

THE EFFECT OF SUPPLEMENTAL PODCASTS
ON TEST SCORES OF RN TO BSN RESEARCH COURSE STUDENTS

BY

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*To know that we know what we know,
and that we do not know what we do not know,
that is true knowledge.*

- Henry David Thoreau

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Abstract

For over 50 years the profession of nursing has voiced the belief that the level of the Baccalaureate Degree should be required for entry into the practice of professional nursing. Despite the increasing complexity of the healthcare environment through the years, the status quo prevails. In 2010, challenged by the Institute of Medicine to achieve 80% of practicing nurses with a BSN by 2020, institutes of higher education are clamoring to fill the gap between Associate Degree and BSN nurses. ADN and Diploma prepared nurses are lacking in the requisite knowledge, skills, and attitudes in research concepts. The complexity in research methodology and analysis can create difficulty for many students that have traditionally relied on familiar practices. Many practicing nurses are unaware of current research that demonstrates evidence for improving outcomes of care. Cultural-Historical Activity Theory provides a framework wherein teaching strategies are planned through examining the situational aspects of the students' experiences, as well as the socio-cultural influences of family, career, and advancing technology. Students struggle with competing needs, and spending time studying is often lost in the chaotic milieu. The availability of supplemental Podcasts as a learning strategy, focused on course objectives, has the potential to promote learning through accessibility and portability of the technology. Podcasts can be accessed anytime and

place; this feature could promote acquisition of important research concepts needed for evidence based professional practice. A quasi-experimental study was performed with 14 RN to BSN completion program students enrolled in a research course. The experimental group was given a podcast of basic research concepts, with subsequent administration of a test to both groups. Findings were not statistically significant at $p \leq 0.05$ level, $F(1,12) = 4.118$, $p = 0.065$, $\eta_p^2 = 0.256$, Cohen's $d = 1.08$, $r = 0.48$. The effect size is large. The survey and focus group results indicated students felt the podcasts increased their learning. Based on the magnitude of the effect size, as well as the supportive results from the survey and focus groups, these results are suggestive of the feasibility of podcasting as an effective teaching strategy. Further research related to podcasting as an effective teaching strategy is recommended.

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Chapter 1

Introduction

With the increasing complexity, ambiguity and chaos in the delivery of healthcare, the idea of intentional learning is critical. Learning activities are needed to create places for thinking about the meanings of the content being learned and its significance to nursing practice. A committee formed through the Robert Wood Johnson Foundation and the Institute of Medicine established an initiative to respond to the expanding role of the nurse in the future of healthcare, and the need to better prepare nurses through education (IOM, 2011). The committee's report highlights the need for higher levels of education and training. A major goal of the initiative is to have a greater percentage of the nursing workforce with a baccalaureate degree, with the target of 80% by 2020. Presently, there is about 50% of the nursing workforce with Bachelor Degrees in Nursing (IOM, 2011). Research has demonstrated improved patient outcomes in hospitals that have higher ratios of BSN to ADN nurses (Benner, Sutphen, Leonard & Day, 2010; Aiken, Clarke, Cheung, Sloane, & Silber, 2003).

Diploma and Associate Degree Nurses are a significant pool of applicants for earning a bachelor's degree in nursing; RN to BSN completion programs often allow practicing RNs to test out of clinical courses, providing incentive in earlier program completion. The nurses enrolled in RN to BSN completion programs have many positive attributes, including life experiences, prior educational preparation, and clinical knowledge and skills (Cangelosi, 2006). However, the return of diploma and associate degree prepared RNs to colleges and universities after their initial basic education can be challenging for students, and for nursing faculty as well. Some of the areas that were

missing from their basic preparation have been categorized as “distasteful, anxiety producing, or even unknown to the students” (Cangelosi, 2006, p. 179). One requirement that often evokes negative connotations with nursing students in general (Sherrod, 2006), and especially the RN-BSN completion students, is the compulsory course of Nursing Research. Compounded by the compressed sessions offered to expedite degree fulfillment, the complexity in research methodology and analysis, and lack of experience in scholarly writing, course expectations can create difficulty for many students. The onus is on the faculty to guide the students in true professional education, and address the unique learning needs of this diverse group of learners.

Nursing research validates the need for nurse educators to shift the focus of their courses from covering content to teaching thinking from multiple perspectives (Ironsides, 2004). Podcasting is a growing pedagogical tool that can provide a means of student-teacher interaction that provides connection of concepts through continued reflection and recursion. The utilization of podcasts combined with other approaches to knowledge acquisition has the potential to assist the students’ in learning the theoretical aspects of Nursing Research class content, and provide perspectives for application to their practice. The student is empowered to enrich their learning through a technology that is readily available to them, at any time or place. This chapter identifies the problem, purpose, and significance of the study, as well as introducing the theoretical framework that provides the foundational support for the research premise; demonstrating application of learning theory to the professional practice of nursing education. Definitions of terms, limitations and assumptions underlying the study are included.

Statement of the Problem

As health care systems work towards increasing their ratio of BSN to ADN educated nurses, employers are encouraging their Associate Degree and Diploma school educated nurses to attain higher degrees. RNs returning for higher education at the baccalaureate level often struggle with learning principles and concepts of research methodology. The expectation for bachelor prepared nurses is to interpret research, apply to practice, identify areas where research is needed, and participate in research on the unit level. Teaching strategies that can assist these students in learning critical research material need to be implemented. Podcasting has the potential to be a viable strategy to improve the learning of research concepts for the RN-BSN completion student body.

Reaching out to meet the diverse learning styles of students is a critical precept in the educative process. Providing supplemental resources can enhance learning, as well as promote a supportive environment; this can lead to the foundation of a main tenet in nursing – dynamic life-long learning.

Purpose of the Investigation

This study investigated the effect of supplemental podcasts as a learning strategy on RN to BSN completion program nursing research course student test scores. Nursing is an evidenced based practice and research is part of the core curriculum of baccalaureate programs.

Significance of the Investigation

As research into this technology in education emerges, the early innovators suggest a “10% decline in attrition and a higher standard of answers in examinations, associated with the introduction of podcasting” (Tynan & Colbran, 2006, p. 832). The literature

highlights a need to further investigate these preliminary findings over time, and this study has the potential to add to the growing body of research regarding the efficacy of podcasting as an educative tool. Although the research on the use of podcasting in education has been growing, the research specific to nursing students and podcasting is scarce. As noted by Margaret Maag (2006) from the University of San Francisco, empirical research is needed “to determine the impact of the mobile media revolution on instructional design and learning effectiveness” (p. 483). Both educators and students can benefit from research on assessment of learning outcomes derived from the integration of instructional design and advanced technology.

A national survey of RN-to-BSN Programs published in 2012 highlights the need for research in the area of RN to BSN completion programs. There is related literature, which includes rationales for promoting the programs, motivational factors for RNs to seek a bachelor’s education, barriers to returning to school, and curricular issues (McEwen, White, Pullis & Krawtz, 2012). Approaches taken to increase learning in RN to BSN students have not received adequate attention. In particular, there is limited research on teaching strategies that have the potential to enhance learning for the licensed RN returning for higher education. There is a need to increase the RN to BSN’s knowledge base in research, and the utilization of podcasting can positively impact this outcome. This study is valuable to the nursing education community in the examination of a teaching strategy for effectiveness in this unique, diverse group of RN to BSN students.

Theoretical Framework

The educational development for a professional nurse is considered a lifelong process. A pervasive growth in knowledge and technology profoundly influences the delivery of effective, quality and safe healthcare. Best practice is based on research, experience and patient values. Lifelong learning cannot be viewed as an individual activity; it needs to be attained through collective action. This perspective is grounded in the theory of Lev Vygotsky, wherein lies the understanding of human cognition and learning as “social and cultural rather than individual phenomena” (Kozulin, Gindis, Ageyev, & Miller, 2003, p.1).

The study of any practice is critical, and a viable way this can be accomplished is through the application of activity theory (Nardi, 1996). Vygotsky’s fundamental work in establishing the cultural-historical school was continued by Leont’ev and others and has led to a relevant extension of activity theory (Nardi, 1996). This extension is concerned with both consciousness and mediation, which are implicit in both activity theory and the cultural historical school (Nardi, 1996). However, the admonition is that it is not a theory for those of the purist persuasion. Nardi (1996) distinguishes activity theory as “applied” as opposed to “pure” science” (p. 7). This research aligns well with this view, as the premise is to look “into users’ actual social and material environments” (Nardi, 1996, p. 9).

“Learning becomes a human activity in which theory and praxis are strongly connected and learning outcomes are obviously seen in society and culture” (Kolokouri, Theodoraki, & Plakitsi, 2012, p. 23). Teaching Nursing Research should be viewed as a dynamic activity involving numerous participants moving towards a common goal:

application of theoretical findings to practice. The required knowledge should be viewed from a cultural, historical and social process, utilizing tools that are both meditative and analytical (Kolokouri, Theodoraki, & Plakitsi, 2012). Vygotsky championed a holistic integration of “knowing and learning in and out of schools and across the lifespan” (Wolff-Michael & Yew-Jin, 2007, p. 186).

The application of Cultural Historical Activity Theory (CHAT) in Nursing Research education has the potential to narrow the theory to practice gap. Nursing faculty can assist students in the attainment of context knowledge, which is relevant to their everyday practice. By using CHAT as a theoretical framework, the inclusion of podcasting as a supplemental educational activity to increase context knowledge can be viewed as a meaningful cultural activity. Students can gain an understanding of foundational research precepts; through interactive classroom activities and recursion through podcasts, students can be mentored to “notice what they might not see on their own” (Lake, 2012, p. 63). Through the use of podcasting, scaffolding of classroom content can be strategized. In this framework, RN to BSN students can participate in constructing contextual knowledge. The ability to read and comprehend research articles, relate to the basis of practice, and apply in the delivery of evidence-based care is an essential outcome for the baccalaureate prepared nurse.

Utilizing the CHAT perspective, acquiring Nursing Research knowledge becomes a dynamic activity system wherein the students, the teacher, the instructional methods (tool), and objects (learning) are connected in a cultural, historical and social process (Kolokouri, Theodoraki & Plakitsi, 2012). Cultural-Historical Activity Theory is based on the earlier works of Vygotsky (Oliver, 2011), illustrating learning through intentional

actions within social settings. These actions are mediated through the unit of analysis (purposeful use of technology), using a tool (podcast), and working towards an objective (learning research concepts) (Oliver, 2011). The learning of research concepts is situated in the “networks of distributed activities of participation” (Paavola, Lipponen & Hakkarainen, 2004, p. 558). Paavola, Lipponen and Hakkarainen (2004) argue “that knowledge and knowing cannot be separated from situations where they are used or where they take place” (p. 558). The whole of the phenomenon needs to be studied, and it cannot be broken down into separate elements. Consideration has to be given to the connection between the definitive modes of mediation with the corresponding activity. “Conclusions cannot be drawn about the technology per se” (Oliver, 2011, p. 377). If the same technology is used in different activities, the same meaning cannot be inferred. This is a situated experiment, studying the technology in context, emphasizing all the elements as part of the analysis. Taking into account the cultural aspects of the students being non-traditional, employed, functioning in a chaotic society, mobile technology for learning fits the cultural-historical perspective. “Vygotsky’s view of the internalization process of knowing gives centrality to cultural and social influences in learning” (Lake, 2012, p. 41).

