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Perceived Ease of Use and Usefulness of Podcasting in Nursing Skills Competence

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Perceived Ease of Use and Usefulness of Podcasting in Nursing Skills Competence

by

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Approval Page

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Abstract

This capstone project examined nursing students' technology acceptance of podcasting as a tool for nursing skill acquisition. Technology acceptance was determined by measuring the students' perceived competence of the skill along with the perceived usefulness and ease of use of the provided podcasts. A convenience sample of 49 first semester nursing students from an associate degree and practical nursing program participated in the project. Perceived competence of the three nursing skills: obtaining vital signs, inserting a Foley catheter, and performing a sterile dressing change was examined and compared from pre-podcast availability to post-podcast availability. The overall means of the nursing students' perceived usefulness and ease of use of the provided podcasts were also examined to determine their technology acceptance. The overall mean scores for both nursing student groups determined there was a significant increase of perceived competence from pre-podcast to post-podcast utilization with all three nursing skill podcasts offered. In addition, both nursing student groups were found to perceive the podcasts as both useful and easy to use.

Keywords: technology acceptance, podcasts, nursing students, nursing skill acquisition, perceived competence, perceived ease of use

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CHAPTER I

Introduction

Advancements in technology have evolved over the last few decades. Technology has allowed for the global advancement of broadband connectivity further allowing the ability to deliver real time information at a low cost that has increased social media participation and daily distant interactions (Zacharis, 2012). Today's generation has grown up with advancing technology and often expects technology use to be included in their educational obtainment (Vogt, Schaffner, Ribar, & Chavez, 2010). Mobile information technology tools have allowed for additional options in education. This evolving technology has influenced and redirected traditional knowledge acquisition methods to include the ability for mobile learning or m-learning (Vogt et al., 2010). The evolving technology tool of *podcasting,* which includes both digital recordings and videos, is one example that allows students the ability of mobile learning. Podcasting has also been noted to play an important role in providing learning abilities outside of the classroom to increase the number of competent nurses that meets both current and future needs (Long & Edwards, 2010).

Problem Statement

The use of podcasts has become more popular as a flexible educational delivery method tool; however, factors that predict students' technology acceptance still remain unclear. The diversity of today's nursing students require nursing programs to provide different learning delivery methods that accommodate the diverse needs as well as increase learning engagement and flexibility (Zacharis, 2012). Nursing students are charged with the challenge of successfully obtaining a vast amount of knowledge and

skills in a relatively short period of time, therefore flexible and engaging educational delivery methods need to be utilized. Providing additional support through mobile information technology allows convenient, portable, instructor guided content support that can be repeated to meet the individual learning needs of the nursing students (Vogt et al., 2010).

Justification of Project

Mobile information technology can offer nursing faculty more ways to support students' knowledge acquisition by offering class and laboratory content that is available at any place and at any time (Vogt et al., 2010). In addition, research has shown that spaced repetition and repetition over time results in more effective learning outcomes of retaining information in contrast to a single class period (Greenfield, 2010). According to Zacharis (2012), instructors often hesitate to implement new technologies in their instruction without evidence that the students' will utilize them. However, today's generation of students have grown up with technology and often include technology use in their daily lives (Vogt et al., 2010). Research has shown that students desire to be offered technology that includes mobile information experiences such as with podcasting that allows for repetition of the information, however there is still more to be learned about podcasting and its acceptance as a learning tool in nursing education (Vogt et al., 2010).

Purpose

The purpose of this project was to examine pre-licensure nursing students' acceptance of podcasting as a skill acquisition tool through the use of Venkatesh and Davis' (2000) Technology Acceptance Model (TAM2). Podcasting has become a

prominent trend in computing and media, however factors that predict its acceptance and utilization in higher education is still not largely explored (Zacharis, 2012). A quantitative quasi-experimental design was used to examine the usefulness and effectiveness of podcasts as a supplemental educational acquisition support tool. For this project, podcasts were provided in addition to material presented in the traditional classroom and laboratory methods to determine the podcasts' technology acceptance. Three of the first semester required nursing skills were demonstrated via podcasts. The nursing skills that were included consisted of acquisition of obtaining vital signs, sterile dressing changes, and Foley catheter insertion. Examining the students' perceived usefulness and ease of use of the podcasts was used to determine their acceptance of this technology and therefore a better understanding of the benefits of utilizing podcasts in nursing education.

Project Questions

This project aimed to answer the following questions with the completion of this capstone project:

1. What was the nursing student's perceived usefulness of the provided podcasts as a support tool for skill acquisition?
2. What was the nursing student's perceived ease of use of the provided podcasts as a support tool for the acquisition?
3. Was there a significant difference in the nursing student's perceived competence of the skill change with the use of the podcasts?

4. Was there a difference in the perception of podcast's perceived usefulness and ease of use between the associate degree nursing students and practical nursing degree program students?

5. Was there a difference between the students' perceived competence of the skill change with the use of the podcasts between the associate degree nursing students and the practical nursing degree students?

Knowing the nursing students' perceptions of the podcasts will assist the nursing educators in the decision of whether or not podcasting is a viable tool for knowledge and skill acquisition support.

Theoretical Framework

User acceptance of technology studies has become important over the last two decades (Chuttur, 2009). Davis' technology acceptance model (TAM) was developed and expanded upon from Ajzen and Fishbeins' Theory of Reasoned Action (TRA) and proposes that the acceptance of technology and utilization can be explained by the user's internal attitudes, beliefs, and intentions (Zacharis, 2012). The TRA further provided a theoretical link for the technology acceptance model's constructs of perceived usefulness (PU) and perceived ease of use (PEOU) (Malholtra & Galletta, 1999). Davis' (1989) TAM proposed that the attitude of a user toward a technology system was influence by the perceived usefulness and perceived ease of use of the system. Bandura's (1982) self-efficacy theory also suggested that behavior in any given instant could be predicted by perceived self-efficacy and judgment outcomes which further showed an importance of considering both perceived usefulness and ease of use (Chuttur, 2009). The TAM has been expanded to also include the TAM2 and TAM3.

In the TAM2, Venkatesh and Davis (2000) further extended the TAM to better explain the reasons why a person would perceive a system useful by adding the additional variables of subject norm, image, output quality, result demonstrability, and job relevance. Job relevance was determined by this PA, to be relevant to podcasting and nursing skill acquisition and therefore will be utilized to guide this capstone project. The construct of job relevance suggested that the proposed user of the system (nursing student) would additionally perceive the technology useful (in this project, podcasts) if they believed that it would help them perform their job better (nursing skill acquisition) (Venkatesh & Davis, 2000). Venkatesh and Davis' (2000) TAM2 was further expanded by Venkatesh and Bala (2008) to include the social influences of computer self-efficacy, computer anxiety, computer playfulness, perception of external control, perceived enjoyment, objective usability, and subject norm as additional variables to determine perceived usefulness.

Understanding the concepts of the theory was important to determine how this theory guided this capstone project. Perceived usefulness is how the individual sees the usefulness in using the technology (Zhang, Cocosila, & Archer, 2010). Perceived ease of use is how the individual perceives the ease of using the technology (Zhang et al., 2010). The TAM2 model further proposes that the perceived usefulness and ease of use is influenced by external variables (Zacharis, 2012). For this project's purposes, perceived competence of the skill was used as an indicator of job relevance. Job relevance refers to the capability of the system (technology) to enhance the user's job performance (Chuttur, 2009). Job relevance was the only external variable chosen to be included as being relevant to this particular project. Perceived competence is the participants' feelings of

competence in engaging in a particular behavior or domain being studied (Williams & Deci, 1996).

The Perceived Competence Scale (PCS) was used to measure perceived competence of the nursing students' skill both before and after utilizing the instructor guided podcasts of obtaining vital signs, inserting indwelling Foley catheters, as well as performing sterile dressing changes. The Perceived Competence Scale (PCS) was utilized to assess the students' perceived competence of the presented skill both before and after the utilization of the presented podcasts. The Perceived Competence Scale (PCS) was created by Deci and Ryan (1996) to assess how people perceive their competence level in relation to a particular behavior being assessed.

Venkatesh and Davis' (2000) TAM2 model is displayed in Figure 1. A conceptual-theoretical-empirical diagram is also included to assist in visually describing the relationship between the TAM2 and this capstone's design (See Figure 2.)

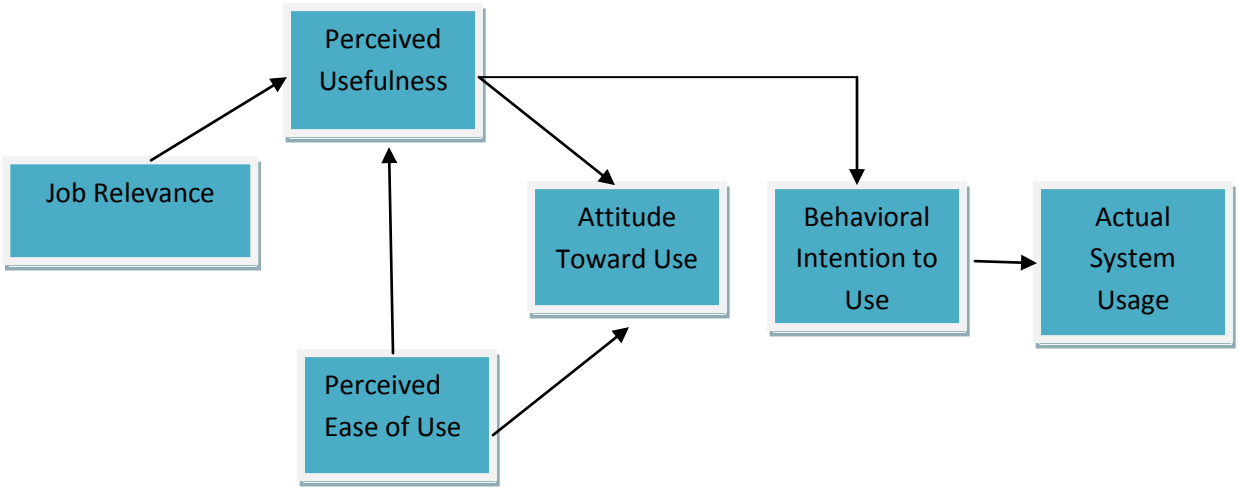

Figure 1. Technology Acceptance Model 2 (TAM2) (Venkatesh & Davis, 2000).

Conceptual-Theory-Empirical Diagram

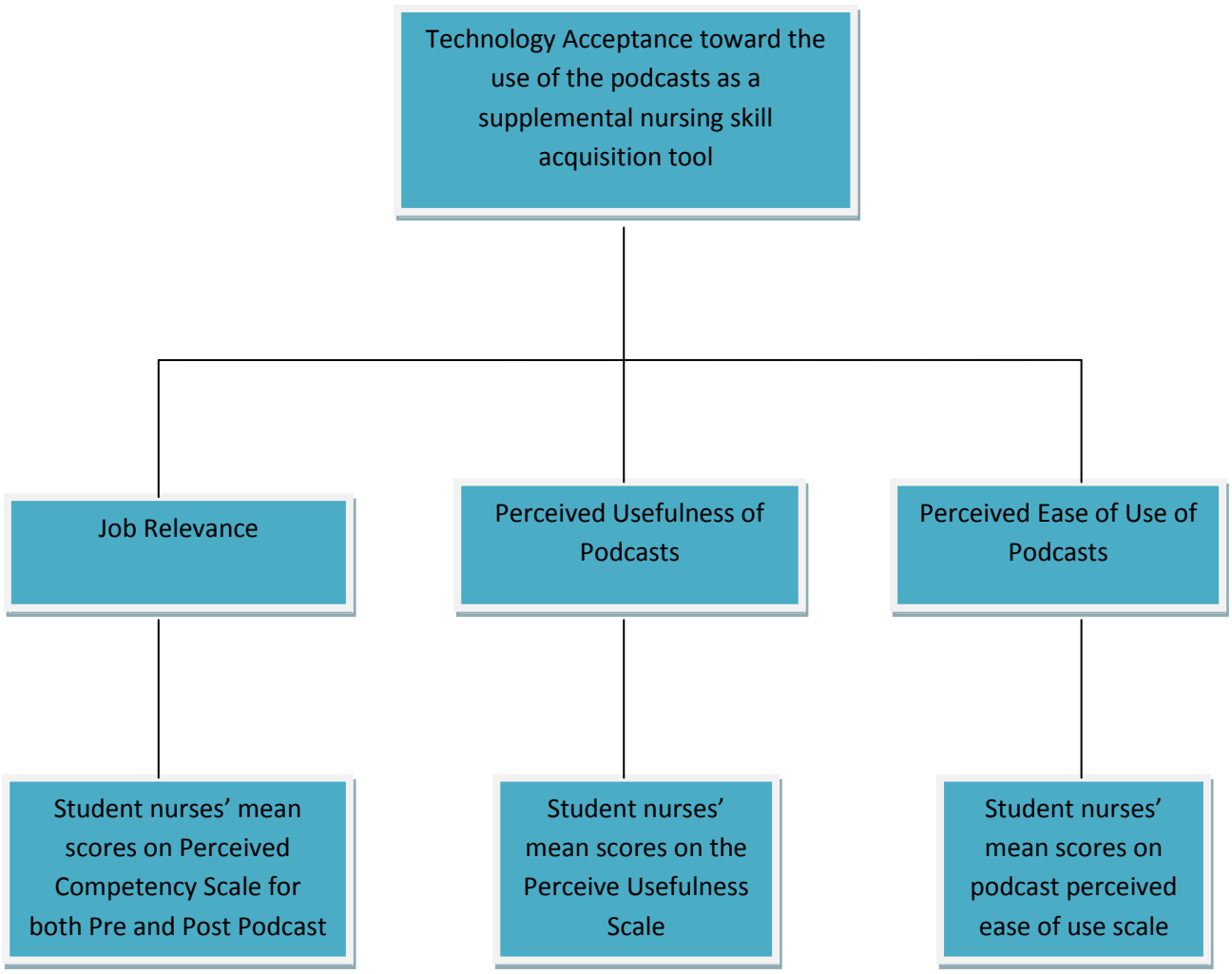

Figure 2. *Conceptual-Theoretical-Empirical Diagram: Technology Acceptance Model 2 (TAM2).*

Operational Definition of Terms

This project sought to gain insight into the perceived usefulness and ease of use of the mobile information technology tool of podcasting to support the nursing student's skill competence acquisition. The following terms of podcasts, media players, mobile learning, and mobile information technology tool will be defined in addition to perceived usefulness and perceived ease of use to assist the reader's understanding of the project.

