risks of harm anticipated in the proposed research are not greater, considering probability and magnitude, than those ordinarily encountered in daily life or during the performance of routine physical or psychological examinations or tests.

I HAVE READ THE FLORIDA STATE LETTER OF ASSURANCE FOR THE PROTECTION OF HUMAN SUBJECTS IN RESEARCH AND AGREE TO ABIDE BY IT. I ALSO AGREE TO REPORT ANY SIGNIFICANT AND RELEVANT CHANGES IN PROCEDURES AND INSTRUMENTS AS THEY RELATE TO SUBJECTS TO THE CHAIR, HUMAN SUBJECTS COMMITTEE, OFFICE OF RESEARCH.

Melissa Chamberlain

RESEARCHER (signature)

(Date)

FSU FACULTY ADVISOR (signature)

(Date)

(Application will not be processed without Advisor's signature)

Human Subjects Application (rev. 11-99)

Questions
FOR RESEARCH INVOLVING HUMAN SUBJECTS
USE ADDITIONAL SHEETS FOR ANSWERING THE FOLLOWING QUESTIONS
PLEASE SUBMIT YOUR ANSWERS IN TYPEWRITTEN FORM

1. GIVE A COMPLETE DESCRIPTION OF YOUR RESEARCH PROCEDURES AS THEY RELATE TO THE USE OF HUMAN SUBJECTS.

In this study the ethical considerations and the principles of the Nuremberg code were adhered to for the protection of human subjects. After submitting a research proposal and obtaining approval from the university to perform the survey, the researcher will obtain permission from the dean of the college of nursing to complete the study. Then the researcher will approach the instructors for approval to perform the survey in the classroom setting. The participants will include senior nursing students at Florida State University. The students will be female or male and between the ages of 18 and 65. At the beginning of the class, the researcher will introduce herself to the class and explain why she is present. If the students would like to participate in the study they will be asked to raise their hands. The students who do not wish to participate will then be told they may leave at that time, as it is voluntary. The remaining students will be given a packet of information, which will contain a cover letter, demographic and survey forms. Completion of the tool is expected to take no longer than 15 minute. All responses will be separated and coded numerically without identifying information about the subjects, thereby assuming anonymity. Data will be analyzed using SPSS software for statistics. Paper and electronic data will be generated and reported in aggregate form only. There will be no sharing of individual responses and subjects will be given the assurance that responses will be kept confidential to the fullest extent allowed by law. Surveys will be collected by the researcher at completion and stored in a locked drawer in the researchers home. Upon completion of the statistical analysis, the data will be stored in a secure room at the College of Nursing. The data will be shredded at the end of a three-year period, Oct. 2009. The only people who will have access to this information will be the researcher, research advisor and a statistician.

2. HAVE THE RISKS INVOLVED BEEN MINIMIZED AND ARE THEY REASONABLE IN RELATION TO ANTICIPATED BENEFITS OF THE RESEARCH, IF ANY, TO THE SUBJECTS AND THE IMPORTANCE OF THE KNOWLEDGE THAT MAY REASONABLY BE EXPECTED TO RESULT? WHAT PROVISIONS HAVE BEEN MADE TO INSURE THAT APPROPRIATE FACILITIES AND PROFESSIONAL ATTENTION NECESSARY FOR THE HEALTH AND SAFETY OF THE SUBJECTS ARE AVAILABLE AND WILL BE UTILIZED?

There are no inherent risks involved in completing the questionnaires. The importance of knowledge gained about the perceptions nursing students have regarding the usefulness and ease of use of personal digital assistant technology will be explained on the informed consent form. The researcher's name, phone

number and email contact are located on the cover letter. Additionally, participants are asked to call if they have any concerns or questions about participating in the study. The risk to human subjects is minimal in this project. Subjects will only be asked to complete documentation and questionnaires. There are no physical requirements of subjects in this project. If they experience any emotional discomfort after answering the questionnaires, the researcher will be available to talk with them.

There may or may not be direct benefit to the participants. It is hoped the information learned from this study on usefulness and ease of using a PDA will promote an understanding of whether or not it would be beneficial and efficacious to require nursing students to purchase PDA's as an educational tool for undergraduate nursing students. This research maybe significant in providing research data that is relevant to the nursing education community.

3. DESCRIBE PROCEDURES TO BE USED TO OBTAIN INFORMED CONSENT.

Each student will be given a cover letter that explains the purpose of the study (Appendix A). Completion of the tool (Appendix B) will imply consent. The subjects will be asked to participate the day the researcher approaches the class to perform the survey. There are no subjects under the age of 18 years of age.

4. DESCRIBE HOW POTENTIAL SUBJECTS FOR THE RESEARCH PROJECT WILL BE RECRUITED. The researcher will attend one class during the first month of the fall semester of senior nursing students and explain the study. The researcher will then request for volunteers to participate in the study by a show of hands.

5. WILL CONFIDENTIALITY OF ALL SUBJECTS BE MAINTAINED? HOW WILL THIS BE ACCOMPLISHED? PLEASE ALSO SPECIFY WHAT WILL BE DONE WITH ALL AUDIO AND/OR VISUAL RECORDINGS, IF APPLICABLE, PICTURES AND PERSONAL DOCUMENTATION OF SUBJECTS BOTH DURING AND AFTER COMPLETION OF THE RESEARCH.

Subject's confidentiality will be maintained to the fullest extent allowed by law. There will be no identifying information requested on either the demographic or questionnaire forms. These questions will be numerically coded only. There will be no audio or visual recordings made. There will be no pictures or personal documentation of any subjects.

6. IS THE RESEARCH AREA CONTROVERSIAL AND IS THERE A POSSIBILITY YOUR PROJECT WILL GENERATE PUBLIC CONCERN? IF SO, PLEASE EXPLAIN.

The research area does not seem to be controversial and is not expected to generate public concern.

7. DESCRIBE THE PROCEDURE TO BE USED FOR SUBJECT DEBRIEFING AT THE END OF THE PROJECT. IF YOU DO NOT INTEND TO PROVIDE DEBRIEFING, PLEASE EXPLAIN.

Subjects debriefing will consist of active listening and answering of any concerns or questions the subjects may have after completion of the survey process. Results will be given to participants upon request.

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BIOGRAPHICAL SKETCH

Melissa Chamberlain was born in Panama City, FL. She graduated from Florida State University with her BSN degree in 2004. She graduated from Florida State University with a Masters of Science degree in Nursing, the Family Nurse Practitioner track, in December 2006.