In her book, *Activity Systems Analysis Methods: Understanding Complex Learning Environments*, Lisa Yamagata-Lynch explains Vygotsky’s mediated action as “a concept to explain the semiotic process that enables human consciousness development through interaction with artifacts, tools, and social others in an environment and results [sic] in individuals finding [sic] new meanings in their world” (2010, p. 16). As technology rapidly advances, the activities and basis for nursing practice cannot remain static. In

developing his theoretical stance, Vygotsky’s underlying assumption of interactive relationships among subject, object and tool is that they change over time; they do not remain constant (Yamagata-Lynch, 2010). The need for nurses to be educated in the research process in determining best practice to mediate action is critical; the profession has been criticized for practicing from tradition, doing things as they always have done, as opposed to investigating what an activity should, or could, be. Utilizing the CHAT framework, the educator works with the students from where they are in knowledge and development in the professional role. Through the object-oriented activity, teachers provide an environment promoting connections among themselves, students, motivation, podcasting, and learning. The educator needs to follow the premise of Vygotsky’s Zone of Proximal Development (ZPD), allowing the students to engage in meaning making of complex concepts; contributing to the appropriate socio-cultural formation of their consciousness. The theoretical framework of CHAT incorporates the constructs of the research study well, as illustrated in Figure 1.



Figure 1: The CHAT Framework: Learning Research with Podcasting. Adapted from Vygotsky’s basic mediated action triangle (Yamagata, 2010, p.17).

In the educational research community, CHAT has been shown to be advantageous for “analyzing data recorded in real classrooms and designing change” (p. 188) in consideration of the cultural setting (Wolff-Michael & Yew-Jin, 2007). This is an aspect of the current study, as data is collected from real classrooms, with the primary motive to facilitate student learning. Wolff-Michael and Yew-Jin (2007) relate how motivation in any activity involves a degree of control over the object. To promote student buy-in and realization that the activity of learning through listening to podcasts has additive value, the benefit of podcasting justifies the time creating the broadcast. Using both a quantitative and qualitative lens through which to view the data promotes review of the functioning of the activity system as a whole, reflecting relationships between motives, actions between tool and object, and possibility of success in student learning.

Research Questions and Hypotheses

A mixed methodology was used to answer the following research questions:

Question 1: What is the effect of supplemental podcasts as a learning strategy on RN to BSN program students’ test scores as measured by a test on research concepts?

H₀: There is no difference between RN-BSN completion students’ research concept test scores between students who have access to supplemental podcasts as a learning strategy and those that do not have access to supplemental podcasts.

H_a: There is a difference between RN-BSN completion students’ research concept test scores between students who have access to supplemental podcasts as a learning strategy and those that do not have access to supplemental podcasts.

Question 2: How do students in a RN to BSN completion program perceive the value of learning research concepts through listening to podcasts?

- Do students feel podcasting enhanced their learning of research concepts, and if so, in what ways?

Definition of Terms

The following acronyms, associations, committees and terms are provided to assist in uniformity and understanding of their use throughout the study. The list includes descriptions provided by many of the organizations for clarity.

American Association of Colleges of Nursing (AACN): A “unique asset for the nation, serves the public interest by setting standards, providing resources, and developing the leadership capacity of member schools to advance nursing education, research, and practice” (AACN, 2013).

American Nurses Association (ANA): The ANA website homepage describes the association as:

A full-service professional organization representing the interests of the nation's 3.1 million registered nurses through its constituent and state nurses associations and its organizational affiliates. The ANA advances the nursing profession by fostering high standards of nursing practice, promoting the rights of nurses in the workplace, projecting a positive and realistic view of nursing, and by lobbying the Congress and regulatory agencies on health care issues affecting nurses and the public. (ANA, 2013)

American Organization of Nurse Executives (AONE): A subsidiary of the American Hospital Association, the AONE is a national organization of nurses whose

mission is “to shape health care through innovative and expert nursing leadership” (AONE, 2013).

Associate Degree in Nursing (ADN): “An academic degree awarded on satisfactory completion of a 2-year course of study, usually at a community or junior college. The recipient is eligible to take the national licensing examination to become a registered nurse” (Mosby's Medical Dictionary, 2009).

Bachelor of Science in Nursing (BSN): A professional degree that infers an education that is built on “a foundation of knowledge in science, humanities and related professional disciplines. BSN graduates are prepared as general clinical practitioners, and are eligible to sit for the National Council Licensure Examination for Registered Nurses (NCLEX)” (University of Washington, 2013).

Carnegie Foundation: The Carnegie Foundation web page About Us includes their “commitment to developing networks of ideas, individuals, and institutions to advance teaching and learning” (Carnegie Foundation, 2013).

Commission on Collegiate Nursing Education (CCNE): The CCNE advocates for the BSN degree as minimal entry into nursing practice. It is:

an autonomous accrediting agency, contributing to the improvement of the public's health. CCNE ensures the quality and integrity of baccalaureate, graduate, and residency programs in nursing. CCNE serves the public interest by assessing and identifying programs that engage in effective educational practices. As a voluntary, self-regulatory process, CCNE accreditation supports and encourages continuing self-assessment by nursing programs and supports continuing growth

and improvement of collegiate professional education and post-baccalaureate nurse residency programs. (AACN, 2013)

Cultural Historical Activity Theory (CHAT): “CHAT represents a theoretical tradition that can be traced back to the works of Vygotsky (1978; 1934/1986) and his contemporaries, conceptualizing individual goal-directed actions in the frame of the larger collective system of activity from which these actions derive their meaning” (Akkerman & Bakker, 2011, p. 135).

Diploma in Nursing: This pathway to nursing licensure is:

a basic educational program that is designed to prepare nursing students for entry into practice, usually in 2 or 3 years. The recipient of a diploma is eligible to take the national certifying registration examination to become a registered nurse. In the United States, most diploma programs are conducted in hospitals, although some are located in community college. (Mosby, 2009)

ICT: acronym for Information and Communication Technologies.

Institute of Medicine (IOM): “An independent, nonprofit organization that works outside of government to provide unbiased and authoritative advice to decision makers and the public. The IOM asks and answers the nation’s most pressing questions about health and health care” (IOM, 2013).

Mobile learning or M-learning: “Involves any sort of learning that happens when the learner is not at a fixed, predetermined location, or learning that happens when the learner takes advantage of learning opportunities offered by mobile technologies” (Traxler, 2008).

National Advisory Council on Nurse Education and Practice (NACNEP): This council:

Advises the Secretary of the U.S. Department of Health and Human Services and the U.S. Congress on policy issues related to the Title VIII programs administered by the HRSA Bureau of Health Professions Division of Nursing, including nurse workforce supply, education and practice improvement. (HRSA, 2013)

National Council of the State Boards of Nursing (NCSBN):

A not-for-profit organization whose purpose is to provide an organization through which boards of nursing act and counsel together on matters of common interest and concern affecting the public health, safety and welfare, including the development of licensing examinations in nursing. (NCSBN, 2013)

National League for Nursing (NLN): “Promotes excellence in nursing education to build a strong and diverse nursing workforce to advance the nation's health” (NLN, 2013).

NCLEX (National Council Licensure Examination): a professional licensure exam developed by the National Council of state Boards of Nursing. According to the NCSBN’s Web site, the purpose of NCLEX is “to ensure public protection, NCSBN member board jurisdictions require a candidate for licensure to pass an examination that measures the competencies needed to perform safely and effectively as a newly licensed, entry-level nurse” (NCSBN, 2013a).

Nursing Research: The course description on the syllabus from the RN to BSN program states:

Course designed to develop students' knowledge of the research process; to increase their appreciation of the significance of nursing research and evidence-based practice in developing sound nursing practice; to help them develop skills to become astute consumers of nursing research; and to apply their knowledge of the research process in nursing practice. Students will be introduced to computer applications that facilitate the research process such as in literature reviews and data analysis. (MNU, 2013)

Podcast: "A program (as of music or talk) made available in digital format for automatic download over the Internet" (Merriam-Webster, 2013).

RN to BSN: a registered nurse (RN) whose highest academic credential is an Associate of Science in Nursing Degree (ADN) degree or a nursing diploma, who is enrolled in a program providing credit for his/her previous degree, working towards a Bachelors of Science in Nursing (BSN) Degree.

RN to BSN completion program: A RN to BSN completion program is designed for Registered Nurses with current RN licensure, having obtained their basic RN education through either an Associate Degree program or a Diploma School; they attend a completion program in the pursuit of a bachelor's of science in nursing (BSN) degree.

Robert Wood Johnson Foundation (RJWF): Nation's largest philanthropy: "Devoted solely to the public's health, unique capability and responsibility to confront the most pressing health and health care problems threatening our society (RJWF, 2013).

SPSS (Statistical Package for the Social Sciences) has been modified by IBM to read Statistical Product and Service Solutions, statistical analysis software.

Survey Monkey is a web survey development cloud based company; provides basic free online questionnaire and survey tools (www.surveymonkey.com).

Limitations of the Study

Due to the research design incorporating a population based on convenience for obtaining the sample participants, results are not generalizable beyond the specific population from which the sample was drawn.

Assumptions

It was assumed that the participants answered all survey and test questions of research knowledge honestly and to the best of their abilities.

Summary

Situated from the theoretical framework of CHAT, the socio-cultural aspects of this population is a driving force for increasing the research base in m-learning, in this case, podcasting. These students are living in a world of advancing technology, and nowhere is this more evident than in the healthcare system. The majority of students work full time. As a non-traditional group of students, many have families, inclusive of a myriad of activities that take time, effort and energy. Added is the rigor of higher education courses. Faculty, students, and teaching strategies need to come together to mediate positive learning outcomes. Audio podcasts can be downloaded onto portable players that can be taken virtually anywhere. This provides the students the opportunity to increase the time available for content review while performing activities that would not be conducive to sitting in front of a computer or reading. They are engaged in life-conducive learning, promoting life-long learning.

Chapter 2

Introduction

This chapter contains the literature review relevant to the research questions addressed in this study, the effect of podcasting and learning research concepts in RN to BSN students enrolled in a BSN completion program. The substance and rigor of the search process is recorded. A review of the literature and research related to nursing education, RN to BSN completion students, the importance of nursing research and education, and podcasts as a learning strategy in education are main tenets of the review. The utilization of Vygotsky's Cultural Historical Activity Theory (CHAT) as the theoretical framework is incorporated.

Literature Review

The review of the literature encompassed search engines and databases from nursing, medicine and related health professions, education, research and psychology. Resources included Educational Resources Information Center (ERIC), Proquest nursing and allied health source, Proquest Dissertations and Theses, Dissertations and Theses @ University of Kansas, Ebscohost, PubMed, Cochrane Data Base, Academic Search Complete, Google Scholar, JSTOR, Omnifile, Project Muse, Sage, Science Direct, Springer Link, and Wiley On-line library. Textbooks in nursing, research, education and psychology were examined. Reports from authoritative agencies and commissions were assimilated, inclusive of the Institute of Medicine (IOM), American Association of Colleges of Nursing (AACN), and the American Nurses Association (ANA).