- Podcasts are defined in this project as a series of audio or video digital media files that are uploaded via internet and are made available for downloading via a mobile information technology tool for listening or viewing as desired (Greenfield, 2010; Strickland, Gray, & Hill 2012).
- Mobile learning is defined in this project as the ability to learn the class content at any time and any place with the assistance of a mobile information technology device (Vogt et al., 2010).
- Mobile information technology devices are defined in this project to include media players, personal digital assistants (PDAs), laptop computers, tablet personal computers, mobile phones, and smart phones (Greenfield, 2010).
- Perceived usefulness is defined in the project as the degree in which the nursing student perceives the podcasts will heighten their job performance of nursing skill acquisition.
- Perceived ease of use is defined in this project as the degree in which the nursing student perceives utilizing the podcasts will be free of effort.
- Perceived competence is the students' feelings of competence in performing the required nursing skill.

- Job Relevance- The capabilities of the podcasts to enhance the student's ability to perform the nursing skill (perceived obtained competence of the skill).

Summary

Advancements in technology have shown to allow for more innovated options for knowledge and skill acquisition. Student nurses often need additional support in obtaining the vast amount of knowledge and skills that are required to become competent nurses. The mobile information technology tool of podcasting has been reported to provide a format that can assist in meeting both the current and future need of competent nurses (Long & Edwards, 2010). The presented capstone project previously described, examined the outcomes of the students reported perceptions of usefulness and ease of use of the provided podcasts as an additional skill competence support measure. Projects that examine the acceptance of innovative technology support measures for knowledge and skill acquisition such as with providing podcasts can result in positive practice change to improve nursing student support. Implementing a project that was guided by theory and previous literature also allowed the attainment of outcomes that are evidence based and have the ability to assist in positive practice change.

CHAPTER II

Literature Review

Technology has the ability to be an asset to nursing education knowledge acquisition. Nursing students are required to obtain a vast amount of knowledge and skills in a relatively short period of time. The nursing discipline requires these students to attain knowledge and skills that allow them the ability to think critically and make complex decisions (Vogt et al., 2010). Nursing educators must strive to provide innovative methods to support the student's knowledge and skill acquisition requirements. Nursing education has evolved from a traditional in class model to incorporating the individual's knowledge acquisition through a variety of methods that includes technology driven distant learning (Vogt et al., 2010).

The current generation of students also expects the latest technological educational strategies (Vogt et al., 2010). Higher education that incorporates distant learning, with the use of technology, can allow students more options to assist with their educational needs. The use of technology such as with podcasting has been evolving in the educational, business, and healthcare setting (Vogt et al., 2010). The purpose of this project was to examine pre-licensure nursing students' acceptance of podcasting as a skill acquisition tool through the use of Venkatesh and Davis' (2000) Technology Acceptance Model 2 (TAM2). There is much that can be learned from previous literature about the acceptance of podcasting and forms of mobile information technology as well as podcasting as an aid to knowledge and skill acquisition.

Review of Literature

A literature search was conducted for studies that utilized Venkatesh and Davis (2000) Technology Acceptance Model and indicators that predict technology acceptance as well as studies that incorporated podcasting and other mobile technology for knowledge and skill acquisition support. Theories that include the acceptance of technology by measuring the students' perceptions of the technology can guide studies to understand how technological tools can benefit knowledge and skill acquisition. There is much that can be learned about effective ways to utilize technology as skill and knowledge acquisition tool.

Several searches were conducted in Cumulative Index to Nursing and Allied Health Literature (CINAHL) and Google Scholar utilizing the keywords: technology acceptance, podcasts, podcasting, nursing education, and mobile technology in different refined searches to obtain the most relevant studies. The first search of the two key words technology acceptance, podcasting, and nursing education did not yield any full text studies in CINAHL. With refining the search to technology acceptance and nursing education, 11 studies were obtained. With the search further refined to searching the keywords technology acceptance and podcasting, three articles were obtained. The keywords that yielded the most articles were technology acceptance which yielded 539 articles, however after limiting the search to healthcare, English only, full text articles within ten years, the yield diminished to 20 articles. A further search in Google Scholar yielded research studies that were linked from relevant studies found in CINAHL.

The research studies chosen to be included in this capstone project's literature review included either studies of technology acceptance or podcasting that were found to

be relevant to healthcare, nursing or education and were conducted within the last 10 years. The following research studies were selected for inclusion for their relevance of the theory model and concepts of this capstone project.

Technology Acceptance

Predicting podcast acceptance. Zacharis (2012) used Davis' (1989) technology acceptance model (TAM) in a study to examine factors that predict the adoption of podcasting as a review and exam preparatory tool. The study included the hypotheses in which each construct perceived usefulness (PU), perceived ease of use (PEOU), and perceived enjoyment (PENJ) would predict the behavioral intention of the student to use the technology of podcasting as a review and exam preparatory tool. The study by Zacharis (2012) used a web-based survey that measured the acceptance degree in which the students accepted the podcasts as a review and exam preparatory tool. The study was conducted in Greece and included 122 student volunteers from one of four introductory information systems courses at a large university. The study utilized 22 enhanced (audiovisual) podcasts that covered different complex topics and were delivered via voiceover PowerPoint slideshow presentations. The study indicated that PEOU accounted for 56.3 percent of the variance in PU, PENJ explained 67.2 percent of the variance in PEOU, while the three factors (PU, PEOU, and PENJ) can significantly account for 78.2 percent in the student's BI to use educational podcasts.

Gribbins (2007) utilized Davis (1989) Technology Acceptance Model to determine the perceived usefulness of podcasting in higher education. Perceived usefulness was reported to frequently have an impact on the attitude toward the technology (Gribbins, 2007). Attitude was defined in the study as the student's positive

or negative beliefs toward podcasting. A survey was administered to students enrolled in two online, graduate level Management Information Systems courses. The questions measured the respondent's attitude toward podcasts, their familiarity with podcasting and their perceived thoughts of the usefulness of the podcasts. Students were also asked about their intention to use various technologies to access and listen to podcasts, if podcasts were made available by the faculty. In addition an open-ended question for additional comments was presented to gain a better insight into the use of podcasts in higher education. The response rate of the study was reported to be 95.9%, with 47 of the 49 students that were enrolled in the two classes participating.

Results of the study showed that at the time of the survey, the majority of the respondents had limited exposure to podcasting with 55% reported to not be aware and had not listened to podcasts before; the lesser amount of 9% had reported to have listened to numerous podcasts, whereas 13% reported to have listened to a few podcasts. The survey results of 70.21% were found that podcasting was agreed to be useful in higher education, with the results of agreeing or strongly agreeing to the statement, "Overall, integrating of podcasting can be useful in college curriculum" (Gribbins, 2007).

Technology acceptance of an online nursing course. A quantitative research study was performed by Tung and Chang (2008) to identify the compatibility, perceived usefulness, and ease of use, perceived financial costs, and computer self-efficacy of online nursing course use. Rogers' (1995) innovation diffusion theory and Davis' (1989) technology acceptance model were combined to guide this study by Tung and Chang (2008). Rogers' concept of compatibility was incorporated in addition to Davis' technology acceptance model concepts of perceived usefulness and ease of use. A six

part, 17 item questionnaire, using a seven point Likert scale was administered to 267 full-time undergraduate nursing students at six Taiwanese universities. Two new additional concepts were added to form the TAM2 of perceived financial costs and computer self-efficacy were proposed in this study to increase the understanding of the users of the online course (Tung & Chang, 2008). The study found that compatibility was the most important variable that affected the student's perception of usefulness of the online course. Furthermore, perceived usefulness was higher in association with their increased compatibility of the online course (Tung & Chang, 2008).

Technology acceptance of cloud computing. Behrend, Wiebe, London, and Johnson (2011) included approximately 750 community college students to examine the factors that lead to the technology adoption of cloud computing on a virtual computing lab platform in a setting of higher education. Cloud computing was described as online software applications and other resources that are available to multiple users via the internet instead of being installed on the user's computer (Behrend et al., 2011).

A quantitative longitudinal study was performed by collecting data through an online, 112 question, 5 point Likert scale questionnaire that was obtained during four points over two semesters. In addition to the quantitative research design, qualitative data was also obtained with instructor guided interviews and focus groups. Participants were examined on their actual usage, perceived ease of use, perceived usefulness, and future intentions of cloud computing. The additional participant characteristics of personal information technology innovativeness, technology anxiety, support received from instructor, and views about the virtual computing lab reliability were also examined. Results of the study showed that the ease of use was significantly related to the usage of

cloud computing. Furthermore, a positive relationship was also found between perceived usefulness and perceived ease of use to beliefs of future utility and use. The study reported that anxiety of technology use was also significantly related to perceived usefulness. The situational factor of access to software was reported to have a direct and negative effect on the virtual cloud lab use. Study limitations were reported to be not being able to include factors that have shown to influence the acceptance of technology. Student behavior of cloud computing was studied, however, successful implementation of cloud computing was said to also require studying the teacher's beliefs and behaviors of the technology, as well as input from technology staff (Behrend et al., 2011).

Davis's TAM constructs of perceived usefulness and perceived ease of use was expanded to include Venkatesh and Bala's (2008) TAM3's determinants of individual differences, system characteristics, social influence, and facilitating conditions that influence the constructs were used by Behrend et al. (2011). The constructs of social influence included computer self-efficacy, computer anxiety, computer playfulness, perception of external control, perceived enjoyment, objective usability, and subjective norm were defined to understand the determinants to ease of use (Behrend et al., 2011). Furthermore, the constructs of job relevance and output quality were defined in the study to aid in the understanding of the determinants of perceived usefulness (Behrend et al., 2011).

Technology acceptance of personal digital assistants. Zhang et al. (2010) analyzed the main factors of the adoption of mobile information technology. A quantitative study was performed by surveying 91 homecare nurses and support personnel of their current activities of wireless personal digital assistants (PDAs), as well

as their perceptions of technology use over a period of one month. The study found that perceived ease of use and usefulness were reasons that explained the intention to use the wireless mobile system device with a significant portion of the homecare nursing personnel. Furthermore, the homecare nursing personnel were found to also perceive the usefulness of the mobile information and communication technology (ICTs) if they also perceived that people that were important in their jobs thought they should use the ICT. The study also showed that the homecare nurses were found to have an increased perception of the technology's usefulness if it also involved a better image of their system (organization) (Zhang et al., 2010). However, job relevance, output quality, and result demonstrability were not found to influence the adoption intention.

Venkatesh and Davis' technology acceptance model TAM2 was used by Zhang et al. (2010) to examine the study's social forces that impact the individuals' adoption intention of the technology use of PDAs. The constructs of subjective norm, image, job relevance, output quality, and result demonstrability were defined and reported in the study as antecedents to the three technology acceptance model constructs of perceived usefulness, perceived ease of use, and adoption intention. Result demonstrability was not found to influence the adoption intention in this study by Zhang et al. (2010) to utilize PDAs as a technology support tool to their current activities, however positive results involving result demonstrability may be found in this proposed capstone project due to the technology support tool of podcasting will be utilized to acquire a skill instead of support already obtained current activity.

Podcasting

Perceived usefulness of podcasting. A study by van Zanten (2008) explored the value of podcasting with traditional lectures for both distance based and traditional on-campus students. A sample consisting of 61 students from a School of Agriculture, Food, and Wine in the courses of Wine and Society (N=30) and Advertising and Promotion (N=31) participated in the study. Both courses were reported to have been previously offered power points; however podcasts were a new resource for the students (van Zanten, 2008). A lecture series from both courses were recorded and uploaded to their online course management system (Blackboard). Ten podcasts were made available for the Wine and Society course, while 14 podcasts were presented for the advertising and promotion course (van Zanten, 2008). The lectures were said to be usually made available for audio streaming and downloading to MP3 files the day after the lectures were delivered (van Zanten, 2008). Students were reported to be notified of the podcast availability via email. Blackboard allowed the ability to monitor and collect statistical data of the podcast access activity by the students (van Zanten, 2008). Results of the study showed that the downloads of the podcasts were markedly greater and more consistent for the distance educations students (van Zanten, 2008). Also, the study found that there was a decline with the podcasts downloads per student as the semester progressed.

van Zanten (2008) stated that even though there was a decline in the download numbers as the semester progressed, the data could not determine how many times the podcasts were listened to by each student. In addition, the marked difference between the download count of the podcasts between the distance education and the on-campus

students suggested that podcasts are especially perceived as beneficial to distance education students (van Zanten, 2008).

Tynan and Colbran (2006) conducted a study with 1,244 law students to identify the students' perceived usefulness of podcasts and their impact on learning. This study also was reported to determine if podcasts had an impact on study habits. Podcasts of lectures were provided to the student sample in six law courses in which oral lectures were the prior primary teaching delivery method. The university consisted of both on campus and distance education students in the law cohort. Audio lectures reported to have not been provided to either the on campus or distance education prior to the study. Tynan and Colbran (2006) shared that the university aimed to evaluate a blended approach for both the on campus and distant education students. Data in the study was collected with both a survey tool and an online focus group (Tynan & Colbran, 2006). Furthermore survey questions consisted of both yes/no questions and five point Likert scale questions (Tynan & Colbran, 2006). The results of the study showed the majority of the students (84%) utilized the podcasts (Tynan & Colbran, 2006). The podcasts were found to be perceived as useful by the students with 67% rating the podcasts as an excellent value and 14.4% rating them as above average (Tynan & Colbran, 2006). The students were reported to prefer the podcasts of the lectures, followed by podcasts of internal seminars, then for weekly summaries (Tynan & Colbran, 2006). When assessing where the podcasts were utilized, the study found that most of the students listened to the podcasts at home. The overall study concluded that podcasts were found to increase student engagement with the study guides and primary materials, were perceived as a

beneficial flexible learning aid for students with family and work obligations, and therefore perceived as useful (Tynan & Colbran, 2006).

A study conducted in India by Kalludi, Punja, Pai, and Dhar (2013) aimed to assess the efficacy and perceived utility of podcasts as a supplemental educational aid for a group of first year dental students. Live lectures were presented to the group of the first year dental students (N=80). The students were randomly divided into two equal groups of group 1 (N=40) and group 2 (N=20). Group one had both a podcast and a textbook study session provided after the lecture before taking the multiple choice question (MCQ) test. Group two also received a live lecture and a textbook study period time, however they did not listen to the podcast before taking the MCQ test. The podcasts were then made available to group two after they completed the MCQ test. Following both groups completion of the tests and podcasts sessions, feedback from the podcasts were gathered to assess for the students' perceived utility of the podcasts.