History of Nursing Education

The roots of nursing education in the United States trace back to Florence

Nightingale; she is credited with instituting the first school of nursing in London, in 1860 (Joynt & Kimball, 2008). The majority of nursing education was accomplished as a hospital based apprenticeship model. The student nurses provided most of the patient care, allowing the hospital administrators to save on salaries for staff nurses (Friss, 1994). Although the model of the hospital based diploma program prevailed, a bachelor's degree program was established at the University of Minnesota in 1909 (Friss, 1994).

It was in 1948 that regulating the profession began through accreditation standards, licensure, and establishing the two-year Associates Degree program, with Bachelor programs continuing. It was in response to a shortage of nurses that Mildred Montag “proposed a nursing program that envisioned a technical nurse: more limited in scope than a professional nurse, but broader in scope than a practical nurse” (Joynt & Kimball, 2008, p. 7), leading to the Associate Degree in Nursing program. Graduates from diploma, associates and bachelor programs take the same qualifying exam (NCLEX), receive the same license, perform the same functions, and receive comparable salaries (Friss, 1994). This has been a contentious issue in nursing ever since inception, as Associates Degree programs historically provide technical ability, and BSN programs develop nursing as a profession. Even now, as professional nursing struggles with 2, 3 and 4-year entry-level pre-licensure programs, there are many issues that remain and licensure has not adapted in relation to education credentials.

The paths of entry into nursing historically lack differentiation in career progression and commensurate professional rewards (Joynt & Kimball, 2008). As the profession continues to struggle with this issue, promoting a requirement of a BSN to practice in the profession is receiving national attention. The IOM Future of Nursing

Report sets a goal of 80% of RNs having a bachelor's degree in nursing by 2020 (IOM, 2011).

Nursing Programs

Throughout its' rich history, the profession of nursing has been the focus of a firestorm of opinions on the minimum education requirements for entry into the field. With the increasing needs and complexity of our healthcare system, a multitude of organizations have called for transformation of nursing education, a system that has been touted as archaic and inadequate. The Carnegie Foundation, Robert Wood Johnson Foundation, and the Institute of Medicine have produced reports characterizing nursing education as ineffective and insufficient to educate the number and quality of nurses that are needed to “deliver patient-centered, equitable, safe, high-quality health care services” (IOM, 2011, p. ix). In order to meet the needs of a diverse society that is in constant flux, the educational preparation of nurses needs to break long-standing traditions, and move forward to meet the demands of these challenging times.

In an increasingly complex healthcare environment, a license to practice nursing requires less formal education than any other profession. Education and Engineering set a minimum requirement of a Bachelor's Degree; Law and Medicine require years of post-baccalaureate study (Benner, Sutphen, Leonard & Day, 2010). The profession of nursing has three diverse educational paths to practice: Diploma, Associates Degree, and a Bachelor of Science in Nursing.

Diploma Schools of nursing have been phasing out over the years; going from being the dominant form of nursing education, to the rarest. Table 1 compiles the State

Boards of Nursing's accredited/approved schools of nursing by degree type, tabulated through each state board's website.

Table 1

State Boards of Nursing's accredited/approved schools of nursing by degree type.

Program Type	BSN	ADN	Diploma	Total
Number of Programs	797	670	51	1518

A significant consequence of the shift to educational settings from hospital-based programs is the breakdown of relationships and connections between nursing programs and practice sites (Joynt & Kimball, 2008). A dilemma facing nursing education today is support from clinical practice areas in promoting learning opportunities for student nurses.

Even within the same type of program, there are often great variations in practice. Chappy and Stewart (2004) performed a national survey examining curricular practices in baccalaureate nursing programs. Their sample included only those schools accredited by the Commission on Collegiate Nursing Education (CCNE). The results of Chappy and Stewart's study demonstrated diverse practices in BSN programs. One area of interest identified is the diversity of the length of time in the actual nursing component of the program. Participants were asked when their students were admitted into the nursing major. Responses varied from students being admitted as freshman, to waiting until the completion of the first semester of sophomore year. Clinical experiences were started anywhere from freshman year to 1st semester junior year (Chappy & Stewart, 2004).

The outcome of a baccalaureate nurse is highly lauded in the Health Care community. Nurse executives “often will gauge the professionalism of staff by the percentage of baccalaureate graduates as a proportion of overall RN staff” (Fralic, 1989, p. 64). In a landmark study by Aiken, Clarke, Cheung, Sloane, and Silber (2003), empirical research identified that surgical patients receiving a higher proportion of care by RNs with bachelor’s degrees had a higher survival rate, demonstrating that a “10% increase in the proportion of nurses with higher degrees decreased the risk of mortality and of failure to rescue by a factor of .95, or by 5%” (p. 1622). Many key organizations, including the American Association of Colleges of Nursing (AACN), the National Advisory Council on Nurse Education and Practice (NACNEP), the American Nurses Association (ANA), and the American Organization of Nurse Executives (AONE), recognize the need for more baccalaureate-prepared nurses in healthcare (Alonzo, 2009; AACN, 2005). Compounding the overall shortage of nurses, a major concern is the lack of BSN-prepared nurses (Alonzo, 2009).

History of RN-BSN

The pursuit of a baccalaureate degree by diploma and associate degree nurses is not a new phenomenon. It is the volume of nurses that are pursuing this path that has steadily increased (Fralic, 1989). In the last decade these numbers have exploded, as the reality of the IOM’s Future of Nursing (2011) report pushes the profession forward. The ANCC (2010) annual report for the year 2008-2009 documents a 12.8% increase in RN to BSN programs, having experienced continuous enrollment growth for the previous seven years. To fill the increased demand, colleges and universities have rushed to increase the supply through increasing enrollment or creating new programs. This has

become a highly competitive undertaking as most colleges and universities are experiencing budgetary constraints and declining enrollments of traditional students, creating a need for innovative sources of revenue (Thurber, 1988). In addition to the generation of valuable tuition income, this source of learners is inclusive of many advantageous traits; many of these students appear to be more goal-directed, experienced and mature.

As new programs are being developed, and existing programs altered to ease the transition for this desirable group, the need to not lose sight of quality and rigor in the programs is crucial. Program outcomes must include evidence of advancement in autonomy, professionalism and intellectual ability (Thurber, 1988). Historically, designing a completion program for the licensed RN has presented numerous dilemmas. One consistency across programs is challenge exams; these provide the opportunity for the student to demonstrate competency in previous acquired knowledge and skills (Stecchi, Pearce, Tyra, Gelser, Durkin & Rogers, 1994). Although individual institutional culture creates a high degree of variance in RN to BSN completion programs, the literature recognizes similarities in many of the problems faculty encounter. Lack of ability in scholarly writing and adequacy in cognition of research methodology and interpretation are key concerns.

Teaching Undergraduate Nursing Research

The importance of evidence-based nursing practice has historically been an area undervalued by nursing students, lacking appreciation for the connection between research and practice (McCurry & Martins, 2010). There are numerous articles commiserating the difficulties of teaching research to pre-licensure nursing students

(Clark, Stanforth & Humphries, 2009; Mattila & Eriksson, 2007; Sherrod, 2006; Lever, 2005), but little is available on the licensed RN seeking a bachelor's degree. The literature supports the premise "nursing research is a critical subject in baccalaureate nursing education" (Clark, Stanforth & Humphries, 2009, p. 9); the RNs in BSN completion programs lack research development in their initial nursing education programs. As graduates of diploma and associate degree programs, they have not received research theory and application as part of their core curriculum.

A major premise from the American Association of Colleges of Nursing (AACN) is that nursing research is an essential component to the nursing profession (AACN, 2008). The AACN asserts that the foundation for research should begin during the students' undergraduate years. A key precept that underlies this premise is that it is an expectation as an outcome at the baccalaureate level; the AACN does not support diploma and associate degrees as acceptable entry degrees for professional nursing practice. The AACN position is clearly stated that the baccalaureate degree in nursing should be the minimal preparation for professional practice (AACN, 2013).

Reports in the literature identify negative student attitudes towards learning research content (Mattila & Eriksson, 2007; Pugsley & Clayton, 2003; Beck, 1986), and this has a longstanding history. A study performed by Cheryl Beck in 1986 on pre-licensure BSN students describes the participants as lacking enthusiasm and understanding for research as a principal component of nursing practice (Beck, 1986). The areas identified as difficult for students to understand includes everything expected as content in a research course, inclusive of terminology, statistical methods, the research process, and methodology (Clark, Stanforth & Humphries, 2009). A study by Mattila,

Koivisto and Haggman-Laitila (2005) describe that students are overwhelmed when beginning their research course studies, and applying research knowledge to clinical practice is a difficult process.

The most effective teaching strategies reported in previous studies include experiential and interactive methods, such as poster presentations, crossword puzzles, diagrams, building blocks and board games (Sherrod, 2006; Lever, 2005; Beck, 1986). However, none of these approaches involve supplemental recursive teaching of key concepts via an audio podcast, as administered in this study. All students received the same content material in class, via consistent course syllabi, expectations, assignments and course objectives.

There are other studies in the literature that concern teaching research methods in nursing education. Roy Ann Sherrod created activities within her nursing research class that involved sampling procedures through random drawing to assist students in understanding an aspect of quantitative research. Sherrod (2006) then instructed her students to depict qualitative designs through drawing scenes that were intended to represent ethnography, case method, historical and phenomenology qualitative methods. Although students verbally responded well to the interactive teaching strategies, the study lacked assessment of learning as an outcome measure. The faculty that reviewed the students' renditions of qualitative methods, for the most part, failed to identify the type of study represented by the students' art renditions (Sherrod, 2006).

An international study by Mattila and Eriksson (2007) describes the process of learning nursing research as stressful for nursing students. One concerning aspect that this study brought forth is that the students did not see a relationship between nursing and

research. The students could not identify benefits to nursing practice from research, and they found the process of scholarly writing for research very difficult (Mattila & Eriksson, 2007).

Pugsley and Clayton (2003) examined students' attitudes about research, with the independent variable the mode of instruction. The control group consisted of students who had been in a traditional style research course, and the experimental group received an interactive teaching strategy. The underlying instructional design was done in an "attempt to excite baccalaureate nursing students about nursing research" (p. 520). The literature review provided by the authors substantiates the long history of nursing students' negative attitudes toward research, citing studies dating back to 1984; this also substantiated the need for further research into this area. The researchers' reported statistically significant improvement in students' attitudes as a result of using the experiential model (Pugsley & Clayton, 2003).

Although Pugsley and Clayton claim statistical significant results, the control group had taken the course a year prior to the study. There was no comparison of learning through the use of tests; the study consisted of a 15-item survey questionnaire to measure attitude and perceptions. This differs from my research on podcasting, which involved the use of a mixed method design, students enrolled in two concurrent classes, and randomization of experimental and control group within each class. Testing compares knowledge attainment, and the survey illustrates overall method, usage, and perception of learning of the podcasts. As nursing education strives to breach the chasm between theory and practice; this study has the potential to benefit the profession. At this time of

advancing technology, nurse educators need to explore the efficacy of emerging innovative, interactive strategies.

In 2005, Lever developed a board game on nursing research concepts “to promote active learning using repetition, peer collaboration, group dynamics, and questioning” (p. 470). A pretest is given prior to the students playing the game, and a post-test on completion. A t-test is analyzed, and the results demonstrate a statistically significant result between the pretest and posttest scores at a 0.05 alpha level (Lever, 2005). In this study, limited by a small convenience sample, the increase in the post-test score is an outcome measurement. It would be interesting to replicate this study to increase the validity of the findings, promoting the strategy as a means to increase student learning of research concepts. Based on the classroom as the means for study, this research supports the credibility of research on samples of convenience.

Podcasts in Education

Before there was the written word, learning through listening was a primary pedagogy for thousands of years (Cebeci & Tekdal, 2006). Many learners prefer listening to reading; podcasting allows for differences in learning styles when used as an adjunctive tool. Not only is the portability and anytime, anywhere availability attractive to learners, it does not require extensive technical skill.

Muppala and Kong (n.d.) contend that the use of podcasting can be extremely beneficial to students, but they admonish that it should be used with caution as a replacement for in-class lectures. Even though there is increasing popularity in adding video to podcasts, termed vodcasts, non-verbal communication often occurs in the classroom. There also can be visual cues that may not be evident in the technology

application. Muppala and Kong surmise that consideration should be given to the visual cues that occur in the classroom, and caution that replacing in-class sessions with audio podcasts may result in “an incomplete learning experience” (p. 2, para 4).

The incorporation of m-technologies can be from a multitude of means. Tynan and Colbran (2006) support the use of podcasting as part of a blend, “combined with other approaches to learning such as ICT, classroom, and print materials” (p. 831). This was a focus in the use of podcasting in my research study; it was supplemental to the traditional mode of content delivery of assigned readings, class lecture and discussion.

Podcasting was employed in a postgraduate physical education program in Singapore to explore dimensions of “social, emotional and pedagogical efficacy of podcasting as a potential enhancement for PE in teacher education” (McNeill, Mukherjee, & Singh, 2010, p. 16). The podcasts were a supplement; they did not replace any of the usual pedagogical formats. Scripts were used to create the podcasts, which included topics that were presented in class. However, the authors noted that the delivery of the material was enriched with the teacher’s observations of issues, concerns and questions that arose in the class, and enhanced with a sense of humor. McNeill et al. (2010) purport the contextual relevance as a source of “deepening” the learning (p. 17).

A significant aspect of this study is the convenience sample of 40 students being divided into two groups of 20, with either a control or experimental designation. The 12-week course design and materials were the same with the exception of the podcasts. A survey and focus group were used for data collection. The majority of respondents rated in the area of being educationally helpful. The difference in the exam scores was

evaluated and not found to be statistically significant, however the assignment scores did exhibit a significant difference at $p = .011$ (McNeill et al., 2010).

Many of the premises are similar to my research; both used podcasting as a supplemental learning activity, providing reinforcement, reiteration, and reflection on the course material. Also, the experimental nature and measurement through examination are consistent. Qualitatively, the results appear significant in “terms of social, emotional and pedagogical enhancement” (McNeill et al., p. 18). Consistent with the researchers’ consensus is that further investigation is needed related to any association to learning (McNeill et al.).

When it comes to incorporation of innovative strategies, medical schools are often found to be in the forefront. Walmsley, Lambe, Perryer and Hill (2009) report that “podcasts have already become a favorite with students in medicine and there are reports of their use in various specialties” (p. 157). These researchers are educators at a UK School of Dentistry, and have introduced podcasts into one of their courses. A key precept that they identify is that a podcast should not replace traditional teaching methods; the intent is as adjunctive material (Walmsley et al., 2009). A main premise underscoring the current podcast research aligns with this very tenet; students need more opportunities for learning, not substitution of one method for another. Another concept that belies educational principles concerns direct relationship of the podcast material to the educational objectives of the course. The approach to podcasting aligns with Walmsley et al.’s style in recording the podcast; the presentation should be an enthusiastic discussion “rather than a monologue, to maintain the interest of the listener” (p. 157).

Walmsley et al.'s (2009) study evaluated the technologies used by students to access the podcasts. They then queried the students as to the acceptability of the podcasts as a vehicle for instruction. They distributed surveys to 149 students, of which 96 were returned; this is a response rate of 67%. Reported data indicated the students utilized the podcasts around exam periods, and they liked having the availability of another learning modality. The researchers felt this was important in valuing the school's philosophy in "providing learning materials in as many formats as possible, to suit individual students' learning styles" (Walmsley et al., 2009, p. 159). Congruent with my study, the podcasts were made available, but the control was in the students' hands as to their choice to use them or not. A significant difference is that all of the dental students had access, wherein there was an experimental and control group in my research, allowing for a modicum of manipulation.

Podcasting in Nursing Education

A concerning issue in nursing education is the widening gap in nursing students' ability to relate theory to practice. This has been, in part, attributed to a lack in the students' ability for retention and transfer of knowledge. A critical problem is that students superficially learn content and fail to make connections between concepts. The addition of podcasting could provide recursion of key concepts, promoting reflection and understanding of the content. Tyler (1949) reports evidence that similar concepts reinforce each other, increasing coherency among perceptions with integration. The teacher can utilize the devices and technologies that surround our students, "in an attempt to empower and enrich their learning, wherever and whoever they are" (Stead, 2005, p.3).

Understanding the needs of the learners is a key educational principle. The usual profile of a RN-BSN student includes full-time employment as a registered nurse along with active involvement in family life, which requires time and energy. Adding the stress and rigor of enrollment in a compressed curriculum, providing assistive learning opportunities can be advantageous (Cebeci & Tekdal, 2006). It promotes personalization in a student's organization of their learning materials.

A study by Maag (2006) specific to nursing students involves the use of podcasting in a traditional medical-surgical course. The researcher recorded didactic lectures and made these available to the students after class, and continued this process over three semesters. At the end of the semesters, the students completed survey questions regarding the use of the podcasts (Maag, 2006). Qualitative responses were contained within the survey, and an example of the responses includes the following:

Well, for the first exam, I listened to it before I started studying with your notes. Then I would listen to it in my car. Then I would listen to it a third time along with my notes. After all that, I would have already known the materials really well by then. I love it; I learn better if I hear it more than once. (Maag, 2006, p. 487-488)

Overarching themes contained in this data include learning through listening, convenience, the advantages of review and repetition, as well as the value to the students, perhaps inadvertently, of spending more time on learning activities (Maag, 2006).

Lectures via podcasts appear as one of the more prevalent uses of this burgeoning technology. A study by Kardong-Edgren and Emerson (2010) involved uploading digital recordings of didactic lectures to a nursing course's learning platform. The course faculty

wanted to investigate the students' perceptions of the podcasted lectures. Data was collected via an online course survey. Although descriptive with no empirical data, findings are relayed as students perceiving that "podcasts helped them study and improved their grades" (Kardong-Edgren & Emerson, 2010, p. 398). An interesting response regarding attendance did occur, wherein the students did not feel the availability of lecture podcasts influenced their class attendance, the faculty recorded an increase in absenteeism during the time period reviewed (Kardong-Edgren & Emerson, 2010). The researchers do report a growing interest in the nursing academic milieu in the efficacy of podcasts, however they state that research into this area "is in its very early stages" (Kardong-Edgren & Emerson, 2010, p. 399).

In 2010, Maura Schlairet looked at the efficacy of podcasting in undergraduate and graduate nursing programs. A main premise of Schlairet's study agrees with Kardong-Edgren and Emerson's work, concerning the need to explore outcomes associated with the use of podcasted classroom lectures. There is a mutual agreement in the underlying rationale between her study and my own research; "health care educators must explore outcomes associated with mobile learning technologies" (Schlairet, 2010, p. 529).

Schlairet's research involves the creation of podcasts of classroom lectures, and involves three diverse groups of learners. All of the students in the study were provided access to course specific lecture podcasts. There was a total of 70 students; consisting of 40 pre-licensure, 23 RN to BSN, and 7 graduate students. Results indicated the preferred mode of utilization of the podcasts was primarily through computer downloads, with rare use of the portability potential the technology can provide. A total of 47% of the subjects

accessed the podcasts, and a significant aspect of the research identified the timing of the podcasts related to the proximity to the timing of an exam. Although the podcasts were recordings of the class lectures, the study demonstrated that “no student expressed interest in using a podcast in lieu of attending class” (Schlairet, 2010, p. 532).

One interesting aspect that parallels the second-degree student population of my research is that a higher percentage of Schlairet’s second-degree and graduate students viewed podcasts as helpful when compared to the undergraduate group, although it was not found to be statistically significant. This was attributed to a difference between a novice and more advanced learner in the development of the skill of active listening (Schlairet, 2010). Planning appropriate teaching strategies involves having an understanding of the learners’ attributes and motivations; facilitating best practices in education includes active learning techniques, and podcasting in a variety of contexts can enhance ways of learning. A recommendation from this study is that “additional research is needed to understand the effects of podcasts on student performance” (p. 532), which is a specific intent of this investigation.

Beard and Morote (2010) piloted a study using podcasts in lieu of class lectures as a preparatory assignment for narrative pedagogy in the classroom. Narrative Pedagogy has been described as a teaching and learning strategy that promotes reflection on practice; exploration of nursing care “emerges when teachers and students publicly share and interpret stories of their lived experiences” (Ironside, 2003, p. 123). Beard and Morote assigned readings and asked the students to listen to a podcast lecture prior to coming to class. During the class students were given a narrative story describing a nurse caring for a patient with an illness that related to the content of the reading and podcasted

lecture. The researchers performed pre- and post-test assessment. The findings of the mean for the post test as greater than the mean for the pre-test was statistically significant at $p < .000$. The findings are touted as supporting Narrative Pedagogy as an effective learning technique; however, the efficacy of the podcasts cannot be determined.

In Beard and Morote's study, there were 41 subjects, of which only 9 students reported having listened to the podcast prior to the class. However, 33 of the students stated they would prefer podcasts over reading the textbook, claiming that the "the textbook was difficult and tedious to read" (Beard & Morote, 2010, p. 187). The students did comment that they would listen to the podcasts prior to exams, but did not have time to listen as a homework assignment for class preparation (Beard & Morote, 2010). This finding supported the need for my research, focused on the value students place on various preparatory methods, and designing the use of the podcasts as supplemental material; the podcasts did not replace the instructor's teaching and learning modalities. The application is student-centered as it takes "the learning to the learners when they have time to learn" (Stoten, 2007, p. 57).

A study from a School of Nursing and Midwifery in the United Kingdom examined the use of a combination of podcasts, vodcasts, and powerpoint slides as a replacement for two lectures from a required pathophysiology course. A follow-up tutorial was provided for the purpose of clarification. The remaining series of classes was delivered in a traditional didactic format. Quantitative and qualitative methods were employed and demonstrated that students felt it was beneficial to be able to review areas multiple times, and appreciated the flexibility and convenience. Unfavorable replies related to technical issues and the lack of immediate response to questions. They also felt

the follow-up tutorials were very important. “This indicates that students appear to wish to maintain some contact with teachers and indeed their peers to reinforce their learning and therefore it would seem to be beneficial to include follow-up tutorials to support the online learning resources” (McKinney & Page, 2009, p. 375). Eighty-nine percent of 125 students reported increased understanding of pathophysiology with multi-media use.