Results of the study showed a significant (p=.000) difference in the mean MCQ scores between group one and group two (Kalludi et al., 2013). The total possible score for the MCQ was reported by the study to be 13, with one point given per question. The mean score for group one was found to be 7.95 ± 2.33 (Kalludi et al., 2013). Group two was found to have a mean score of 6.05 ± 2.23 (Kalludi et al., 2013). All 80 students were reported to participate with the assessment of the attitude toward the podcasts' utility in the study. An overall mean score of 3.59 out of five was found for the perceived utility of the podcasts (Kalludi et al., 2013). A significant percentage (63.8%) of the students however did perceive that the lack of images in the audio was a disadvantage (Kalludi et al., 2013). Only a small percentage (16.2%) reported technical difficulties and

that the podcasts were too time consuming (17.5%) (Kalludi et al., 2013). The study concluded that students were found to benefit from being provided podcasts as well as perceived the podcasts as useful as a supplement learning tool in addition to their classroom lectures (Kalludi et al., 2013).

Podcasting and student learning. Marrocco, Kazer, and Neil-Boylan (2014) aimed to introduce faculty to podcasting opportunities in nursing education and to effectively integrate podcasting into graduate teaching and learning practices. Furthermore the study aimed to evaluate the impact of the podcasts with the students and faculty. In a pilot study, faculty was asked to submit a brief abstract describing their interest, experience, and intention of utilizing podcasting as a technology tool for the students. The submitted abstracts were evaluated by three faculty members for creativity, and the likelihood for success (Marrocco et al., 2014). According to Marrocco et al. (2014), four faculty members were chosen to receive iPods to create podcasts during the semester with content that included a mock, talk through pelvic examination podcasts for utilization before performing the examination; exemplar papers for a statistic class, clinician interviews from diverse specialty areas, and case studies and role related topics to complement the classroom, as well as advance health assessment case presentations.

In this study the faculty was required to attend a podcast orientation along with an introduction to transformational principles meeting. Seven faculty members from the adult, family, and pediatric practitioners programs along with the doctoral program participated in the project evaluation. Three of the participating faculty members used podcasting in graduate level nurse practice primary care courses. This study reported that the students would listen to the recorded lectures if they either missed class or wanted to

increase their understanding of the presented materials and also with preparing for examinations (Marrocco et al., 2014). The positive aspects reported from this study included the ability to create an arena for students who are hesitant to participate in class discussion and also provide an asynchronous education opportunity without geographical barriers (Marrocco et al., 2014). Transformational learning theory was additionally reported to foster a learning environment in which learning needs of the modern graduate students are supported (Marrocco et al., 2014). Lastly Marrocco et al. (2014) stated today's technology advanced student may not accept all forms of technology therefore; additional studies of the application of technology in formal education are needed.

Gibson and Richards (2011) used a quasi-experimental, pretest/posttest comparison group design in a critical care class of electrocardiogram (ECG) interpretation to determine if podcast lectures increased student learning when they were followed by faculty-guided case studies. Two convenience sample groups were composed of senior level baccalaureate nursing students that were enrolled in the class. The first eight weeks of the fall semester's group of 19 students had lectures, whereas the second eight week's group of 19 had the podcasts. The lecture group was provided the allotted five hours of the ECG interpretation skill, whereas the podcasts group was provided the podcasts one day prior to the ECG interpretation skill class and the five hour class time consisted of discussing and applying the content to case study scenarios and ECG strips to review. Results showed the pretest scores for the lecture group were higher (mean 46.32) than the podcast group (mean 38.95) (Gibson & Richards, 2011). Posttest scores were found to be higher in both groups in comparison of the pretest scores (Gibson & Richards, 2011). The higher posttest scores in both groups showed that both

instrumental methods are beneficial (Gibson & Richards, 2011). However, it was later learned that only 28% of the podcast engaged group actually watched the entire podcasts which suggested the need for further research to determine additional findings (Gibson & Richards, 2011).

McNeil, Mukherjee, and Singh (2010) assessed the role of podcasting by administering a 17 question survey and a focused group interview in a post-graduate physical education teacher education (PETE) program. The participating students of the study consisted of first year PETE students of the post-graduate diploma program. The program's student group (N-40) were divided equally in to two groups, an experimental group (N=20) and control group (N=20). Each group's course was taught by an experienced instructor of the course and had identical course outlines and materials. The experimental group had the podcasts explained to them to be an enhancement to the normal course materials and resources and were asked to keep the podcasts and their content private. The experimental group was offered twice weekly podcast made available shortly after the instruction that reflected on the student teacher's participation in educational games. The students were reported to be notified of the podcast availability simultaneously via texts to their cell phones. At the end of the course, the experimental group was invited to attend a briefing to explain the study and additionally invited to complete a voluntary survey administered by a neutral (not a part of the program or known by the students). After the survey, the neutral instructor randomly selected a group of six students to participate in a focused group interview. The findings of the podcast study were found to be promising (McNeil et al., 2010).

The findings reported that all students in the experimental group (100%) listened to the podcasts alone in either their homes or while driving or exercising (McNeil et al., 2010). Results of the survey were determined utilizing a five point Likert scale. Sixty percent of the experimental group reported listening to all the presented podcasts (McNeil et al., 2010). The audio quality was rated as very good (4) by 40% and excellent (5) by 50% of the group (McNeil et al., 2010). When evaluating the social and emotional aspects of the podcasts from irritating (1) to worth looking forward to (5), 60% found them to be enjoyable (4), with 30% finding them to be worth looking forward to (5) (McNeil et al., 2010). In addition, 50% found the podcasts really interesting (4) with 25% describing the podcasts as awesome (5) (McNeil et al., 2010). Lastly, the finding showed that 50% of the group found the podcasts to be helpful, while 40% found them to be exceptionally helpful (5) (McNeil, et al., 2010). The qualitative responses to the podcasts were also found to be favorable (McNeil et al., 2010). The majority of favorable interview responses included the aspects of consolidation, reiteration, and reinforcement of the presented class materials (McNeil et al., 2010).

Soong, Chan, Cheers, and Hu (2006) evaluated the impact of video recorded lectures on students' learning at the university level. All college students that had attended a class where the lectures were recorded, were asked to participate in the survey. A four point Likert scale questionnaire that included a demographic section and feedback regarding the use of the video recorded lecture were completed by 1,160 students. The study reported that the majority of the video recordings were reported to be viewed at home or on campus (Soong et al., 2006). Results of the study found that the students either strongly agreed or agreed that the video lectures were useful to their college studies

(Soong et al., 2006). Students were also found to either strongly agree or agreed that they were satisfied with the quality of the recorded video lectures (Soong et al., 2006). Viewing patterns were reported to show that the majority of the student viewers selected portions of the video to repeatedly review to gain understanding of the material, while other students were found to either view the entire recording or viewed selected portions of the video once for review (Soong et al., 2006). Finally, the study found that the students wanted both the classroom lecture and access to the video recorded lectures via Blackboard as part of their available course materials (Soong et al., 2006).

Podcasting and student retention. Greenfield (2010) used podcasting as an academic support tool for student retention. Medical-surgical classes of 64 nursing students were reported to have completed a total of three examinations during the course. After the first examination, lectures and case studies were recorded using a small media (MP3) digital recorder. The sections of the content were broken down into 10-15 minutes and began with a clear content statement of what would be included (Greenfield, 2010). The study's podcast sections included questions students asked during class for review. Results showed that six of the students that were previously considered at risk for failing due to their reported grade range of 66-72 on the first examine without the podcasts, improved their test grade range for the second and third examinations with the podcast to grades in the 70s to 80s. The six students were also reported to all be from non-English speaking backgrounds. The examination results were compared to the examination results to the prior two years. The comparison found that there were not increases in the prior year examination scores for the first examination to the next two examinations like found in the present study (Greenfield, 2010). In addition, the English as second language

(ESL) students reported via an email survey that the podcasting had contributed to their passing the course (Greenfield, 2010).

Podcasting effectiveness. The introduction of podcasts were evaluated by Strickland et al. (2012) to determine their effectiveness in a research and evidence based practice nursing course module. A sample of two cohorts, for a total of 228 nursing students was used in the study. The podcasts were reported to be implemented to make the content of the module easier as well as to bring the researcher closer to the student. The podcast modules aimed to provide the students access to the university's staff that was actively involved in research, but normally had only limited contact with the undergraduate nursing students (Strickland et al., 2012). Five module content podcasts were created and made available for subscription or automatic download in Web Course Tools (WebCT) (Strickland et al., 2012). The nursing student samples were surveyed via the online questionnaire Ultimate Survey (Strickland et al., 2012). The study's online survey consisted of both quantitative and qualitative questions.

The study resulted in a 15% response rate or 71 students, and showed that the majority of study participants reported that the podcasts positively impacted their learning experience. Qualitative comments further suggested satisfaction with the podcast implementation, and the podcasts allowed for flexibility and convenience (Strickland et al., 2012). Disadvantages of the podcast in the study were found to include needing a computer and the time needed to download the podcasts (Strickland et al., 2012). Strickland et al. (2012) reported the limitation of the student included a low response rate, however the positive qualitative responses to podcasting suggested that further research is warranted to study podcast effectiveness.

Classroom podcasts were created by Schlairet (2010) for three different student groups to explore the podcast's associated outcomes. The study utilized the web-based course evaluation framework and included 70 second-degree nursing students and graduate students. The quantitative study's framework variable concepts included educational practices, faculty support, learner support, outcomes, and the use of the technology. An initial classroom podcasting orientation and on-going technical support were provided to promote adjustment to this new technology learning tool (Schlairet, 2010). The study groups were asked to complete a demographic information sheet and the opinionnaire: computering in nursing (Q-CN), at the end of the semester to assess the group's attitudes toward the use of computers in nursing, followed by the student podcasting survey developed by Forbes and Hickey (2008). Results showed that all 70 students in the three groups participated. Pretesting of the Q-CN showed that attitudes toward the use of computers in nursing were strong (Schlairet, 2010). The posttest of the Q-CN showed an improved attitude toward computer use in nursing; however the analysis of variance suggested the difference was not significant from pretest to posttest for the groups (Schlairet, 2010). The study did report that significance was found in the attitude of computer use in nursing by ethnicity. The lowest attitude scores were found among Asian students and among students with English as a second language (ESL) (Schlairet, 2010). The study further found that 47% of students reported podcast access during the semester. The podcasts were found to be listened to the most at home, during the afternoon or night with an average of two to five podcasts utilized during the semester (Schlairet, 2010). The podcasts were reported to be helpful by the majority of the students, with the second degree and graduate students having greater percentages of

satisfaction (Schlairet, 2010). Computers were found to be the main venue for listening to the podcasts even though most students were reported to own MP3 players (Schlairet, 2010). Limitations of the study were reported to be a small sample size, which suggested limited generalizability on how podcasts can affect student performance and the need for further research (Schlairet, 2010).

A study by Evans (2008) aimed to investigate the effectiveness of podcasting as a revision tool after the traditional lecture course has finished and before the final exam. The study hypothesis that the students would perceived that revising from podcasts is quicker than from notes, that revising with podcasts is more effective than lecture and textbook revision, the learners would be more receptive to revision materials offered via podcasts than with traditional revision lectures or textbooks, and learners would feel that they can relate more to the podcast than traditional revision lectures (Evans, 2008). The study included 196 volunteer first year Business and Management undergraduate students. The students in the study were provided a simple guide to accessing the podcast via an iPod or personal computer (PC). Each provided podcast consisted of a five minute audio recording of the course lecture reviewing and clarifying the course outcomes. The podcast series were reported to consist of three podcasts that were released at one week intervals during the revision period before the exam. Results of the study were obtained via a survey that consisted of six demographical questions, 15 five-point Likert scale questions and two open-ended questions. The results were reported to suggest that the students valued the flexibility of the podcasts and felt they enhanced their learning process (Evans, 2008). The podcasts were found to be perceived as a quicker way to revise versus their own notes (Evans, 2008). Evans (2008) further reported that the

podcasts were found to engage the learners with the lecture outcomes and gave the ability to save time revising for the student. Podcasts were additionally confirmed to be perceived as more effective than the text books; however were not found to be perceived as more effective than their own notes (Evans, 2008). This finding was reported to show that the fact that the student did perceive the podcasts as being more effective than their own notes suggested that the summarizing aspect of the podcasts could benefit the learner in concentrating on the important subject matter without getting off tract with detailed information (Evans, 2008). The short duration of the podcasts (5 minutes) was reported to help explain them as not being perceived as effective as the students' own notes (Evans, 2008). Evans (2008) further concluded that the podcasts can encourage active learning and provide a medium for helping students assimilate and construct their won understanding of the learning outcomes.

Podcasting use. Collier-Reid, Case, and Scott (2013) investigated how students used lecture podcasts produced in two engineering courses. Survey-based data was gathered with two surveys, containing both open and closed ended questions from 141 and 131 returned responses respectively (Collier-Reid et al., 2013). The student sample was reported to having varying academic abilities and included students from a mechanical engineering (N=15) and chemical engineering (N=23) courses. The first survey was reported to concentrate on access to devices that allowed listening or watching podcasts as well as prior experience to recorded lectures. The second survey reported in the study questioned the students' perception of the greatest benefit of having recorded lectures. Activity of the lecture downloads was also evaluated in the study due to the podcasts being downloaded via the university's virtual learning environment

(VLE) and the system's reported ability to provide this data. Collier-Reid et al. (2013) reported a total of 2,270 podcast downloads from the VLE during a course, and concluded that the students utilized ongoing use of the podcasts and focused on using the podcasts for assessments. A spike in the podcast downloads were noted toward the end of academic term and before the three week period of exams (158 downloads) and increased during the examination periods (331 downloads) (Collier-Reid et al., 2013). Lastly, the study found an intense use of the podcast with test preparation and also found the podcasts to be beneficial to non-first language students in the course (Collier-Reid et al., 2013).

Chester, Buntine, Hammond, and Atkinson (2011) aimed to describe the characteristics of podcast users in education. Participants of the study included 273 undergraduate students. Students were surveyed utilizing two questionnaires to compare users and non-users of podcasts by demographical variables, courses, and year level. The study further assessed student satisfaction of podcasts, reasons for the podcast use and to gain an understanding of the academic behavior and self-efficacy of the users and non-users of the podcasts. The first questionnaire included 26 scale response and open-ended questions regarding demographic information and academic behavior. The second survey tool measured academic self-efficacy. Results of the study suggested that both utilization and satisfaction with lecture recordings varied with courses, with higher satisfaction occurring with the later years' courses than with the first years' courses (Chester et al., 2011). Reported self uses of the lecture recordings (podcasts) were found to increase after examinations, which confirmed that exam revisions were a primary motivation (Chester et al., 2011). Chester et al. (2011) concluded that the podcast users in the study were

found to be students that were older, more confident, and usually engaged with their learning. Older students were found to significantly be more likely to report podcast use than the younger students (Chester et al., 2011). Hours of employment was also related to podcast use, students reported utilizing the podcasts when work prevented them from attending face to face classes; however podcasts were not found to replace lectures with no significant attendance differences found between users and non-users of the podcasts (Chester et al., 2011).

Forbes and Hickey (2008) examined the use of podcasting initiated in a baccalaureate school of nursing with undergraduate nursing students. Faculty recorded their lectures via small recording devices and used the open source editing software Audacity (Forbes & Hickey, 2008). The study reported podcasts were uploaded to Blackboard and were accompanied by a PowerPoint slide presentation for access and the ability to be downloaded to their computer or mobile devices. A 16-question quantitative and qualitative survey was developed and reviewed by two other faculty members participating in the podcasting to assess the content validity (Forbes & Hickey, 2008). The survey was reported to be given to all 248 undergraduate nursing students enrolled in the six courses where podcasts were used. The study was reported to yield a sample of 170 of students or a 68.5% response rate. The reported data was analyzed for common patterns and themes (Forbes & Hickey, 2008).

The results of the study were reported in the five frame work areas of student use of podcasting, listening habits, perceived effect on learning, impact on class attendance, and choice of classes (Forbes & Hickey, 2008). The podcasting study with baccalaureate nursing students found that 95% of the participants reported that they accessed at least

one podcast, whereas 65% reported accessing six or more times during the semester (Forbes & Hickey, 2008). Senior level students were reported to utilize the podcasts more than lower level course participants and 24% of students accessed podcasts to courses that they were not enrolled in (Forbes & Hickey, 2008). Listening habits showed that the majority accessed the podcasts via a computer at home, after class or in the evening, and before examinations to reinforce the content (Forbes & Hickey, 2008). Perceived effect on learning showed that an overwhelming percentage (92.4%) reported that podcasting had a positive effect on their learning (Forbes & Hickey, 2008). The perceived benefits were reported to be clarification of the course concepts that were not fully understood during class, the ability to view PowerPoint slides along with the podcasts to reinforce the class content, and the ability to help facilitate note taking (Forbes & Hickey, 2008). Furthermore, an additional benefit to podcasting was reported to be the ability of podcasts to allow for repetition of the material if needed. Finally, the sample group consisted of 24% of reported ESL students which indicates that podcasts had a positive effect on their learning by giving them the ability to listen at their own pace and look up words they were unsure of (Forbes & Hickey, 2008).

Abt and Barry (2007) used a pre-post random allocation research design to examine the effect of student's use of podcasts. Sixty first year undergraduate student volunteers from an exercise physiology module were given an initial pre-test using a formative multiple choice design. The participants were divided into either the podcast group or the control group. The podcast group was asked to listen to six podcasts that were provided over six weeks, whereas the control group was given the exact transcripts of the podcasts provided to the podcasts groups. The difference between the groups was

reported to be the content method of delivery only (Abt & Barry, 2007). The reported sample in the study yielded 50 students, due to some of the students failing to complete the post-test. After the six weeks, the same test was used to re-examine the groups. Results of the study showed a 43% examination performance improvement by the control group, while the podcast group showed a 46% improvement. The quantitative results suggested that the podcasts provided little student benefit with the statistical analysis of trivial or positively small benefit in the exercise physiology course (Abt & Barry, 2007). Abt and Barry (2007) shared that more research is needed in the use of mobile technology adoption in education, and research should include the effects of student involvement in the creation process of the podcasts, which link the creation to summative assessment.

Gaps in Literature

The literature review suggested that there is an interest in utilizing podcasts in education; however there were limited studies that addressed podcasting in nursing education. Podcasts were found to be studied with various concepts such as student learning, student retention, effectiveness, and use. The literature showed that podcasts were perceived to be beneficial by the participants (Gribbins, 2007; McNeil et al., 2010). Two studies were found to utilize the Technology Acceptance Model to determine the technology acceptance of the use of podcasts (Gribbins, 2007; Zacharis, 2012). Of the two studies that utilized the TAM with podcasts use, one study only surveyed the previous reported use and the potential use of podcasts in higher education (Gribbins, 2007). One study found an increase in knowledge acquisition in both the podcast group and the control group that were provided the same supplemental class content in different

formats, which suggested the need for additional podcasts studies to determine if the podcasts were effective or if supplemental class content in other forms would be equally effective (Abt & Barry, 2007). Podcast length on effectiveness is also an area that would benefit from additional studies. Evans (2008) reported that the short duration of podcasts can have an effect on their perceived effectiveness when compared to revising (reviewing) lecture content with their own notes. The reviewed literature suggested an overall favorable attitude toward podcasting in different educational settings, however gaps still remain in determining if mobile learning, such as with podcasting, is an accepted form of technology for nursing knowledge and skill acquisition.

Strengths of the Presented Research Studies

The literature reviewed showed that there is strength that supports the utilization of podcasts in nursing education as a potential tool for knowledge acquisition relating to the overall reported perceived student satisfaction (Vogt et al., 2010). The student perception of the perceived usefulness of podcasting in higher education was found to be a main strength in the literature (Gribbins, 2007). The main strengths noted in the literature were found to include but were not limited to:

- The TAM variables of PU, PEOU, and PENJ were found to significantly account for the behavioral intention of podcast use (Zacharis, 2012)
- Reported satisfaction with podcasts portability and flexibility (Vogt et al., 2010)
- Reported positive perceptions of podcasting being helpful to increased content understanding (Schlairet, 2010; Strickland et al., 2012; McNeil et al., 2010)
- Podcasting as an aid for passing with ESL students (Greenfield, 2010)

- Podcasting had a minimal impact on budgets, faculty workload, or class attendance (Schlairet, 2010, Chester et al., 2011; Collier-Reid et al., 2013)
- Podcasts as a learner-focused activity contributes to student learning (Gibson & Richards, 2011)
- Podcasts can be beneficial to distance education students (van Zanten, 2008).

Limitations of the Presented Research Studies

The reviewed literature contained limitations that need to be considered for determining the effectiveness of implementing podcasts in education as a knowledge and skill acquisition tool. The limitations of small sample size and low response rate were found in the reviewed literature (Strickland et al., 2012). Small sample size and low response rates yielded the problem of limited generalizability to determine if podcasting is an overall effective supplemental tool for knowledge and skill acquisition (Schlairet, 2010). Furthermore, some participants that were surveyed did not listen to all the presented podcasts, which also suggested the need for further research findings with podcasts use (Gibson & Richards, 2011).

Conclusion

The literature review of these studies included the utilization the technology acceptance model as well as studies with podcast use for student learning, retention, effectiveness and success. The literature review presented showed that overall students perceived podcasting as beneficial due to their reported perceptions of them being helpful and the reported satisfactions with their portability and flexibility. The distant or mobile information technology tools in the literature review included podcasts, PDAs, cloud computing, and online nursing course adoption. The studies utilizing Davis' TAM

included this capstone model's main constructs of perceived usefulness and ease of use as well as additional concepts that study factors that influence distant or mobile information technology use. One study also included the TAM2 constructs of subjective norm, image, job relevance, output quality, and result demonstrability. Whereas other studies included the additional TAM3 constructs of individual differences, system characteristics, social influence, facilitating conditions, compatibility, perceived financial costs, and computer self-efficacy. The presented strengths, limitations, and gaps in the literature suggested a strong need for further research on podcasting in nursing education.

CHAPTER III

Methodology

The increase in technology has led to the need for nursing instructors to utilize technology to assist the nursing student's quest in their required knowledge and skill acquisition attainment. The evolving technology of podcasting has influenced and redirected learning from the traditional classroom setting to include anytime and anywhere, mobile learning abilities that can provide a more convenient additional method of knowledge acquisition (Vogt et al., 2010). The purpose of this project was to examine the acceptance of podcasting as a knowledge and skill acquisition tool.

The results of this capstone project helped determine if podcasting was perceived as useful and easy to use, therefore a student accepted technology tool for nursing education skill acquisition. The following chapter described the capstone project's project implementation measures, setting, sample, project design, and protection of human subject measures, instruments, data collection, timeline, and budget.

Project Implementation

A quantitative quasi-experimental design was used to examine the technology acceptance of podcasts as a supplemental educational acquisition support tool. For this project, podcasts were provided in addition to material and demonstrations presented in the traditional nursing skill lab. The project took place in the fall of 2014, during the nursing student's first semester when these skills are first presented. Podcast demonstrations of three of the required first semester skills: obtaining vital signs, Foley catheter insertion, and performing a sterile dressing change were implemented and made

available for use. The podcasts were provided prior to when the students were required to show competency of performing these skills.

Empirical data was gathered to answer the following questions within this capstone project:

1. What was the nursing students' perceived usefulness of the provided podcasts as a support tool for skill acquisition?

2. What was the nursing students' perceived ease of use of the provided podcasts as a support tool for the acquisition?

3. Was there a difference in the nursing student's perceived competence of the skill change with the use of the podcasts?

4. Was there a difference in the perception of podcast's perceived usefulness and ease of use between the associate degree registered nursing (RN) students and practical nursing (PN) degree program students?

5. Was there a difference between the students' perceived competence of the skill change with the use of the podcasts between the associate degree nursing students and the practical nursing degree students?

Setting

The setting for this capstone project was a school of nursing at a rural community college in the south eastern United States. This community college has a school of nursing that consists of a practical nursing program, associate degree nursing program, and a transition from licensed practical nurse (LPN) to registered nurse (RN) program, as well as intermittent cohorts offered upon demand through a university satellite RN to Bachelor of Science in nursing (BSN) program.

Sample

The capstone project sample consisted of a convenience sample of all full-time, first year associate degree nursing, and practical nursing students enrolled and attending the fall semester in the community college school of nursing. Inclusion criteria were nursing students over the age of 18 years old, who read, write, and speak English, and are registered as full-time nursing students in the practical nursing and associate degree nursing program.

Protection of Human Subjects

Prior to the implementation of this capstone project, permission from the Institutional Review Board (IRB) from the University and the participating community college were obtained by this project administrator (PA). Informed consent was further obtained from the participating students before implementing the project. The informed consent detailed the purpose of the study, included an explanation of benefits and how no harm would be done to participants. The informed consent included that no compensation or penalty, including program success or grade, would be made for participation or non-participation, and the rights of the participants in the proposed research project which included the ability to remove themselves from the project at any point.

Each participant had the opportunity to read and have explained the information on the consent form. At any time during the study the participant could decline to participate in the podcast usage and survey portion of the study and only participate in the required skill acquisition portion without penalty. A copy of the obtained consent form was given to all participants at the time of the initial project explanation meeting. The form provided the participant with contact information for the PA, facility representative,

and the IRB at the University. The detailed consent also provided information concerning any potential risks, how to obtain help if needed, and the proposed benefit of the capstone project (to gain insight into the technology acceptance of podcasting in nursing education). Finally, no participant identifying data was included on the survey questionnaires to assure anonymity. Survey questionnaires were stored and secured in a locked cabinet within the work office of the PA at the project setting.

Project Design

A quantitative quasi-experimental design was used to determine technology acceptance of podcasting as a supplemental knowledge and skill acquisition tool. Davis' (1989) Technology Acceptance Model (TAM) constructs of perceived usefulness and ease of use of the podcast were utilized, as well as Venkatesh & Davis' (2000) TAM2 variable of job relevance to further determine perceived usefulness, was utilized to determine the technology acceptance of podcasting. A quasi-experimental design was chosen due to the desire of this PA to provide all the students in the sample, the ability to utilize the podcasts as a supplemental skill acquisition support tool. Podcast demonstrations of the three required first semester skill competences acquisition of obtaining vital signs, sterile dressing changes, and Foley catheter insertion were provided. The three provided skill podcasts are detailed below. The podcasts included the content from project site school of nursing's skill competency evaluation checklist that the student sample would have to perform in what is known as "check offs" to demonstrate competency of the skill.

Podcast Skill Content

The vital sign skill podcast included the content of taking an oral temperature, blood pressure, respirations, radial pulse, apical pulse, and assessing for an apical/radial pulse deficit (See Table 1). The Foley catheter skill podcast included verifying orders, preparing the patient, implementing inserting the urinary Foley catheter, evaluation and documentation as well as appropriate delegation of the procedure (See Table 2). The sterile dressing change skill podcast included the content of verifying the order, preparing the patient for the dressing change, implementing the sterile dressing change, evaluation and documentation of the procedure, and appropriate delegation of the procedure (See Table 3).

Table 1

Vital Signs Podcast Content

Vital Signs Skill	Podcast Description
Oral Temperature	• Identify factors that may interfere with an accurate oral temperature • Prepare thermometer for use • Measure the temperature properly • Verbalize the procedure and temperature variations for other methods
Radial Pulse/Respirations	• Locate proper site for radial pulse • Determine the rate, rhythm, and volume of radial pulse using the proper technique • Count for the appropriate length of time based on the rate, rhythm, and volume of the radial pulse • Statement that the student would need to be within four beats of the instructor's findings • Begin to start to count respirations without removing hand from the position for pulse • Determine the rate, rhythm, and depth of respirations using proper technique, 30-seconds for an adult with regular respirations and one full minute for an adult with irregular respirations or with assessing a infant or child • Statement that the student would need to be within two breaths of the instructor's findings
Apical Pulse	• Locate the point of maximum impulse (PMI) • Assess the apical pulse's rate and rhythm for one full minute • Statement that the student would need to be within four beats of the instructor's findings
Apical/Radial Pulse Deficit	• Describe the apical-radial deficit • Statement that the student would need to perform the technique with the instructor
Blood Pressure	• Properly position the patient for blood pressure procedure • Determine the proper size and cuff for the patient • Discuss factors that affect the site where the blood pressure can be obtained • Measure blood pressure utilizing the two step method • Statement that the student's blood pressure values would need to be within four millimeters of mercury (mmHg)

Table 2

Foley Catheter Insertion Podcast Content

Foley Catheter Insertion Podcast Description
General Preparation and Assessment • Verify orders and identify Patient • Provide adequate lighting and provide for privacy • Explain procedure to patient • Assess for latex and iodine allergy • Assess for comfort • Wash hands and gather equipment Implementation • Assist patient as necessary in performing personal perineal hygiene • Perform hand hygiene • Open and prepare catheterization kit using sterile technique • Properly insert catheter • Position drainage bag properly and check for patency • Remove gloves properly and make patient comfortable • Statement that the student would need to discuss adaptations for male catheterization Evaluation • Evaluation of the patient's reaction to procedure Documentation • Statement that the student would need to correctly document procedure, findings, and patient response to Foley catheter. Delegation • Statement that the student would need to report the appropriate personnel to delegate the skill.