There are similarities and differences between many facets of the UK research and this study on podcasting effectiveness. Although pathophysiology and research are totally different subject areas, both of these areas can be “difficult for many students and requires repeated rehearsal of complicated ideas and concepts” (McKinney & Page, 2009, p. 373). Although the podcasts were provided as lecture replacements, the students felt they needed to have the face-to-face tutorials on the technology delivered material. The premise from my research is that the material was solely supplemental and did not replace the planned course learning modalities. The UK study surveyed students’ self-reports of enhanced learning, with no objective measure of increased learning. The research in my study had an experimental and control group, and a test on knowledge of the subject administered to evaluate differences between the two groups. There is agreement that there is a paucity of research available on the efficacy of podcast use in nursing, supporting the value of this study.

Another relevant study concerning podcasts in an undergraduate nursing research course was conducted in Edinburgh in the United Kingdom. The researchers’ purpose was “to present an evaluation of the introduction of podcasts in an undergraduate research module to enhance research-teaching linkages between the theoretical content and research in practice and improve the level of student support offered in a blended

learning environment” (Strickland, Gray & Hill, 2012, p. 210). Students were provided with five podcasts that consisted of presentations by experts in research. The author’s rationale in choice of content for the podcasts was based on “the chasm between research active staff and the teaching of students” (Strickland et al., p. 211). The students were still provided with “the usual” (p. 211) learning modalities; the podcasts were an additional opportunity for learning application of research concepts.

There were two separate cohorts of students, totaling 461, enrolled in the research courses. End of course evaluations included additional questions related to the podcasts. The questions contained both quantitative and qualitative queries. The response rate was extremely poor, only 15% of the students completed the questionnaires. Positive findings stipulated that the multi-modal pedagogy increased student understanding, positively impacted their learning experience, and promoted greater engagement. Similar to other studies, technology difficulty is a negative finding (Strickland et al., 2012).

The researchers conclude with the auspice “questions remain unanswered as to the academic effectiveness of podcasts” (Strickland et al., p. 2). Further research is needed to support the growing knowledge base of podcasting as an effective learning strategy. The fact that their research involved a nursing research course validates the importance of providing additional learning resources in a subject students often struggle with. Strickland et al. (2012) reiterated the importance of evidence-based practice and the need to increase the student’s ability to relate the theoretical component to the practice setting.

Podcasting can also function as a separate educational offering on its own. The Geriatric Nursing Education Consortium (GNEC) produced podcast modules on the care

of older adults. It has been recognized by the Institute of Medicine that student nurses need to be prepared to have the knowledge and skills to care for the burgeoning population of older adults, which is emerging as a national healthcare need (Aselage, 2010). These podcasts can be used as standalone educational media, or integrated by faculty in gerontology courses. The potential for the technology is creating a paradigm shift in the delivery of education. There is also a movement towards collaboration within the higher education community; the Higher Education Podcast Repository will allow for sharing of teaching and learning materials worldwide (Skiba, 2006).

Application of Theory to Practice

This research has two facets; they are congruent, yet separate, areas where professionals will apply knowledge to specialized practice. The educators have the expert knowledge of the research process to teach the RN to BSN nursing students. The nursing educators' application of CHAT as a teaching and learning strategy can bridge the students' gap in ability to apply research concepts in their practice as a registered professional nurse. Vygotsky's beliefs about learning involves, "developing a capacity to interpret and act upon the workplace and to question meanings and the social practices that sustain them" (Edwards, 2010, p. 67). Through understanding the meaning of research in determining best practice, students' have the tools to question traditional practices, promoting their capacity to change practice. It is not just the knowledge, but it has to incorporate the desire. Vygotsky's work valued the affective aspects of learning. Ann Edwards (2010) relates that Vygotsky "was clear that emotion cannot be filtered out of analyses of how we act in the world" (p. 66). In the process of engaging our students in

learning, we have to be cognizant of the interrelationship of emotional processes with motivation and cognition in planning activities (Lompscher, 1999).

Summary

In summary, the literature shows that educative experiences need to be developmentally appropriate, humanistic, and relevant. Real-world activities are needed that link experiences, providing continuity through connecting previous learning. The importance of continuity is a critical educational precept; “every experience both takes up something from those that have gone before and modifies in some way the quality of those which come after” (Dewey, 1938, p. 35). All of these attributes are essential components in nursing education. Podcasting is a real world activity that can be used to reinforce and connect concepts, as the teacher can vary types of data and provide dynamic illustrations and examples. This has the potential to be an excellent teaching tool that can provide the continuity that Dewey addresses, without the veil of rote memorization. It can promote a higher level of cognition.

The literature supports the value of the present study on the effects of supplemental podcasts. It is clear that the practice of nursing is evidence-based. There is a scarcity of studies that focus on the nursing students’ application of research to practice. It has been recommended that there should be an emphasis on studies focusing on efficient teaching methods from the perspective of knowledge, skills and attitudes (Mattila & Eriksson, 2007); this is not only from the view of the student, but the faculty view can be either educative, non-educative or mis-educative depending on their own knowledge, skills and attitudes when it comes to research. “The importance of teachers is

great in advancing nursing science and its applicability to practice during nursing education” (Mattila & Eriksson, 2007, p. 570).

Chapter 3

Introduction

The focus of this chapter is the methodology incorporated into the study of the effect of supplemental podcasts as a learning strategy in RN to BSN completion program nursing research course student test scores. The quantitative tools are presented with results of pilot testing for reliability. Additionally, the qualitative aspect queries students' perception of the value of learning research concepts through listening to podcasts, and its' potential for enhanced learning of research concepts is described.

Methodology

Mixing methodologies has become increasingly visible in research literature, and was the methodology applied in conducting this experimental study on the effect of supplemental podcasts on student's learning. This research concerns two distinct professional realms, professional nursing practice and professional nursing education. There are more mixed research articles "published in the health and medical field than in any other field, estimated at 41%, with the field of education coming in as the next at 21%" (Onwuegbuzie, 2012, p. 192).

Mixed methods research focuses on the collection, analysis, and convergence of both qualitative and quantitative data, and the incorporation of both methods can provide a better understanding of the research question (Creswell & Plano-Clark, 2011). In quantitative research, the voice of the participants is not directly heard (Creswell & Plano-Clark, 2009). Qualitative research allows for the participants' meaning making of the phenomena, providing a richer source of data. Mixed methods research can provide

more evidence than either quantitative or qualitative research alone; a mixed methodology can provide increased descriptive data.

Research Design

The design in determining the sample population was based on convenience related to the availability of the subjects. Convenience sampling infers that the sample is selected based on "time, money, location, and availability of sites or respondents" (Merriam, 2009, pg. 79); all of these concerns were relevant in the choice of participants for the study.

Sample

The population of interest consisted of students enrolled in a RN-BSN completion program. As noted above, the participants in this study were chosen as a sample of convenience. Ideally, a true random sample would allow inferential statistics to be generalized to the population. Keppel and Wickens (2004) decry that "true random sampling from a population is a statistical ideal that is never attained in practice" (p. 8).

The eligible participants for the study were students enrolled in two separate, concurrent, research courses in an RN to BSN completion program at a Midwest, Christian, comprehensive liberal arts university. Enrollment at the University averages 1750 students registered in undergraduate academic majors in over 40 areas, and graduate-level programs in education, nursing, business administration and counseling. The expected enrollment for each of the RN-BSN completion program research courses at the time of the proposal of the study had approximated 25-30 students.

Protection of Human Subjects

Prior to participant contact, approval through the Human Subjects Committee, University of Kansas, Lawrence Campus (HSCL), was obtained through the appropriate channels (Appendix A). Approval through the subjects' university IRB was also obtained prior to the project (Appendix B). Letters to participants requesting consent and explaining the study were obtained (Appendix C).

A concern that review boards and students may express relates to the aspect of using students as research participants. Beck and Kosnick (2006) identified a concern as the "students may feel pressured into becoming involved in a research project initiated by their professor" (p. 142). As the researcher, I was not the teacher for either course, and had no responsibility for grading or any evaluative activities. It was stressed through both verbal explanation and in the consent letter that participation was voluntary, and that withdrawal from the study could occur at any time.

"A basic responsibility of all researchers is to protect subjects from harm while they are participating in a study" (Fain, 2004, p. 32). This research did not constitute any harm to participants. The participant letter was thoroughly reviewed, explaining the rationale, and the risk/benefit ratio was addressed. The goal was for the experimental group to access and listen to the podcasts, and for all participants to answer the survey and test questions in an honest, forthright manner. The consent letter explained the voluntary aspect, with ability to withdraw without fear of any adverse repercussions reiterated. Tests of academic achievement are recognized as a reliable way to evaluate the effectiveness of an intervention (Cook & Cook, 2008).

Understanding the research process and basic principles of research are main

objectives for learning the content students are studying in class. This aspect was explained as a main tenet of the research design. It was felt that through participation in a research study while taking a research class, students in both classes would have the advantage of application of theory to practice. There should not have been any inference that students who listened to the supplemental podcasts had any advantage in their class performance, as the podcasts were timed prior to their final course exam. After the *Research Concepts Test* was completed, the students in the control group were given access to the podcasts. The initial explanation of the research study requesting the students' participation included the benefit of assisting in advancing the field of nursing education through the study of the value of an innovative teaching strategy. As part of their nursing studies and practice, the participants should value autonomy, beneficence, altruism, justice, veracity and fidelity. These attributes align with ethical conduct in research.

Sampling Procedure

At the time of data collection, the enrollment in the research courses was less than the projected numbers; the numbers had been based on the projected study plans of students enrolled in the program at the time of the dissertation proposal. The main campus site enrollment consisted of 27 students, and at the time of data collection the number of eligible participants was 25. Course enrollment at the satellite campus site had fallen below the projected number of students, and at the time of data collection, class size had diminished to 8 students. This phenomenon has been related to the addition of on-line course offerings in response to trends in student enrollment. The pool of potential participants at the time of data collection between both classes was 33. As the study

intent provides students with a supplemental manner to learn research content, and has the advantage of experiential learning while taking a course consisting of the concepts being studied, presentation of the project held high expectations for volunteerism.

The satellite campus class was the initial group presented with the explanation of the research study, review of the informed consent, and clarification of questions and concerns. The main tenet of the students' queries related to the aspect of time, expressing pressure from course work already difficult to manage. Discussion involved information about the length of time of the Podcast as 18 minutes, the time to take the research test and survey as approximately 30 minutes, and a 15 to 20 minute focus group session. The experimental and control group randomization as explained in the informed consent was further elaborated, with the availability of the podcast to the whole class provided before their final exam, and timing of experimental group podcast access designed after their class exam and prior to their final to eliminate any perceived advantage. When no further questions were forthcoming, the consent forms were distributed. Out of the 8 students in the class, 6 students signed and returned the consent forms. Copies of the consent form were given to each volunteer to ensure access to contact information, and the ability to withdraw from the study at any time was reiterated. The response rate for the satellite class was 75%. With 6 students consenting, a bag containing 3 red foiled and 3 green foiled candies was shaken and each student picked a candy out of the bag. Students having picked the green candies were assigned to the experimental group, and those picking the red candies were delegated to the control group.

The class held at the main campus was the larger class. The explanation of the research study, review of the informed consent, and clarification of questions and

concerns was given in the same manner and format as to the satellite group above. In this class, after the presentation, students' expressed hesitation related to the aspect of time. Information concerning anticipated time commitment was provided in the same fashion as to the previous group. Other aspects concerning experimental and control group randomization, and availability and timing of the podcast, were also explained. The consent forms were distributed, further questions were addressed related to the time factor, and numerous students expressed existing hardship over their course workload. I reiterated that this was strictly voluntary, and they could withdraw at anytime if they chose to consent.

Collection of the signed consents resulted in 8 students volunteering, a response rate of 32%. Eight candies were placed in the bag, four green foiled and four red foiled, and each student that had signed the consent form reached in to the bag and picked a candy randomly. Between the two sites, the total sample was 14 students, with random designation of 7 to the experimental group and 7 to the control group. There were 4 students that wanted to think about participating, and had the consents with contact information. There was no contact prior to administration of the podcast to the experimental group.

As the researcher, I had no control over registration into courses. It is a random occurrence as to a student's desire to return for a BSN degree, choose this particular program, choose or be advised to take this course at a certain time during their study plan, and choose to take the course at the venue offered. One course was scheduled at the main campus, and the other course was located in a satellite campus. I had no responsibilities

in advisement of students on courses of study or completion plans in the RN to BSN completion program.

Anonymity was maintained in the collection of data; participant coding and random assignment were used to differentiate groups, test scores and survey responses. Coding was important in review of the survey data, as correlations were made related to age, gender and years of experience. The codes were used for confidentiality. As previously indicated, participation was voluntary, and students were aware that they could withdraw from the study at any time.

Data Collection

The quantitative portion of the research design addressed the first research question:

Question 1: What is the effect of supplemental podcasts as a learning strategy on RN to BSN program students' test scores as measured by a test on research concepts?

H₀: There is no difference between RN-BSN completion students' research concept test scores between students who have access to supplemental podcasts as a learning strategy and those that do not have access to supplemental podcasts.

H_a: There is a difference between RN-BSN completion students' research concept test scores between students who have access to supplemental podcasts as a learning strategy and those that do not have access to supplemental podcasts.

The quantitative portion consists of data collected from the results of the *Research Concepts Test* (Appendix D) administered to both the experimental and control groups. The test, the dependent variable, was designed by the researcher to cover the content delivered throughout the course, and based on the course objectives. The test was not

related to the student's grade or course work in any way. The test was administered after the last class prior to the final course exam. Differences between the test scores were calculated and reported between the control and experimental groups. The manipulation of the independent variable (podcasting as a teaching strategy) involved the random assignment of students in each of the scheduled research classes to either the experimental group, who had access to the podcasts, or the control group, who did not have access to the podcasts prior to the study's test on research content. Podcast was scripted (Appendix E). Significance level was set at $p \leq 0.05$.

Further quantitative data was collected via demographic questions and a survey consisting of 10 questions on a 5 point Likert scale ranging from strongly disagree, disagree, neutral, agree to strongly agree. The test questions, demographic data and survey questions were formatted into one document to facilitate ease of completion for participants. The survey addressed the following main and complementary research questions:

Question 2: How do students in a RN to BSN completion program perceive the value of learning research concepts through listening to podcasts?

- Do students feel podcasting enhanced their learning of research concepts, and if so, in what ways?

The qualitative portion of the research design also addresses the second research question. The qualitative data collection method consisted of scheduled focus groups at the end of the courses. The qualitative portion can assist in strengthening the value of the study, as there is a relatively small sample, and the use of focus groups provides the opportunity to explore the issue in greater depth. Focus group sessions were conducted to

explore the students meaning making of the podcast in relation to their learning of research concepts. Merriam (2009) portrays focus groups as a method of qualitative research data collection, stating, “a focus group is an interview on a topic with a group of people who have knowledge of the topic” (p. 93). The topic for the focused discussion was specific to their meaning making of the podcasts for learning research concepts. Do students that receive access to podcasts perceive the treatment as having any import to their learning of research concepts? Further probing to illicit student meaning-making was accomplished through questions stimulated from students’ discussion points, allowing a more natural flow than asking a specific set of questions. Focus groups have been described as group interviews that do not incorporate a question and answer format, rather they rely on the interactions within the groups (Mertens, 2010).

Rubin and Rubin (2005) relate that a “central principle in wording main questions is to start out broadly” (p. 159), assisting the researcher in learning about the main premise. Follow-up questions were used for clarification as needed. The sessions were tape-recorded; consent had already been obtained through the signed consent letter to participate in the study. As the researcher, I transcribed the taped focus group discussions. The transcription process allows the researcher to pay close attention to what the participant says (Rubin & Rubin, 2005). Anecdotal notes corresponding to the discussion were kept, and used to highlight appearance of themes, identifying notable expressions for quoting in the findings of the study. Data driven descriptive coding was used to document specific respondents’ terms. Using the concept of open coding, potential bias related to any prediction of predetermined themes was avoided. Open coding involved reading the text and easing out what is happening. Graham Gibbs

describes that "one should try to pull out from the data what is happening and not impose an interpretation based on pre-existing theory" (p. 45).

An advantage to the format of a focus group is that the data can be enriched via a social constructivist view; participants have the advantage of situating their views from the perspectives of others in the group (Merriam, 2009). Maxwell (2005) posits that qualitative research on educational practice has more meaning for faculty and student experiences in the classroom than quantitative. A desirable aspect of the use of focus groups involves the collaboration between the researcher and participants, a form of action research. The intent is to assess the value of inclusion of supplemental podcasts as a review strategy, where the focus can be on the students' perceived value. Marshall and Rossman (2011) support the use of focus groups as a means of action research; the theoretical framework supports this premise. The format includes the provision of a safe, comfortable environment. The focus groups were held in classrooms, light refreshments were provided, and as the researcher, I facilitated the discussions.

Data Analysis

The statistical computer program, Statistical Program for the Social Sciences (SPSS), was used for statistical analyses. The quantitative data collected via the test scores was analyzed through the univariate mode in the general linear model; this analysis identifies differences between group scores. Analysis of variance can be used when there is one independent variable and two groups. In evaluation of the null hypothesis, the use of analysis of variance provides the "comparison of variances reflecting different sources of variability" (Keppel & Wickens, 2004, p. 24). Essentially,

analysis of variance is an assessment of the within and between group variances, and analysis supports the decision to either accept or reject the null hypothesis.

The survey tool for demographic data such as age, years of experience, GPA, and hours worked per week, was attached to the post-test for ease of completion by the participants; everything situated on one form (Appendix D), clearly demarcating participant's demographics, survey responses and test answers, noting experimental or control. Descriptive statistics were generated for data derived from the demographic and quantitative survey response format. The use of the surveys allowed meaningful information to be gathered through students' responses, inclusive of their attitudes toward research, podcasting, and study habits. Surveys can be "useful when the perceptions of a group are relevant, regardless of the accuracy of the perceptions" (Cook & Cook, 2008, p. 100). Data was then transferred for analysis to SPSS, determining correlations, descriptive statistics and testing for reliability of the survey tool.

Qualitative and quantitative research is often combined in a number of ways; for this study the qualitative data was used to elaborate and validate the testing findings. Compiling themes from focus group responses assists in providing richer data. Triangulation looks for "convergence, corroboration, and correspondence of results from different methods" (Creswell & Plano-Clark, 2011, p. 62). The results can be illustrated from testing data analysis and focus groups through the concept of complementarity. Data from both methods can assist in informing and in the development of the other, which can increase the richness of the findings (Creswell & Plano-Clark, 2011).

Reliability and Validity

Reliability "concerns the extent to which an experiment, test, or any measuring

procedure yields the same results on repeated trials” (Carmines & Zeller, 1979, p. 11). Pilot testing of the results of the Research Concepts Test and the survey tool was conducted for reliability. An APA Task Force on Statistical Inference (1999) reminds readers that it is not the test that is reliable or unreliable, reliability is a property of the scores on the test for the test takers at that time only. The test and survey needs to measure what they are intended to measure; this represents the validity of the tools (Carmines & Zeller, 1979). In other words, are the participants able to interpret the questions and responses correctly to be able to respond in a manner that will illustrate their knowledge of research accurately? Will they be able to ascertain the intent of the statements on the survey tool to be able to determine their level of agreement?

Content Validity

To maximize validity of the test and survey tool, it was important to have both items reviewed prior to administration in the research study. The test needs to measure what it intends to measure; the survey tool needs to have clear, understandable statements that correlate with a scale range in agreement or disagreement, with a neutral response available. Content validity was determined through review by three PhD prepared faculty members experienced in teaching Research to undergraduate nursing students. Inclusive in this assessment were the faculty teaching the RN-BSN classes consisting of the student population. Content validity “depends on the extent to which an empirical measurement reflects a specific domain of content” (Carmines & Zeller, 1979, p. 20). All of the reviewers’ responses indicated test questions reflected appropriate cognitive domain knowledge assessment. Suggestions regarding wording and question style were used in finalizing the *Research Concepts Test*. All reviewers attested through personal discussion

that the content was valid, inclusive of course objectives, and appropriate to educational level. Through expert review, content validity was established for both instruments. However, in order to be valid, reliability needed to be demonstrated.

Pilot Testing Research Tools for Reliability

As two tools were developed specifically for data collection in this study, a group of students were needed for the pilot testing that had as many similar characteristics as the study population as could feasibly be obtained; the students also needed to meet criteria reflecting appropriateness for testing the research instruments. The first criterion is that the students would need to have recently taken a research class that was at the same level as the study group. In this way, there was a reasonable expectation that the material had been covered as the course objectives are developed from the same AACN standards, and the same textbook was used. The second criterion relates to the availability of podcasts as supplemental study resources in previous courses. The tools consisted of the Research Concepts Test and a survey of opinions on podcasts for supplemental study. The third and final criterion was accessibility, convenience and reliability of the students for completion of the instrument pilot.

Students enrolled in the Accelerated Bachelor of Science in Nursing (ABSN) program at the same mid-western university as the RN-BSN program met the criteria, and exhibited many other similar characteristics. Both are in bachelor of nursing programs, and both programs consist of compressed time frames. There were 42 students in the accessible class for piloting the research test for reliability, and all were sent e-mail explanation of the study, and a link to the research test and survey. The explanatory letter

incorporated the informed consent process and was approved through the IRB (Appendix F).

Demographics, the *Research Concepts Test* and the survey tool were incorporated into Survey Monkey for ease of administration, student convenience and students' time constraints. There were no student identifiers placed on the survey, and coding was based on demographic information. Informed consent was obtained through the students' completion and return of the tool as stipulated on the information/informed consent letter. Test statistics were computed through the Advantage Test Scoring Machine Model 1200 from Apperson Education Products. A detailed report was generated providing the exam item analysis, showing the number of questions and the percentage of all answers selected for each question. The report highlights the correct answers, and a bar graph visually displays the percentage of incorrect answers (Apperson Education Products, n.d.). A point biserial was calculated for each question and a Kuder-Richardson Formula 20 (*KR-20*) computed for test reliability.