Table 3

Sterile Dressing Change Podcast Content

Sterile Dressing Change Skill Description
General Preparation and Assessment of Patient • Verify Orders • Identify patient • Provide adequate lighting and privacy • Assess the dressing size and location • Explain procedure to patient • Assess for any patient allergies • Assess patient's comfort level and intervene appropriately • Gather equipment and prepare work area Implementation • Wash hands • Adjust bed to proper working level • Drape the patient to expose dressing site • Prepare for proper disposal of old dressing • Don clean cloves and remove tape as necessary • Remove and assess soiled dressing and dispose of properly • Assess wound for size, depth, sutures, staples, tubes and characteristics • Properly remove gloves and wash hands • Prepare sterile field and don sterile gloves • Apply sterile dressing using sterile technique • Remove gloves properly and properly dispose of soiled items. • Wash hands Evaluations • Describe the patient's response to the procedure Documentation • Statement that the student would need to correctly document procedure, findings, and patient response to dressing change Delegation • Statement that the student would need to report the appropriate personnel to delegate the skill.

The podcasts were provided via the student's online learning format (Blackboard). The students had the nursing skill podcasts available as a mobile support tool that allowed for unlimited viewing and simulation practicing of the skill along with the podcasts. The student also had the ability to download and keep the podcasts for as long as they liked on their mobile device or desk-top computer.

Theoretical Concepts

Perceived Usefulness and Ease of Use

TAM2's perceived usefulness (PU) and perceived ease of use (PEOU) scale was used in this study to answer this project's questions:

1. What was the nursing student's perceived usefulness of the provided podcasts as a support tool for skill acquisition?
2. What was the nursing students' perceived ease of use of the provided podcasts as a support tool for the acquisition?
3. Was there a difference in the perception of the podcasts' perceived usefulness and ease of use between the RN students and PN students?

Job Relevance

TAM2's variable of job relevance was included in this study to help determine the perceived usefulness of podcasting as a supplemental skill acquisition tool. Measurement of job relevance, along with directly measuring perceived usefulness, further answered three of this project's questions:

1. What was the nursing students' perceived usefulness of the provided podcasts as a support tool for skill acquisition?

2. Was there a difference in the nursing students' perceived competence of the skill change with the use of the podcasts?

3. Was there a difference between the students' perceived competency of the skill change with the use of the podcasts between the RN and the PN degree students?

Instruments

Measurement of job relevance and the degree of competence change were obtained by utilizing Deci and Ryan's (1996) Perceived Competence Scale (PCS). The PCS was created by Deci and Ryan (1996) to assess how people perceived their competence level in relation to a particular behavior being assessed. The PCS was used in the project to measure the perceived competence of the nursing students' skill both before (pre-podcast) and after (post-podcast) utilizing the instructor guided podcasts of obtaining vital signs, performing sterile dressing changes, as well as inserting indwelling Foley catheters. Job relevance was determined by analyzing the perceived competency scale mean changes from pre to post podcasts.

Previous alpha scores of the PCS were reviewed for the consistency of the tool. An early study by Williams, Freedman, and Deci (1998) utilized the PCS to determine perceived competence on the management of glucose levels of patients with diabetes and reported alpha scores from 0.84 to 0.87. An additional study by Williams, Niemiec, Patrick, and Deci (2009) utilized the PCS to determine perceived competence with long-term tobacco abstinence and reported an alpha measurement of 0.90 at baseline and 0.94 at six months.

The pre-podcast PCS survey measurement collections were scheduled on the first day the skill content was presented by the instructor in the lab. The skill content was

presented in the skill lab by the instructor and included a demonstration of the expected competency of the skill that nursing student was expected to perform. The pre-podcast survey collection date and time was scheduled on the first day right after the skill content was presented to limit the variables that utilizing the podcasts could possibly influence their perceived competence of the skill. Post pod-cast PCS survey collection date and times were scheduled for the day prior to the students' time to show the skill competence in what is known as the "skill check-off". The post-podcast survey collection time was scheduled to limit the variable of the outcome of the skill check-off on the students' perceived competence level.

An independent sample *t* test was conducted to evaluate and compare the means from the pre podcast and post podcast PCS scores for each nursing skill podcast. The statistical analysis was determined with the overall sample and the individual nursing student groups' (PN and RN) means as a whole with no attempt to pair each student with their prior completed surveys.

Perceived Competence Scale (PCS)

The Perceived Competence Scale consists of a four item questionnaire that begins with a leading or root statement that is designed to be altered to meet the desired research behavior questions. Permission to use and alter this tool to meet the desired research behavior questions was obtained prior to their utilization (See Appendix A). The four item questionnaire original root statements (See Table 4) were altered to meet the desired research questions for this capstone project (See Table 5).

Table 4

Original Perceived Competence Scale Root Statements

Statements
1. I feel confident in my ability to…
2. I now feel capable of…
3. I am able to…
4. I am able to meet the challenge of…

Table 5

Altered Perceived Competence Scale Statements

Statements
1. I feel confident in my ability to apply the presented nursing skill to real life clinical situations.
2. I now feel capable of implementing the nursing skill to patients in clinical situations.
3. I am able to recall the knowledge I obtained to perform the nursing skill presented.
4. I am able to meet the challenge of performing the skill with the required accuracy for patients requiring the nursing skill.

Perceived Usefulness and Ease of Use Scales (PU & PEOU)

The second and third instruments that were utilized were Davis' (1989) PU and PEOU scale. Davis' (1989) PU and PEOU scales are designed to assess the technology being researched and provide original root statements that are designed to be altered to

meet the researcher's technology subject need (See Table 6). Davis' PU and PEOU scales were also altered to meet this project's question needs (See Table 7). Permission to use and alter this tool to meet the desired technology of podcasting was also obtained prior to their utilization (See Appendix B). Venkatesh and Davis (2000) reported that the Perceived Usefulness scale's Cronbach's mean range is from 0.87 to 0.98, while the Perceived Ease of Use scale's reliability means range were 0.86 to 0.98.

The PU and PEOU scales were surveyed once on the day the last post-survey was given for perceived competence for each group (PN and RN). An independent sample *t* test was conducted to evaluate and compare the means. The statistical analysis was determined with the overall sample and the individual nursing student groups' (RN and PN) means as a whole with no attempt to pair each student with their prior completed surveys.

Table 6

Original Perceived Usefulness and Ease of Use Scale Statements

Statements
Perceived Usefulness
1. Using the system improves my job
2. Using the system in my job increases my productivity
3. Using the system enhances my effectiveness in my job
4. I find the system useful in my job
Perceived Ease of Use
1. My interaction with the system is clear and understandable.
2. Interacting with the system does not require a lot of my mental effort.
3. I find the system to be easy to use.
4. I find it easy to get the system to do what I want it to do.

Table 7

Altered Perceived Usefulness and Ease of Use Scale Statements

Statements
Perceived Usefulness 1. Using the podcasts improves my acquisition of the presented skill. 2. Using the podcasts in my acquisition of the presented skill increases my productivity. 3. Using the podcasts enhances my effectiveness of my acquisition of the presented skill. 4. I find the podcasts useful in my acquisition of the presented skill.
Perceived Ease of Use 1. My interaction with the presented podcasts is clear and understandable. 2. Interacting with the podcasts does not require a lot of my mental effort. 3. I find the podcasts to be easy to use. 4. I find it easy to get the podcasts to do what I want it to do.

Data Collection

Surveys were distributed in person to the student nurse participants in their educational setting. The two nursing student groups' data was collected and coded separately to answer the desired capstone questions of:

1. Was there a difference in the nursing student's perceived competence of the skill change with the use of the podcasts?
2. Was there a difference in the perception of podcast's perceived usefulness and ease of use between the associate degree registered nursing (RN) students and practical nursing (PN) degree program students?
3. Was there a difference between the students' perceived competence of the skill change with the use of the podcasts between the associate degree nursing students and the practical nursing degree students?

Prior to the distribution of the initial Perceived Competence Scale and demographic survey, a brief review of the project, informed consent content, as well as the participant's rights was explained by the PA to the student samples. The two nursing student groups had the previously described data collected separately during their separate scheduled lab time. The data collection survey tools were selected to address Venkatesh and Davis' (2000) TAM2 constructs of perceived usefulness, ease of use, and job relevance of podcasts as a technology skill acquisition supplemental tool. Paper and pencil surveys were handed out and collected in person for each survey collected.

Data Analysis

Data analysis was a crucial step in adequately interpreting the results of this project. After all of the survey instruments were completed by the sample population, a statistical analysis of the data was conducted. The Statistical Package for Social Sciences (SPSS) version 22 for Windows (SPSS Inc. Chicago, IL, USA) was utilized to obtain the statistical analysis of this research project. The data was carefully reviewed before being entered into SPSS for data analysis. SPSS allowed the obtainment of descriptive statistics to describe the results from the utilized survey instruments. Descriptive analysis and independent sample *t* test were utilized to analyze the data and to compare the means. Descriptive analysis determined the frequencies, overall mean scores and standard deviations for both the pre and post PCS and also the PU and PEOU scales. Independent *t* test was used to compare the means from pre-podcast PCS to post-podcast PCS. A Levene's test for equality of variance determined that the assumption of the *t* test was met in that the variances were found to be equal with each group (pre-podcast and post-podcast).

Timeline

The proposed capstone project was implemented in the 16 week, fall 2014 semester. Podcasts were implemented and made available to the students to correlate with the semester's content skill acquisition schedule. The podcast's timeline was also purposely planned to promote their use as a supplemental skill acquisition support tool for the student's competency outcome success. The data collection of the PCS's timeline was planned to obtain this capstones' desired perceived competence data. The pre podcast PCS data was collected on the first day each skill was presented to show the nursing students' beginning perceived competence of the skill. Each skill podcast was then presented and made available on that first day that the skill was presented. The nursing skill podcasts were then available as an unlimited supplemental skill acquisition tool during the students' practice week. The data collection of the utilized scales of PCS, PU, and PEOU timeline are further described below (See Table 8).

Table 8

Data Collection of Tool Timeline

Sill Podcasts	Pre-podcast-First Day Skill Presented	Post-podcast-Prior to Skill Check-off	Final- After all skill podcasts were presented
Vital Signs			
PN	PCS	PCS	
RN	PCS	PCS	
Foley Catheter Insertion			
PN	PCS	PCS	
RN	PCS	PCS	
Sterile Dressing Change			
PN	PCS	PCS	
RN	PCS	PCS	
Post all skills and podcasts			
PN			PU & PEOU
PN			PU & PEOU

Note. PN= Practical Nurse; RN= Registered Nurse; PCS= Perceived Competency Scale; PU= Perceived Competency Scale; PEOU= Perceived Ease of Use Scale.

The timeline above shows the data collection periods in time for the PCS, PU, and PEOU scale. The PCS was utilized to analyze job relevance. Perceived skill competence was assessed at six different points in time with both nursing student groups (RN and PN). Perceived competence was evaluated both pre and post podcast for the three different nursing skills: obtaining vital signs, inserting a Foley catheter, and performing a sterile dressing change. The PU was used to analyze the perceived usefulness of the podcasts. The PEUO scale was used to analyze the perceived ease of use of the podcasts

and therefore usefulness of the podcasts. The PU and PEUO scales were utilized once for both nursing student groups (PN and RN) for the final data collection point in time, after all of the skill podcasts were presented.

Budget

The original planned budget and final budget for this podcasting capstone project included both supplies already available and purchased supplies. The final budget included the use of a basic digital video recording device for the portable recording of skill podcasts already owned by the PA, the facility's lab time for practicing podcasts (three hours), preparing the lab and recording of the three podcast nursing skills (eight hours), access to the students' online format (Blackboard), and computer use for podcasts upload which also were readily available for use to the PA. The remainder of the budget included purchased office supplies for the required paper, batteries, and copies of the informed consents and surveys ($50.00), and download fees for the computer statistical package ($75.00).

Summary

Research projects that examine factors that address technology acceptance can allow educators a better understanding of how they can provide innovative methods to support student knowledge and skill acquisition support. The methodology of this capstone project was designed to examine Davis' TAM2 constructs of the perceived effectiveness, ease of use and job relevance that suggest the technology acceptance of podcasting. Examining TAM2's construct of job relevance (i.e. the perceived competence change), was especially important in determining the podcasts' perceived usefulness due to the increased availability of mobile technology choices used in nursing education for

knowledge and skill acquisition support tools (Forbes & Hickey, 2008). This project's results allowed for a better understanding of the perceived effectiveness of podcasts as a technological tool for the required skill acquisition that supports nursing student's goal of becoming successful licensed nurses.

CHAPTER IV

Results

The purpose of this project was to determine the technology acceptance of instructor guided podcast for nursing skill acquisition. Venkatesh and Davis' (2000) technology acceptance model (TAM2) constructs of perceived usefulness, perceived ease of use, and job relevance were utilized to determine the technology acceptance of podcasting. To determine the technology acceptance of podcasting, this project aimed to answer the following questions:

1. What was the nursing student's perceived usefulness of the provided podcasts as a support tool for skill acquisition?
2. What was the nursing student's perceived ease of use of the provided podcasts as a support tool for the acquisition?
3. Was there a difference in the nursing student's perceived competence of the skill change with the use of the podcasts?
4. Was there a difference in the perception of podcast's perceived usefulness and ease of use between the associate degrees registered nursing students (RN) and practical nursing degree program students (PN)?
5. Was there a difference between the students' perceived competence of the skill change with the use of the podcasts between the RN and the PN students?

Davis's perceived usefulness scale (PU) and perceived ease of use (PEOU) scale, as well as Deci and Ryan's (1996) perceived competence scale (PCS) were utilized to answer this capstone's desired questions. The three scales: PU, PEOU, and PCS all

allowed for the use of a seven point Likert scale from strongly disagree to strongly agree (See Table 9).