The *KR-20* is a statistical test of reliability, measuring consistency of responses within the test. This test measures the exams reliability to test knowledge on a single subject (Tucker, 2007). It is the "estimate of reliability of scales composed of dichotomously scored items (Carmin & Zellers, 1979, p. 48). The *KR-20* is measured as a coefficient, with a range from 0.00 to 1.00 (no consistency to perfect consistency). The closer the *KR-20* is to 1.00, the greater reliability of the test. Errors in measurement are considered to be present if the level is below 1.00, the greater the difference, the greater the error in measurement (Jacobs, 1991). A reliability coefficient of .60 at a minimum is needed before collecting data through use of the tool. Through assessing the test for

reliability, information has been obtained that the test has a reasonable likelihood of yielding the same results as would be found if administered to the same group of test-takers multiple times (Varma).

The p -value, or item difficulty, is another indication of reliability examined in the item analysis; this means that the test items should rank equally when answered by different test-takers. The p -value is an indication of the proportion of test-takers that correctly answer the item. The p -value ranges from 0.00 to +1.00. Values closer to 0.00 indicate higher proportions of students answer the question incorrectly, and values nearing 1.00 relate that a higher proportion of the assessed population answer the question correctly (Tucker, 2007). When a teacher is determining appropriate item difficulty in compiling questions for an exam, in order to avoid the test being considered too easy or too hard, ideally, the teacher should choose items that have proven difficulty indexes between 0.4 and 0.6 (Tucker, 2007). In reality, this short range is difficult to obtain and feasibility is questionable. McDonald (2007) reports p -values between 0.30 and 0.80 constitute a good test; items that range between 0.20 and 0.29 are considered “marginally good, needs improvement” (p. 243).

The point-biserial (r_{pb}) of the item analysis is provided as a statistical calculation through the Advantage Test Scoring Machine Model 1200. This statistic depicts the correlation as being “between the right/wrong scores that students receive on a given item and the total scores that the students receive when summing up their scores across the remaining items” (Varma, n.d., p. 3). It is a correlation between the dichotomous variable, which is the multiple choice item score (right or wrong), and the continuous variable, the total score on the test. The score ranges from -1.0 to +1.0, and it is an

important indicator of the quality of the test item. The higher the point biserial (closer to +1.0), the higher the number of students who tended to answer the questions correctly on the overall test answered the item correctly, and students averaging lower scores answered the item incorrectly. This reflects that the item has a good discriminatory ability. Conversely, a low point biserial indicates that students who tend to score lower on average are answering the question correctly. This would put the discriminating value of the item in doubt, requiring the item to be scrutinized for wording, correctness, ambiguity, and correct keying; the item with no obvious fix should be removed from the test. “Good” items have point-biserials above 0.25 (Varma, p. 6).

Reliability Testing for Survey Tool.

Cronbach’s alpha was calculated with SPSS for the survey tool. Internal consistency is an assessment of the “extent to which all the items in a test measure the same concept or construct and hence it is connected to the inter-relatedness of the items within the test” (Tavakol & Dennick, 2011, p. 53). Cronbach’s alpha is a technique that requires only a single test, providing a “unique estimate of reliability for the given test administration (Carmin & Zellers, 1979, p. 44). Relating back to the *KR-20* used in statistical analysis of the *Research Concepts Test*, Cronbach’s alpha is a generalization of this coefficient (Carmin & Zellers, 1979).

Pilot Testing Participant Demographics. The response rate of students that consented to participate in piloting the research tools was 8, which is a 19% response rate of return. Demographic data for the pilot instrument testing group: all of them were female ($n=8$), ranging in age from 23-50, *Mean* = 31.86, *Median* = 29.00, *Mode* = 29, *Standard Deviation* = 8.764, and range of 27. Grade Point Average (GPA) measured on

a 4.0 scale ranged from 3.06 to 3.80, *Mean* = 3.45, *Median* = 3.47, *Mode* = 3.66, *Standard Deviation* = 0.265 and range is 0.74.

Reliability Testing Pilot *Research Concepts Test* Results. The piloted *Research Concepts Test* consisted of 30 multiple choice questions based on the learning objectives of the course. The results for the pilot group consisted of a minimum score of 67% and a maximum score of 97%, which is a 30-percentage point range. The *Mean* = 78.87, *Median* = 75, *Mode* = 70, and *Standard Deviation* = 11.92. The *KR-20* for reliability of the pilot test is 0.695.

When evaluating the pilot group *Research Concepts Test*, point-biserial values were evaluated, and the *Mean* is 0.17. The *p*-value (item difficulty) values were also evaluated, with a *Mean* of 0.79. As reported above, the *KR-20* result is 0.695. Upon review of the overall statistics generated from the *Research Concepts Test*, individual and combinations of questions were chosen based on negative point biserials and lack of discriminatory value based on item difficulty. Reliability testing was examined through multiple trials testing Cronbach's alpha through SPSS. Three questions were removed from the research test: question 1 $r_{pb} = -0.03$, *p* value = 0.875; question 13 $r_{pb} = 0.00$, *p* value = 0.00; and question 14 $r_{pb} = 0.00$, *p* value = 0.00. The resultant 27 question *Research Concepts Test* reliability statistics are: *KR-20* = 0.71 tested with the Advantage Test Scoring Machine Model 1200, and Cronbach's alpha = 0.723 using SPSS.

Other variables considered were content validity, course objectives, key concepts, and application of theoretical content to expected professional nursing practice. The results obtained through the *KR-20* and Cronbach's alpha demonstrate the overall reliability of the *Research Concept Test*, and can only be interpreted for the specific

group completing the test at that time, and can not be inferred as the reliability score for the test administered in the actual research study. The results of this test have a different role than if they were being used in educational evaluation decisions, which is a higher stakes outcome. In evaluating the degree of reliability, for most teacher-made tests, Gaberson (2015) denotes a reliability estimate of 0.60 to 0.85 to be desirable. The reliability is not transferable to the actual research sample, as they are a different group of students, and the variables differ in post-licensure status, quasi-experimental nature of the study, and synchronicity with research course.

Reliability Testing Pilot Survey Results. The survey tool was piloted along with the *Research Concepts Test*. Data collected from the eight respondents via the survey portion was analyzed for internal consistency using SPSS reliability testing providing a statistical Cronbach's alpha. This measures the extent to which all the items on the survey measure the same concept or construct. The measure is only specific to the pilot testing sample. Assessment is required each time the test is administered. The survey tool's construction consisted of 10 questions answered via a 5-item scale Likert style questionnaire, ranging from strongly disagree, disagree, neutral, agree to strongly agree. As noted, acceptable values for Cronbach's alpha should range between 0.70 and 0.95.

It was determined that all items did not reflect the same metric, meaning that some items needed to be reverse scored. Items 1, 2, 3, 5, 6, and 8 did not support the value of listening to podcasts and were reversed scored prior to performing the analysis for internal consistency estimates of reliability (Green & Salkind, 2014). Prior to use in the research study, the piloted survey should score at least 0.70. The 10-question survey tool in the pilot test as measured by SPSS resulted in a Cronbach's alpha of 0.811.

Reliability of Tools Administered in Research Study

Reliability Testing of *Research Concept Test*.

Every effort was made in the final assessment of the actual test used in the study to determine basic knowledge of research with a tool that demonstrated acceptable reliability and validity values per statistical analysis and expert review. It would be unreasonable to expect an error free assessment tool. There inevitably are errors of measurement; however, the goal of the researcher “is to try to minimize these inevitable errors of measurement and thus increase reliability” (Jacobs, 1991, para 2).

Questions are examined based on discrimination and difficulty. Questions 1, 13 and 14 displayed lack of discrimination, decreasing the reliability of the test, and therefore eliminated from the test. The 27 question test was assessed to determine the reliability of the *Research Concept Test* administered in the study. The $KR 20 = 0.641$ and the Cronbach’s alpha is 0.644 . Both are above the 0.600 that Gaberson (2015) had reported as acceptable for a teacher made test. The results are limited to this group only.

The length of the test can impact the reliability, with longer tests typically found to be more reliable. The preliminary choice of 30 questions seemed reasonable when considering the elements of time on task, fatigue, and the voluntary aspect of the research project. Although a test with a larger number of items may promote improved reliability testing parameters, the time factor and volunteer nature of the project suggests consideration needs to be factored in for reasonable test taking time. The final 27 question tool demonstrates content validity and acceptable reliability scores for basic research knowledge assessment.

Reliability Testing of Survey Results. Data collected in the research study

through the survey was analyzed for internal consistency using SPSS reliability testing, generating a statistical Cronbach's alpha. The estimate of reliability provided by Cronbach's alpha is unique for only the administration of the Survey to the 7 experimental study participants. As identified in the pilot test for reliability, all items did not reflect the same metric, and items 1, 2, 3, 5, 6, and 8 were reversed scored prior to performing the analysis. Analysis of the survey tool yields the value of Cronbach's alpha as 0.892, which is within the acceptable range.

Reliability and Validity of Focus Groups. It has been argued that since the “reliability issue concerns measurements then it has no relevance in qualitative research” (Golafshani, 2003, p. 601). Qualitative research differs from quantitative in the view of the phenomena of interest; it is not from a scientific or positivist paradigm. Qualitative research viewed from a naturalist lens invokes less of a scientific rigor, but rigor is established in trustworthiness, confidence in results, and asking: can the project be defended? But how much richer, trustworthy and understandable could the data be when studied from both views? There is complementarity through the mixed methods design, where elucidation of aspects from the phenomena in question were compared, enriching the data (Golafshani, 2003). Triangulation of the data is drawn from the multiple methods of data collection, expert faculty with experience in nursing research reviewing the format, discussion generated in the focus groups, and evidence from the literature. In qualitative analysis, the researcher's analysis for appropriate meaning-making of the responses and discussions are also considered in determination of reliability. Lastly, elimination of any potential for bias on the part of the researcher enhances the aspect of truthfulness to be discovered as the meaning of the phenomenon unfolds.

Limitations

The quantitative portion of this research design is limited in the convenience sample resulting in a low number of participant volunteers; therefore, there can be no definitive determination that supplemental intervention is causal in relation to student learning that could be generalizable to other RN to BSN students. However, there remains substantial value in providing educators information about the particular group of learners and use of teaching strategies. This effort can guide future endeavors in experimental research to validate the intervention as an evidenced based teaching strategy (Cook & Cook, 2008).

The use of self-reporting depends on the expectation that the participants will impart truthful information on the surveys, and put their best effort forth on the test. There is also the issue of the students' use of the podcasts; there is no control over when, how often, listening device utilized, or even if the students' access and listen to the podcasts at all.

As the sample was taken from two classes, the variable of a different teacher has potential to impact the results. As indicated in the methods section, both classes have the same syllabus, course materials, assignments, textbook, and assessment measures. To examine any potential difference between the two groups, the test score means were compared through a univariate analysis of variance. The satellite group test score $Mean = 66.67$, $SD = 12.09$; the main campus test score $Mean = 69.38$, $SD = 14.4$. Statistical level set at $p \leq 0.05$; $F(1,12) = 0.138$, $p = 0.717$. There is no statistical significance between the two classes from which the random sampling was obtained.