Table 9

Seven point Likert Scale

Response	Scale
Strongly Disagree	1
Disagree	2
Disagree Somewhat	3
Undecided	4
Agree Somewhat	5
Agree	6
Strongly Agree	7

Results

Forty nine nursing students from two nursing student groups (PN and RN) were asked to participate in this project. The total nursing student sample included 17 (34.7%) PN and 32 (65.3%) RN students. Of the sample, 49 (100%) students in both groups completed both the pre and post podcast Perceived Competency Scale (PCS) survey for the skill of obtaining vital signs. For the Foley catheter skill, 47 students (95.9%) completed both the pre and post podcast PCS survey due to one RN student dropping from the program and one unanswered survey was turned in from the PN group. Forty eight nursing students (97.9%) completed both the pre and the post PCS podcast survey for the final nursing skill of performing a sterile dressing change.

The overall nursing student sample consisted of both males (N=4) and females (N=45) with a reported age ranging from 19 to 48 years of age. The highest overall percentage of students (49%) reported to be in the age range of 18-25 years in both the PN group (N=8, 47%) and the RN group (N=16, 50%). The majority of the PN student

sample reported working in healthcare (53%, N=9) while the majority of the RN student sample did not report working in health care (N= 28%, N=9). Lastly the previous educational level of the group revealed that the majority (75.5%) of the samples' highest educational level was the completion of high school. The frequencies of distribution of the PN student (See Table 10) and RN student group (See Table 11) demographic variables are presented below.

Table 10

PN Student Frequencies Distribution of Demographic Variables

	Totals	Percentage
Gender		
Male	1	5.9 %
Female	16	94.1 %
Education		
High School	14	82.3 %
Associate Degree	2	11.8 %
Bachelor Degree or Higher	1	5.9 %
Age -Groups		
18-25	8	47.0 %
26-35	6	35.3 %
36-40	1	5.9 %
>40	2	11.8 %
Healthcare Provider		
Yes	9	53.0 %
No	8	47.0 %

Table 11

RN Student Frequencies Distribution of Demographic Variables

	Totals	Percentage
Gender		
Male	3	9.4 %
Female	29	90.6 %
Education		
High School	23	72.0 %
Associate Degree	6	19.0 %
Bachelor Degree or Higher	3	9.0 %
Age -Groups		
18-25	16	50.0 %
26-35	7	22.0 %
36-40	6	19. 0%
>40	3	9.0 %
Healthcare Provider		
Yes	9	28.0 %
No	23	72.0 %

Theoretical Concepts

The results of this capstone project are presented with each of the TAM2's constructs of job relevance, perceived usefulness, and perceived ease of use. According to Venkatesh and Davis' (2000) TAM2's model perceived usefulness will show the acceptance of the technology being assessed. Furthermore, perceived ease of use and job relevance further predicts perceived usefulness of the technology being assessed

(Venkatesh & Davis, 2000). The results of this capstone project's job relevance, perceived usefulness, and ease of use of podcasts are presented below.

Job Relevance

TAM2's variable of job relevance was included in this study to help determine the perceived usefulness of podcasting as a supplemental skill acquisition tool. Job relevance is reported to refer to the capability of the technology in this study podcasting, to enhance the users' (nursing students') ability to perform their job (learning the nursing skill) (Chuttur, 2009). Measurement of job relevance, along with directly measuring perceived usefulness, assisted in answering three of this project's questions:

1. What was the nursing students' perceived usefulness of the provided podcasts as a support tool for skill acquisition?
2. Was there a difference in the nursing students' perceived competence of the skill change with the use of the podcasts?
3. Was there a difference between the students' perceived competency of the skill change with the use of the podcasts between the associate degree nursing students and the practical nursing degree students?

Surveys of perceived competency were given to a sample of nursing students after an in lab instructor demonstration of the skill (pre-podcast) and then again after presenting and uploading an instructor guided podcast of the skill (post-podcast) which allowed for the ability to view and download the podcasts for unlimited viewing to determine if there was an increased level of competency and therefore an influence of the podcasts' usefulness. The pre-podcast surveys were distributed and collected on the first day right after the skill content was presented by the instructor to assess the students

beginning perceived competence of the presented nursing skill. Post pod-cast PCS survey collection date and times were scheduled on the day prior to the students' time to show the skill competence in what is known as the "skill check-off". The post-podcast survey collection time was scheduled to determine the students' ending perceived competence after having the ability to utilize the podcasts and before obtaining the results of the competence check-off from the instructor.

An independent sample *t* test was conducted to evaluate the overall student PCS mean scores as well as comparing PCS means between the two student groups (PN and RN). The means were obtained for each PCS pre and post podcast survey question. Student responses ranged from "strongly disagree" to strongly agree" (See Table 9.).

The PCS's statistical results are presented in this section for each individual skill of obtaining vital signs, inserting a Foley catheter, and performing a sterile dressing change. The statistical results are presented below of the overall student group means for pre podcast presentation of the skill as well as the post podcasts utilization availability means and *p* values for each individual PCS question. Each skill is presented below with the found results from each perceived competency scale question to determine the mean change if any from pre podcast to post podcast.

Vital Signs Skill

Question 1: I feel confident in my ability to apply the presented nursing skill to real life clinical situations. An overall mean score of 4.71 (*sd*= 1.237) for pre podcast presentation and utilization availability was found, while an overall mean score of 6.10 (*sd*= .928) was found for post podcasts presentation and utilization availability. A significant difference, $p = .000$ was found from the overall pre podcast mean to the

overall post podcast mean. A pre podcast mean scores of 5.35 (*sd*= 1.169) PN and 4.72 (*sd*=1.442) RN were found. Post podcast mean scores of 5.76 (*sd*= .903) and 5.81(*sd*= .738) were found respectively. The *p* value (.000) determined that there was a significant increase in both nursing students group's perceived competence in their ability to apply the presented skill of obtaining vital signs to real life clinical situations.

Question 2: I now feel capable of implementing the nursing skill to patients in clinical situations. An overall mean score of 4.71 (*sd*= 1.368) for pre podcast presentation and utilization availability, while an overall mean score of 6.13 (*sd*= .937) was found for post podcasts presentation and utilization availability. A significant difference, $p = .000$ was found from the overall pre podcast mean to the overall post podcast mean. A pre podcast mean scores of 5.35 (*sd*= 1.169) for the PN group and 4.69 (*sd*= 1.442) for the RN group were found. Post podcast mean scores of 5.94 (*sd*= .966) and 5.91 (*sd*= .777) were found respectively. The *p* (.000) value determined that there was a significant increase in both nursing students group's perceived competence of feeling capable of implementing the nursing skill of obtaining vital signs to patients in clinical situations.

Question 3: I am able to recall the knowledge I obtained to perform the nursing skill presented. An overall mean score of 4.88 (*sd*= 1.299) for pre podcast presentation and utilization availability, while an overall mean score of 6.13 (*sd*= .914) was found for post podcasts presentation and utilization availability. A significant difference, $p = .000$ was found from the overall pre podcast mean to the overall post podcast mean. A pre podcast mean scores of 5.29 (*sd*= 1.160) for the PN students and 4.97 (*sd*= 1.307) for the RN students were found. Post podcast mean scores of 5.94 (*sd*= .748) and 6.06 (*sd*=.840) were found respectively. The *p* value (.000) determined that there was a significant

increase in both nursing students group's perceived competence to recall the knowledge they obtained to perform the skill of obtaining vital signs.

Question 4: I am able to meet the challenge of performing the skill with the required accuracy for patients requiring the nursing skill. An overall mean score of 4.77 (*sd*= 1.325) for pre podcast presentation and utilization availability, while an overall mean score of 6.15 (*sd*= .922) was found for post podcasts presentation and utilization availability. A significant difference, $p = .000$ was found from the overall pre podcast mean to the overall post podcast mean. A pre podcast mean scores of 5.29 (*sd*= 1.160) for the PN students and 4.63 (*sd*= 1.476) RN were found. Post podcast mean scores of 5.82 (*sd*= .951) and 5.91 (*sd*= .856) were found respectively. The *p* value (.000) determined that there was a significant increase in both nursing students group's perceived competence to meet the challenge of performing the skill of obtaining vital signs with required accuracy for patients requiring the obtainment of vital signs.

Foley Catheter Insertion Skill

Question 1: I feel confident in my ability to apply the presented nursing skill to real life clinical situations. An overall mean score of 4.55 (*sd*= 1.558) for pre podcast presentation and utilization availability, while an overall mean score of 5.6 (*sd*= .948) was found for post podcasts presentation and utilization availability. A significant difference, $p = .000$ was found from the overall pre podcast mean to the overall post podcast mean. A pre podcast mean scores of 4.69 (*sd*= 1.815) for the PN students and 4.48 (*sd*= 1.435) for the RN students were found. Post podcast mean scores of 6.18 (*sd*= .809) and 5.29 (*sd*= .864) respectively, were found. The *p* value (.000) determined that there was a significant increase in both nursing students group's perceived competence of

being confident in their ability to apply the skill of inserting a Foley catheter to real life clinical situations.

Question 2: I now feel capable of implementing the nursing skill to patients in clinical situations. An overall mean score of 4.47 (*sd*= 1.501) for pre podcast presentation and utilization availability, while an overall mean score of 5.57 (*sd*= 1.016) was found for post podcasts presentation and utilization availability. A significant difference, $p = .000$ was found from the overall pre podcast mean to the overall post podcast mean. A pre podcast mean scores of 4.56 (*sd*= 1.861) for the PN students and 4.42 (*sd*= 1.311) for the RN students were found. Post podcast mean scores of 6.24 (*sd*= .831) and 5.26 (*sd*= .995) respectively, were found. The *p* value (.000) determined that there was a significant increase in both nursing students group's perceived competence of feeling capable of inserting a Foley catheter in clinical situations.

Question 3: I am able to recall the knowledge I obtained to perform the nursing skill presented. An overall mean score of 5.26 (*sd*= 1.259) for pre podcast presentation and utilization availability, while an overall mean score of 5.83 (*sd*= .940) was found for post podcasts presentation and utilization availability. A significant difference, $p = .022$ was found from the overall pre podcast mean to the overall post podcast mean. A pre podcast mean scores of 5.38 (*sd*= 1.455) for the PN students and 5.19 (*sd*= 1.167) for the RN students were found. While post podcast mean scores of 6.24 (*sd*= .831) and 5.65 (*sd*= .950) respectively, were found. The *p* value (.000) determined that there was a significant increase in both nursing students group's perceived competence of being able to recall the knowledge they obtained to perform the presented skill of inserting a Foley catheter.

Question 4: I am able to meet the challenge of performing the skill with the required accuracy for patients requiring the nursing skill. An overall mean score of 4.60 (*sd*= 1.527) for pre podcast presentation and utilization availability, while an overall mean score of 5.60 (*sd*= 1.035) was found for post podcasts presentation and utilization availability. A significant difference, $p = .001$ was found from the overall pre podcast mean to the overall post podcast mean. A pre podcast mean scores of 4.69 (*sd*= 1.991) for the PN students and 4.55 (*sd*= 1.261) for the RN students were found. While post podcast mean scores of 6.29 (*sd*= .849) and 5.26 (*sd*= .965) respectively, were found. The *p* value (.000) determined that there was a significant increase in both nursing students group's perceived competence of being able to meet the challenge of performing the skill with the required accuracy for patients requiring the skill.

Sterile Dressing Change Skill

Question 1: I feel confident in my ability to apply the presented nursing skill to real life clinical situations. An overall mean score of 4.71 (*sd*= 1.237) for pre podcast presentation and utilization availability, while an overall mean score of 6.10 (*sd*= .928) was found for post podcasts presentation and utilization availability. A significant difference, $p = .000$ was found from the overall pre podcast mean to the overall post podcast mean. A pre podcast mean scores of 5.49 (*sd*= 1.176) for the PN student group and 4.77 (*sd*= 1.283) for the RN student group were found. Post podcast mean scores of 6.18 (*sd*= .809) and 6.06 (*sd*= .998) respectively, were found. The *p* value (.000) determined that there was a significant increase in both nursing students group's perceived competence of being confident in their ability to apply the skill of performing a sterile dressing change to real life clinical situations.

Question 2: I now feel capable of implementing the nursing skill to patients in clinical situations. An overall mean score of 4.71 (*sd*= 1.368) for pre podcast presentation and utilization availability, while an overall mean score of 6.13 (*sd*= .937) was found for post podcasts presentation and utilization availability. A significant difference, $p = .000$ was found from the overall pre podcast mean to the overall post podcast mean. A pre podcast mean scores of 4.53 (*sd*= 1.375) PN and 4.81 (*sd*= 1.376) RN were found. Post podcast mean scores of 6.24 (*sd*= .831) and 6.06 (*sd*= .998) respectively, were found. The *p* value (.000) determined that there was a significant increase in both nursing students group's perceived competence of implementing the nursing skill of performing a sterile dressing change to patients in clinical situations.

Question 3: I am able to recall the knowledge I obtained to perform the nursing skill presented. An overall mean score of 4.88 (*sd*= 1.299) for pre podcast presentation and utilization availability, while an overall mean score of 6.13 (*sd*= .914) was found for post podcasts presentation and utilization availability. A significant difference, $p = .000$ was found from the overall pre podcast mean to the overall post podcast mean. A pre podcast mean scores of 4.88 (*sd*= 1.317) (PN group) and 4.87 (*sd*= 1.310) RN were found. Post podcast mean scores of 6.29 (*sd*= .849) and 6.03 (*sd*= .948) respectively, were found. The *p* value (.000) determined that there was a significant increase in both nursing students group's perceived competence of being able to recall the knowledge they obtained to perform the presented nursing skill of performing a sterile dressing change.

Question 4: I am able to meet the challenge of performing the skill with the required accuracy for patients requiring the nursing skill. An overall mean score of 4.77

(*sd*= 1.325) for pre podcast presentation and utilization availability, while an overall mean score of 6.15 (*sd*= .922) was found for post podcasts presentation and utilization availability. A significant difference, $p = .000$ was found from the overall pre podcast mean to the overall post podcast mean. A pre podcast mean scores of 4.76 (*sd*= 1.251) for the PN group and 4.77 (*sd*= 1.383) for the RN group were found. Post podcast mean scores of 6.29 (*sd*= .849) and 6.06 (*sd*= .964) respectively, were found. The *p* value (.000) determined that there was a significant increase in both nursing students group's perceived competence of being able to meet the challenge of performing the skill of performing a sterile dressing change with the required accuracy for patients requiring the nursing skill.

An independent *t*-test was used to determine the overall mean scores and for the student responses of the individual PN and RN groups. The independent *t*-test results were used to answer the capstone question: Was there a significant difference with the nursing student's perceived competence of the skill change with the use of the podcasts? Table 12 presents the overall, pre and post means and standard deviations for each PCS question and nursing skill.

Table 12

PCS Questions Overall Group Pre and Post Means and Standard Deviations

	Overall- Pre Podcasts		Overall- Post Podcasts		Sig.
	M	*SD*	*M*	*SD*	
Questions					
I feel confident in my ability to apply the presented nursing skill to real life clinical situations.					
Vital Signs	4.71	1.237	6.10	.928	.000
Foley Catheter Insertion	4.55	1.558	5.60	.948	.000
Sterile Dressing Change	4.71	1.237	6.10	.928	.000
I now feel capable of implementing the nursing skill to patients in clinical situations.					
Vital Signs	4.71	1.368	6.13	.937	.000
Foley Catheter Insertion	4.47	1.501	5.57	1.016	.000
Sterile Dressing Change	4.71	1.368	6.13	.937	.000
I am able to recall the knowledge I obtained to perform the nursing skill presented.					
Vital Signs	4.88	1.299	6.13	.914	.000
Foley Catheter Insertion	5.26	1.259	5.83	.940	.022
Sterile Dressing Change	4.88	1.299	6.13	.914	.000
I am able to meet the challenge of performing the skill with the required accuracy for patients requiring the nursing skill.					
Vital Signs	4.77	1.32	6.15	.922	.000
Foley Catheter Insertion	4.60	1.527	5.60	1.035	.001
Sterile Dressing Change	4.77	1.325	6.15	.922	.000

The design of this project allowed for perceived competence data to be gathered for three different nursing skills (vital sign obtainment, Foley catheter insertion, & performing a sterile dressing change) within two groups (PN and RN) to be compared at two different points (Pre-podcast and Post-podcast). Overall mean scores were found to increase and to have a significant difference ($p < 0.05$) between pre and post podcasts for the three presented nursing skills. The data obtained from the PCS suggested that the podcasts did have job relevance to the nursing students in the sample.

The PCS was also used to answer one of this capstone's questions of: Was there a difference in the perceived competence of the skill change with the use of the podcast? For all four PCS questions, a significant increase in the overall mean scores were found to increase from pre to post podcast utilization for both the PN and RN students.

Perceived Usefulness and Ease of Use

Davis' (1989) PU and PEOU scale was used in this study to answer this capstone project's questions:

1. What was the nursing students' perceived usefulness of the provided podcasts as a support tool for skill acquisition?
2. What was the nursing students' perceived ease of use of the provided podcasts as a support tool for the skill acquisition?
3. Was there a difference in the perception of the podcasts' perceived usefulness and ease of use between the RN and PN students?

Perceived usefulness. An independent sample *t* test was further conducted to evaluate the mean scores for perceived usefulness and answer the capstone's question: What was the nursing students' perceived usefulness of the provided podcasts as a

support tool for the skill acquisition? The PU scale utilized a seven point Likert scale that allowed for responses ranging from “strongly disagree” to strongly agree” (See Table 9). The overall mean scores are presented in Table 13.

Table 13

Overall Means and Standard Deviations for Perceived Usefulness

Question	*M*	*SD*
1. Using the podcasts improves my acquisition of the presented skill.	6.04	1.021
2. Using the podcasts in my acquisition of the presented skill increases my productivity	5.96	1.062
3. Using the podcasts enhances my effectiveness of my acquisition of the presented skill	6.04	.999
4. I find the podcasts useful in my acquisition of the presented skill.	6.09	.996

The overall mean scores of the PU scale showed the majority of students agreed or strongly agreed with the questions of podcast usefulness Likert scale frequencies of the overall group sample (PN and RN) are further presented below for each of the PU scale statements. The data obtained with the PU scale results showed that the nursing students in the sample did perceive that the podcasts were a useful technology support tool for skill acquisition.

Using the podcasts improves my acquisition of the presented skill. The majority of the overall sample (PN and RN students) agreed or strongly agreed that using the podcasts improves their acquisition of the presented skill (See Table 14).

Table 14.

Overall Group Likert Scale Frequencies for Perceived Usefulness

Question	Total	Percentage
Using the podcasts improves my acquisition of the presented skill.		
Likert Scale		
Data Not Entered	0	0%
Strongly Disagree	0	0%
Disagree	0	0%
Disagree Somewhat	1	2.1%
Undecided	2	4.2%
Agree Somewhat	4	8.3%
Agree	25	52.%
Strongly Agree	16	33.%

Using the podcasts in my acquisition of the presented skill increases my productivity. The majority of the overall sample (PN and RN students) agreed or strongly agreed that using the podcasts in their acquisition of the presented skill increased their productivity. (See Table 15)

Table 15

Group Likert Scale Frequencies for Perceived Usefulness, Question 1

Question	Total	Percentage
Using the podcasts in my acquisition of the presented skill increases my productivity.		
Likert Scale		
Data Not Entered	0	0%
Strongly Disagree	0	0%
Disagree	0	0%
Disagree Somewhat	1	2.1%
Undecided	2	4.2%
Agree Somewhat	8	16.%
Agree	21	43.%
Strongly Agree	16	33.%

Using the podcasts enhances my effectiveness of my acquisition of the presented skill. The majority of the overall sample (PN and RN students) agreed or strongly agreed that using the podcasts in their acquisition of the presented skill increased their productivity. (See Table 16)

Table 16

Group Likert Scale Frequencies for Perceived Usefulness, Question 2

Question	Total	Percentage
Using the podcasts enhances my effectiveness of my acquisition of the presented skill.		
Data Not Entered	0	0%
Strongly Disagree	0	0%
Disagree	0	0%
Disagree Somewhat	1	2.1%
Undecided	1	2.1%
Agree Somewhat	6	12.%
Agree	24	50.%
Strongly Agree	16	33.%

I find the podcasts useful in my acquisition of the presented skill. The majority of the overall sample (PN and RN students) agreed or strongly agreed that using the podcasts in their acquisition of the presented skill increased their productivity. (See Table 17).

Table 17

Group Likert Scale Frequencies for Perceived Usefulness, Question 3

Question	Total	Percentage
Using the podcasts enhances my effectiveness of my acquisition of the presented skill.		
Data Not Entered	0	0%
Strongly Disagree	0	0%
Disagree	0	0%
Disagree Somewhat	1	2.1%
Undecided	1	2.1%
Agree Somewhat	6	12.%
Agree	24	50.%
Strongly Agree	16	33.%

This project further allowed for the comparison of means for the perceived usefulness with PU scale to answer the project question: Was there a difference in the perception of the podcast's perceived usefulness between the RN and PN students? Likert scale frequencies comparisons for each individual group (PN and RN) are presented below for each of the PU scale statements (See Table 18).

Table 18

Group Comparison of Means and Standard Deviations for Perceived Usefulness

Student Group	PN		RN	
Question	*M*	*SD*	*M*	*SD*
1. Using the podcasts improves my acquisition of the presented skill.	5.71	.772	6.23	1.104
2. Using the podcasts in my acquisition of the presented skill increases my productivity	5.71	.772	6.10	1.185
3. Using the podcasts enhances my effectiveness of my acquisition of the presented skill	5.76	.752	6.20	1.095
4. I find the podcasts useful in my acquisition of the presented skill.	5.71	.772	6.30	1.055

The majority of the students in the PN sample as well as the RN sample agreed or strongly agreed with each statement of perceived usefulness, however the RN means were found to be higher than the PN with each PU survey question.

Perceived ease of use. An independent sample *t* test was further conducted to evaluate the mean scores for perceived ease of use and answer the capstone's question: What was the nursing students' perceived ease of use of the provided podcasts as a support tool for the skill acquisition? The PEOU scale utilized a seven point Likert scale that allowed for responses ranging from "strongly disagree" to strongly agree" (See Table 9). The overall mean scores are presented in Table 19.

Table 19

Overall Means and Standard Deviations for Perceived Ease of Use

Question	*M*	*SD*
1. My interaction with the presented podcasts is clear and understandable	6.17	.907
2. Interacting with the podcasts does not require a lot of my mental effort.	5.85	1.368
3. I find the podcasts to be easy to use.	6.27	1.106
4. I find it easy to get the podcasts to do what I want it to do.	6.02	1.158

The overall mean scores of the PEOU scale showed the majority of students agreed or strongly agreed with the questions of podcast ease of use. The data obtained with the PEOU scale results showed that the nursing students in the sample did perceive that the podcasts were an easy to use technology support tool for skill acquisition. Likert scale frequencies of the overall group sample (PN and RN) are further presented below for each of the PEOU scale statements.

My interaction with the presented podcasts is clear and understandable. The majority of the overall sample (PN and RN students) agreed or strongly agreed that their interaction with the podcast was clear and understandable (See Table 20).

Table 20

Group Frequencies for Perceived Ease of Use, Question 1

Question	Total	Percentage
My interaction with the presented podcasts is clear and understandable.		
Data Not Entered	0	0%
Strongly Disagree	0	0%
Disagree	0	0%
Disagree Somewhat	2	2.0%
Undecided	2	2.0%
Agree Somewhat	7	14.3%
Agree	20	40.8%
Strongly Agree	20	40.8%

Interacting with the podcasts does not require a lot of my mental effort. The majority of the overall sample (PN and RN students) agreed or strongly agreed that their interaction with the podcast did not require a lot of their mental effort (See Table 21).

Table 21

Group Frequencies for Perceived Ease of Use, Question 2

Question	Total	Percentage
Interacting with the podcasts does not require a lot of my mental effort.		
Data Not Entered	1	2.0%
Strongly Disagree	1	2.0%
Disagree	0	0%
Disagree Somewhat	1	2.0%
Undecided	6	12.2%
Agree Somewhat	5	10.2%
Agree	17	34.7%
Strongly Agree	18	36.7%

I find the podcasts to be easy to use. The majority of the overall sample (PN and RN students) agreed or strongly agreed that they found the podcast were easy to use (See Table 22).

Table 22

Group Frequencies for Perceived Ease of Use, Question 3

Question	Total	Percentage
I find the podcasts to be easy to use.		
Data Not Entered	1	2.0%
Strongly Disagree	1	2.0%
Disagree	0	0%
Disagree Somewhat	0	0%
Undecided	2	4.1%
Agree Somewhat	3	6.1%
Agree	17	34.7%
Strongly Agree	25	51.0%

I find it easy to get the podcasts to do what I want it to do. The majority of the overall sample (PN and RN students) agreed or strongly agreed that they found it easy to get the podcasts to do what they wanted it to do (See Table 23).

Table 23

Group Frequencies for Perceived Ease of Use, Question 4

Question	Total	Percentage
I find it easy to get the podcasts to do what I want it to do.		
Data Not Entered	2	4.1%
Strongly Disagree	1	2.0%
Disagree	0	0%
Disagree Somewhat	0	0%
Undecided	3	6.1%
Agree Somewhat	4	8.2%
Agree	20	40.8%
Strongly Agree	19	38.8%

This project further allowed for the comparison of means for the perceived ease of use between the two student groups with the PEOU scale to answer the project question: Was there a difference in the perception of the podcast's perceived ease of use between the associate degree nursing students and practical degree program students? Likert scale frequencies comparisons for each individual group (PN and RN) are presented below for each of the PEOU scale statements (See Table 24).

Table 24

Group Comparison of Means and Standard Deviations for Perceived Ease of Use

Student Group	PN		RN	
Question	*M*	*SD*	*M*	*SD*
1. My interaction with the presented podcasts is clear and understandable	5.82	.636	6.35	.985
2. Interacting with the podcasts does not require a lot of my mental effort.	5.53	1.231	6.03	1.426
3. I find the podcasts to be easy to use.	6.00	.707	6.42	1.259
4. I find it easy to get the podcasts to do what I want it to do.	5.88	.697	6.10	1.350

The majority of the students in the PN sample as well as the RN sample agreed or strongly agreed with each statement of perceived ease of use, however the RN means were found to be higher than the PN with each PU survey question.

Summary

The purpose of this capstone project was to examine the perceived usefulness and ease of use podcasting as a support tool for skill acquisition. The statistical presentation included the overall means as well as the comparison of the two nursing student level groups mean results for the PCS, PU, and PEOU. The overall pre and post PCS mean scores were analyzed for both student groups (PN and RN) for three nursing skills, as well as compared between the groups individually. Furthermore the overall PU and PEOU means were analyzed and also compared between the individual student groups (PN and RN). Results showed that there were significant perceived competence increases with all three skill podcasts: obtaining vital signs, inserting a Foley catheter,

and performing a sterile dressing change from pre to post podcasts. This increase in perceived competence suggested that the students found that the podcasts did have job relevance to obtaining the nursing skills and therefore are perceived as useful (Venkatesh & Davis, 2000). The data also showed that the nursing students perceived the podcasts as easy to use, which according to the TAM2 model, further suggests perceived usefulness (Venkatesh & Davis, 2000). The final scale of PU showed that the sample nursing students perceived the podcasts as useful. This capstone's findings of the nursing students' increase in perceived competence (job relevance), reported perceived usefulness and ease of use of the podcasts suggested that podcasting is an accepted technology for nursing skill acquisition.

CHAPTER V

Discussion

This project explored the technology acceptance of podcasting as a supplemental nursing skill acquisition tool by analyzing the perceived increase in competence for the nursing skills and overall perceived usefulness and ease of use of the podcasts. The findings presented in this chapter answered the capstones' questions:

1. What was the nursing students' perceived usefulness of the provided podcasts as a support tool for skill acquisition?
2. What was the nursing students' perceived ease of use of the provided podcasts as a support tool for the acquisition?
3. Was there a difference in the nursing student's perceived competence of the skill change with the use of the podcasts?
4. Was there a difference in the perception of podcast's perceived usefulness and ease of use between the RN and PN students?
5. Was there a difference between the students' perceived competence of the skill change with the use of the podcasts between the RN and PN degree students?

Application of Theoretical Framework

The technology acceptance of podcasting as a supplemental skill acquisition tool was analyzed utilizing Venkatesh and Davis' (2000) technology acceptance model two (TAM2). The TAM2's constructs of perceived usefulness, perceived ease of use, and job relevance were utilized to determine nursing students' technology acceptance of podcasting. The determination of perceived usefulness and ease of use, along with job relevance of the podcasting was deemed appropriate due to the podcast's content of fundamental nursing skills being presented to both levels (PN and RN) students for the

first time and also in their first semester of nursing school. Perceived usefulness of the podcast was first determined by analyzing job relevance. Job relevance was measured by a change in perceived competence by analyzing the PCS means from pre podcast to post podcast. The perceived usefulness of the podcasts was additionally determined from the means of the PU scale. Lastly, the perceived ease of use of the podcasts was determined by analyzing the mean scores for the PEOU scale.

The overall mean scores of perceived competence for each skill of obtaining vital signs, inserting an indwelling Foley catheter, and performing a sterile dressing change had a significant increase from pre to post podcast utilization suggesting that the podcast were perceived to have job relevance and therefore perceived as useful. This finding correlates with previous a pervious study by Kalludi et al. (2013) in which students in an experimental group utilized podcasts had a significant higher test mean when compared with the non-podcast utilization control group. Analyzing and comparing each individual nursing student groups further allowed for the understanding of the technology acceptance of podcasting as a supplemental tool for nursing skill acquisition. The RN and PN students were both found to have an increase in the perceived competence from pre-podcast to post-podcast for all three nursing skills. The increase in the skill perceived competence from pre-podcast to post-podcast with both individual nursing student groups (PN and RN) suggested that the podcasts had job relevance for acquiring the nursing skill and therefore also suggested perceived usefulness. The overall mean scores for the PEOU scale showed that the nursing students in both groups (RN and PN) found the podcasts were easy to use, which additionally suggested perceived usefulness. Finally the PU scale mean scores for both nursing student groups (RN and PN) showed that the students did

perceive the podcasts to be useful. The result of this project suggested that podcasts were an accepted technology tool by the nursing students in both groups (RN and PN) for nursing skill acquisition.

Implications of Findings

Nursing students are faced with having to obtain a vast amount of knowledge and skills during their nursing program. Technology continues to grow and many students may require and expect different methods to accommodate their learning needs (Vogt et al., 2010). Mobile technology methods, such as with video podcasting can be offered by nursing educators as additional support methods for nursing students' knowledge and skill acquisition in addition to the traditional classroom and lab environments. The results of this project showed that the provided video podcasts were perceived as useful therefore suggesting that the podcasts were an accepted technology tool for nursing skill acquisition by the nursing students.

Overall, podcasts have shown strong student satisfaction and have been perceived to enhance student learning (Goldberg & McKhann, 2000). This projects results of podcasting being perceived as useful has also been found in other studies. According to a study by Gosper et al. (2007), 80% of a student sample from four universities indicated that podcasts made it easier for them to learn; furthermore two thirds of the sample also reported that podcasts helped them achieve better results. In a study by Kalludi et al. (2013), audio podcasts were perceived as useful; however the students reported that a disadvantage was the lack of images. Utilizing podcasts, especially with video podcasts can be a useful tool for nursing students attempting to acquire both knowledge and skills and shows a need for future studies of their technology acceptance.

These results allow nursing educators to better understand of how podcasting can be utilized as a flexible support tool for nursing skill acquisition. Understanding which technology tools that can support students' expectations and acceptance can allow educators the ability to utilize technology tools that have the ability to be effective. This project strived to increase the understanding podcasting's perceived usefulness and therefore acceptance.

Limitations

Limitations of the project were identified as instructor influence, student level variance, self-reporting, sample size, and setting. The presence of a current instructor as the project administrator (PA) may have been a limitation in the project. Being aware of the PA as an instructor and some of the students having a previous relationship or a developing relationship over the course of the project with the PA, may have skewed the data of perceived usefulness and ease of use of the podcasts as well as their perceived competence of their skill acquisition. Student level variance may also be a possible limitation for this study.

Time in relationship to each group's skill acquisition may also be a possible limitation. The PN group's overall timeframe for presented skills was different from the RN students. Even though both groups were allowed approximately the same time (one week) between being presented the skills (pre-podcast) and being required to show competence of the skill (post-podcast), the PN group's schedule had the students skills all presented near the beginning of the semester, while the RN group's skills were presented over a longer period of time, in intervals between class content over the entire semester. This time frame difference may have caused a difference in their perceived confidence of

their skill competence due to the length of time being exposed to other class experiences and nursing content.

Self-reporting of their perceived competence level may also be limitation. Even with the survey anonymity of the PCS, the students may have reported a higher level of their perceived competency level due to not wanting to disclose a lower competency level. The sample size may also be a limitation for this project. The sample size of the project yielded a convenience sample of 49 participants with 48 participants completing the project. Finally the setting of utilizing one academic setting was a limitation due to time restrictions and limited nursing school programs in the area.

Recommendations

This project aimed to determine the technology acceptance of podcasting for nursing skill acquisition. Nursing skill acquisition was utilized due to the ability to use both PN and RN students with the same content. Further studies are needed to determine the technology acceptance of podcasting with other areas of content with nursing students as well as other technologies that are beneficial to support the knowledge and skill acquisition of nursing students. In addition, future studies that utilize larger sample groups within various nursing levels and content would also be beneficial to nursing education.

Conclusions

Meeting the needs of today's diverse nursing students requires nursing instructors to provide technology tools that increased learning flexibility and engagement (Zacharis, 2012).

The increase in available technology and educators charge to support students' diverse needs can often make understanding what technology to utilize uncertain. Podcasting was presented in this project as such a tool that can provide a flexible learning option that can be carried outside of the traditional lab or classroom. Podcasting was found to be perceived as useful to both nursing student groups (RN and PN) as a supplemental nursing skill acquisition tool. Future directions of utilizing podcasts should be examined with nursing education. Podcasting has the potential for being an effective technology tool for both traditional classroom lecture content as well as with nursing skill acquisition as presented with this project. A plethora of available technology has increased and suggests a need for educators to be aware of the technology's acceptance and therefore understand which technology will be accepted for utilization by the students.

References

Abt, G., & Barry, T. (2007, December). The quantitative effect of students using podcasts in a first year undergraduate exercise physiology module. *Bioscience Education e journal, 10*. Retrieved from http://www.bioscience.heacademy.ac.uk/journal/vol/beej-10.8.pdf

Bandura, A. (1982). Self-efficacy mechanisms in human agency. *American psychologist, 37*(2), 122-147.

Behrend, T., Wiebe, E., London, J., & Johnson, E. (2011, March-April). Cloud computing adoption and usage in community colleges. *Behavior Information Technology, 30*(2), 231-240.

Chester, A., Buntine, A., Hammond, K., & Atkinson, L. (2011). Podcasting in education: Student attitudes, behavior, and self-efficacy, *Educational Technology & Society, 14*(2), 236-247.

Chuttur, M. (2009). Overview of the technology acceptance model: Origins, developments and future directions. *Sprouts: Working Papers on Information Systems, 9*(37). Retrieved from http://sprouts.aisnet.org/9-37

Collier-Reid, B., Case, J., & Scott, A. (2013). The influence of podcasting on student learning: A case study across two courses. *European Journal of Engineering Education 38*(3), 329-339.

Davis, F. (1989). Perceived usefulness, perceived ease of use, and user acceptance of information technology. *MIS Quarterly, 13*(3). 319-340.

Deci, E & Ryan, M. (1996). *Perceived Competence Scales.* Retrieved from: http://www.selfdeterminationtheory.org/perceived-competence-scales/

Evans, C. (2008). The effectiveness of m-learning in the form of podcast revision lectures in higher education. *Computers & Education 50,* 491-498.

Forbes, M., & Hickey, M. (2008). Podcasting: Implementation and evaluation in an undergraduate nursing program. *Nurse Educator, 33*(5), 224-227.

Gibson, M., & Richards, J. (2011). Student engagement through podcasting. *Nurse Education, 36*(4), 161-164.

Goldberg, H., & McKhann, G. (2000). Student test scores are improved in a virtual learning environment. *Advances in Physiology Education, 23*(1), 59-66.

Gosper, M., McNeil, M., Woo, K., Phillips, R., Preston, G., & Green, D. (2007). *Web-based lecture recording technologies- Do students learn from them?* Paper presented at EDUCAUSE Australia, Melbourne, Australia.

Greenfield, S. (2010). Podcasting: A new tool for student retention? *Educational Innovations, 50*(2), 112-114.

Gribbins, M. (2007). The perceived usefulness of podcasting in higher education: A survey of students' attitude and intention to use. Proceedings of the Second Midwest United States Association for Information Systems, Springfield, IL.

Kalludi, S., Punja, D., Pai, K., & Dhar, M. (2013). Efficacy and perceived utility of podcasts as a supplemental teaching aid among first year dental students. *Australasian Medical Journal 6*(9), 450-457.

Long, S., & Edwards, P. (2010). Podcasting: Making waves in millennial education. *Journal for Nurses in Staff Development, 26*(3), 96-101.

Malhorta, Y., & Galletta, D. (1999). Extending the technology acceptance model to account for social influence theoretical bases and empirical validation. *Proceeds of the 32nd Hawaii International Conference on System Sciences.* Retrieved from http://www.brint.org/technologyacceptance.pdf.

Marrocco, G., Kazar, M., & Neal-Boylan. (2014). Transformational learning in graduate nurse education through podcasting. *Nursing Education Perspective 36*(1), 49-53.

McNeil, M., Mukherjee, S., & Singh, G. (2010). Podcasting in physical education: Teacher Education. *Journal of Research, 5*(1).16-19.

Rogers, E. (1995). *Diffusion of innovations,* New York, Free Press.

Schlairet, M. (2010). Efficacy of podcasting: Use in undergraduate and graduate program in a college of nursing. *Journal of Nursing Education, 49*(9), 529-533.

Soong, S., Chan, L., Cheers, C., & Hu, C. (2006). Impact on video recording lectures among students. In L. Markauskaite, P. Goodyear & P. Reimann (Eds.), *Proceedings of Ascilite* (pp.789-793). Sydney, Australia, Retrieved from: http://www.ascilite.org.au/conferences/sydney06/proceedings/pdf_papers/p179.pdf.

Strickland, K., Gray, C., & Hill, G. (2012). The use of podcasts to enhance research teaching linkages in undergraduate nursing students. *Nurse Education in Practice, 12,* 210-214.

Tung, F., & Chang, S. (2008). A new hybrid model for exploring the adoption of online nursing course. *Nurse Education Today, 28,* 293-300.

Tynan B., & Cobran, S. (2006). Podcasting, student learning and expectations. In L. Markauskaite, P. Goodyear & P. Reimann (Eds.), *Proceedings of Ascilite* (pp.825-832). Sydney, Australia. Retrieved from: http://www.ascilite.org.au/conferences/sydney06/proceedings/pdf_papers/p132pdf

van Zanten, R. (2008). The value of lecture podcasting for distance and on-campus students. In Hello! Where are you in the landscape of educational technology? Proceedings ascilite Melbourne 2008. Retrieved from: http://ascilite.org.au/conferences/melbourne08/procs/vanzanten.pdf

Venkatesh, V., & Davis, F. (2000). The theoretical extension of the technology acceptance model: Four longitudinal field studies. *Management Science, 46*(2), 186-204.

Venkatesh, V., & Bala, H. (2008). Technology acceptance model 3 and a research agenda on interventions. *Decision Sciences, 39*(2), 273-315.

Vogt, M., Schaffner, B., Ribar, A., & Chavez R. (2010). The impact of podcasting on the learning and satisfaction of undergraduate nursing students. *Nursing Education in Practice, 10,* 38-42.

Williams, G., & Deci, E. (1996). Internalization of biopsychosocial values by medical students: A test of self-determination theory. *Journal of Personality and Social Psychology, 70,* 767-779.

Williams, G., Freedman, Z., & Deci, E. (1998). Supporting autonomy to motivate glucose control in patients with diabetes. *Diabetes Care, 21,* 1644-1651.

Williams G., Niemiec, C., Patrick, H., & Deci, E. (2009). The importance of supporting autonomy and perceived competence in facilitating long-term tobacco abstinence. *Annals of Behavior Medicine, 37,* 315-324.

Zacharis, N. (2012). Predicting college students' acceptance of podcasting as a learning tool. *Interactive Technology and Smart Education, 9*(3), 171-183.

Zhang, H., Cocosila, M., & Archer, N. (2010, January/February). Factors of adoption of mobile information technology by homecare nurses. A technology acceptance model 2 approach. *CIN: Computers, Informatics, Nursing, 28*(1), 49-56.

Appendix A

Re: Permission for tool use in research

Deci, Edward <deci@psych.rochester.edu>

Sat 2/1/2014 8:11 PM

To:Ms Lisa Mesmer Barnes <lbarnes2@gardner-webb.edu>;

You have our permission to use the Perceived Competence Scale (PCS_A) and to modify it for use in your research.

Ed Deci

On 2/1/14 1:30 PM, "Ms Lisa Mesmer Barnes" <lbarnes2@gardner-webb.edu> wrote:

>
> _____
> From: Ms Lisa Mesmer Barnes
> Sent: Saturday, February 01, 2014 3:55 PM
> To: deci@psch.rochester.edu
> Subject: Permission for tool use in research
>
> My name is Lisa Barnes and I am a DNP student at Gardner-Webb University. I
> am inquiring about using the Perceived Competence Scale (PCS-A) in my doctoral
> research. According to the previous studies I have read that have used this
> scale, the tool has been modified to reflect the research topic. I am also
> requesting permission to modify the tool to reflect my study of perceived
> competence as well as use the following Likert scale with your tool:
>
> 1. Strongly disagree
> 2. Disagree
> 3. Disagree somewhat
> 4. Undecided
> 5. Agree somewhat
> 6. Agree
> 7. Strongly agree
>
> Please respond to let me know if I have permission to do so.
>
> Thank you,
>
> Lisa M. Barnes
> DNP Nursing Student
> Gardner-Webb University

Appendix B

RE: Permission to use tool

Fred Davis <FDavis@walton.uark.edu>

Sun 2/2/2014 3:53 PM

To:Ms Lisa Mesmer Barnes <lbarnes2@gardner-webb.edu>;

Lisa

You have my permission to use the TAM tool of perceived usefulness and ease of use and adapt it for your research.
Best wishes
Fred Davis

From: Ms Lisa Mesmer Barnes [lbarnes2@gardner-webb.edu]
Sent: Saturday, February 01, 2014 3:34 PM
To: venkatesh@venkatesh.us
Subject: Permission to use tool

My name is Lisa Barnes and I am a DNP student at Gardner-Webb University. I am inquiring about using the TAM tool of perceived usefulness and perceived ease of use in my doctoral research on podcast use