There is the potential for bias based on my previous use of podcasting and favorable student feedback. However, I have not had any previous contact with the participants prior to the study, and any views on pedagogical preferences were not discussed. The questions in the focus group were structured to not lead the students in any direction, as it is the students' perceptions and meaning they have derived of the phenomenon that is important. The role of the researcher is as the "tool", not as a source of data.

There can be a cumulative benefit as similar studies may appear in the literature, which can strengthen the value of this research study. Readers form their own impressions from the study; it may stimulate their reflections on innovative teaching strategies that can enhance students' learning. And that is the intent, to promote student learning.

Summary of Methodology

In summary, the methodology utilized for this study has a support base in educational literature (Beck & Kosnik, 2006; Nardi, 1996; National Research Council, 2000). The National Research Council's Commission on Behavioral and Social Sciences and Education identifies bridging the research and practice gap as a serious issue; they emphasize the importance of insights that can be "gained from the wisdom and challenges of classroom practice" (p. 283). Although podcasting use as an educational technology is growing exponentially, this is not evident in nursing education research and literature. The success of podcast technology as a teaching strategy in nursing education needs to be correlated with theories on learning. The theoretical framework supports the incorporation of cultural/social relevant tools to mediate learning. Dissemination in the

nursing education community has the potential to assist novice educators integrating research into practice, improving practice and promoting student learning.

Chapter 4

Introduction

In this chapter, the results of this mixed methodology study incorporating a quantitative and qualitative mixed design format is presented, addressing the respective hypotheses and research questions. Triangulation and complementarity of the data for increased strength qualitatively will be discussed, inclusive of the relationship between the quantitative and qualitative findings. The results represent the compilation and analysis of the researcher's intent to determine the effect of supplemental podcasts as a learning strategy on RN to BSN program students' test scores as measured by a test on research concepts, and secondly, to investigate how students in a RN to BSN completion program perceive the value of learning research concepts through listening to a situated podcast.

The discussion of the results providing conclusions and recommendations attributed to the data from both quantitative and qualitative methodologies will be presented in Chapter 5.

Findings

Research Participant Demographics

The sample consisted of 14 participants, 86% females ($n=12$) and 14% males ($n=2$). Twenty-nine percent ($n=4$) of this group of RN-BSN students obtained their original RN basic education in diploma programs and 71% ($n=10$) received Associates Degree in Nursing. Age ranged from 27-59 years, with a *Mean* = 43.85, *Median* = 46, *Mode* = 32, *Standard Deviation* = 10.065 with a range of 32. The number of years working as a RN ranged from one year to 26 years (range of 25); the *Mean* = 10.14,

Median = 6.5, *Mode* =1, with a *Standard Deviation* = 8.15. The number of hours worked per week ranged from 24 to 55 (range 31), with a *Mean* = 38.36, *Median* = 40, and *Mode* = 40. The *Standard Deviation* is 7.02.

Regarding previous use of podcasts, 71.4% ($n=10$) reported having listened to podcasts for entertainment, 28.6% ($n=4$) had never listened for entertainment. Educational listening was 35.7% ($n=5$), with 64.3% ($n=9$) never having listened for educational purposes. There are two methods of access to listen to the podcast, 71.4% ($n=10$) had access to a portable device such as an IPOD or a MP3 player, while 28.6% ($n=4$) did not. There were three choices for mode of listening, 35.7% ($n=5$) report listening through the computer, 14.3% ($n=2$) used a portable device, and 50% ($n=7$) didn't listen (control group) prior to the post-podcast research test administration.

Research Question # 1 Findings

An experimental quantitative study was performed to answer the first research question.

Question 1: What is the effect of supplemental podcasts as a learning strategy on RN to BSN program students' test scores as measured by a test on research concepts?

H(o): There is no difference between RN-BSN completion students' research concept test scores between students who have access to supplemental podcasts as a learning strategy and those that do not have access to supplemental podcasts.

H(a): There is a difference between RN-BSN completion students' research concept test scores between students who have access to supplemental podcasts as a learning strategy and those that do not have access to supplemental podcasts.

Descriptive Results

The *Research Concepts Test* results inclusive of all 14 participants consist of a minimum score of 48% and a maximum score of 93%, which is a 45-percentage point range. The *Mean* = 68.21, *Median* = 66.50, *Multi-Modal* 59, 63, 78, 81 and *Standard Deviation* = 13.05.

The control group scores ranged from 48% to 81%, a range of 33 percentage points between minimum and maximum scores. The *Mean* = 61.86, *Median* = 59.00, *Mode* = 59 and *Standard Deviation* is 12.69.

The experimental group scores ranged from 63% to 93%, a range of 30 percentage points between minimum and maximum scores. The *Mean* = 74.57, *Median* = 74.0, *Mode* = 63 and *Standard Deviation* = 10.66.

The results of the control and experimental groups are displayed in Table 2.

Table 2

Means and Standard Deviations

Group	<i>Mean</i>	<i>Standard Deviation</i>
Control Group	61.86	12.69
Experimental Group	74.57	10.66

Univariate Analysis of Variance

The technique of univariate analysis of variance is used for assessing the relationship of one or more factors with a dependent variable (Green & Salkind, 2014). For this study, the factor is the Podcast for supplemental study of research concepts. The Podcast, the between-subjects factor difference, was sent to the experimental group three

days prior to the administration of the *Research Concepts Test*. Receipt of the Podcast differentiates the samples on a quantitative measurement. An analysis of variance assesses “whether means on a dependent variable are significantly different among groups” (Green & Salkind, 2014, p. 164).

A one-way analysis of variance was performed to evaluate the relationship between the supplemental Podcast and the scores on the *Research Concepts Test*. The independent variable is the supplemental Podcast. The dependent variable is the *Research Concepts Test* score. Sample size is 14, with 7 randomly assigned to either the experimental or control group. The analysis of variance was not statistically significant at the $p \leq .05$ level, $F(1,12) = 4.118$, $p = 0.065$.

The APA Task Force on Statistical Inference (1999) emphasized the importance of providing some effect size estimate when reporting a p value. Bruce Thompson (2000) reported in an article about the APA task force that “statistical significance is the concept that the calculated p values in a given study are a function of several study features, but are particularly influenced by the confounded, joint influence of study sample size and study effect sizes” (p.9). Cohen, Manion and Morrison (2011) support the importance of effect size, stating that “it is much more important than [statistical] significance” (p. 616).

Effect size and variance were calculated from the data. The relationship between the Podcast and the *Research Concepts Test*, as assessed by Partial Eta Squared ($\eta_p^2 = 0.265$), indicated the Podcast factor as accounting for 26.5% of the variance of the dependent variable. A Cohen’s d was calculated for effect size, resulting in $d = 1.08$, $r = 0.48$, demonstrating a large effect size. This effect size appears to indicate that there could be relevance to the study, even with the p value demonstrating that there is no

statistical significance; when there is no statistical significance based on the p value, in not rejecting the null hypothesis, a type II error could occur.

Research Question # 2 Findings

A survey tool was administered and focus group sessions were held to answer the second research question.

Question 2: How do students in a RN to BSN completion program perceive the value of learning research concepts through listening to podcasts?

- Do students feel podcasting enhanced their learning of research concepts, and if so, in what ways?

The first method consisted of ten closed ended questions formatted in a Likert style questionnaire, ranging from strongly disagree, disagree, neutral, agree to strongly agree. This quantitatively provides data on the students' perceptions of the value of learning through listening to podcasts. The second form of data collection is a qualitative technique. Focus group sessions were conducted to explore the students meaning making of the podcast in relation to their learning of research concepts. The format of focus groups was utilized to provide participants with the advantage of situating their views from the perspectives of others (Merriam, 2009); this also relates to the theoretical framework, as the data can be enriched via a social constructivist view.

Survey Tool Results

The reliability analysis of the responses from the survey tool administered to the experimental group regarding their perceptions of the podcast as a teaching and learning strategy, as reported in Chapter 3, had yielded a Cronbach's alpha of 0.892. Analysis of the data was done in review of each question separately, and the results are reported and

explained predominantly as frequencies and percentages in Table 3.

Table 3

Survey Tool Results

Statement	SD	D	N	A	SA	<i>M</i>
I would rather read the textbook than listen to a Podcast.	1 14.3%	5 71.4%	0 0%	1 14.3%	0 0%	2.0
I would rather study my notes than listen to the Podcast.	1 14.3%	4 57.1%	0 0%	2 28.6%	0 0%	2.43
I did not have time to listen to the Podcasts.	1 14.3%	3 42.8%	2 28.6%	0 0%	1 14.3%	2.57
The Podcasts increased my understanding of the course concepts.	0 0%	0 0%	1 14.3%	5 71.4%	1 14.3%	4.0
I felt listening to the podcasts was tedious and boring.	2 28.6%	3 42.8%	2 28.6%	0 0%	0 0%	2.0
Listening to the Podcasts was a waste of time.	2 28.6%	4 57.1%	1 14.3%	0 0%	0 0%	1.86
I wish other courses had Podcasts available.	0 0%	0 0%	1 14.3%	4 57.1%	2 28.6%	4.0
Listening to the Podcasts did not increase my learning of the concepts.	1 14.3%	5 71.4%	1 14.3%	0 0%	0 0%	2.0
Listening to the podcasts was time well spent.	0 0%	0 0%	1 14.3%	4 57.1%	2 28.6%	4.14
I enjoyed listening to the Podcasts.	0 0%	0 0%	2 28.6%	5 71.4%	0 0%	3.71

Note: SD = Strongly Disagree; D = Disagree; N = Neutral; A = Agree; SA = Strongly Agree; *M* = Mean.

Respondents' results demonstrate support for listening to the podcast as being time well spent, increased understanding of the course concepts, and five out of the seven indicated they enjoyed listening to the Podcast. High percentages of respondents (57 to 85%) disagreed with the negative connoted items, indicating they did not find the podcast tedious or boring, they did not find listening to the podcast a waste of time, and disagreed with the statement that the podcast did not increase their learning. The survey results are

reinforced through the analysis of the data derived from the focus groups as presented below.

Results of Focus Groups

As indicated in Chapter 3's presentation of methods, the qualitative data collection method consisted of scheduled focus groups at the end of the courses. The qualitative portion assists in strengthening the value of the study. The use of focus groups provided the opportunity to explore students' perceptions of podcasting as a learning method. The sessions explored the students meaning making of the podcast in relation to their learning of research concepts.

After transcribing the audio recordings of the focus group sessions, aligning anecdotal notes and observations, the next process was coding. Open coding was used in the analysis of the transcribed audio recordings of the focus groups. Anecdotal notes corresponding to the discussion were reviewed, including the notations on observations during the sessions. Notable expressions for quoting in the analysis were highlighted. There were themes identifiable in the data formatted for coding and further analysis purposes. This type of descriptive coding is data driven, as it was recorded close to the respondents' terms. The potential bias noted concerning my familiarity and belief in the efficacy of podcasting should be diminished using the concept of open coding and not formulating predetermined themes. During the process of open coding, themes were identified from the data.

The use of focus groups enhanced the collaboration between myself as the researcher, and participants; this can be attributed to our shared profession in an acknowledged evidence based practice. This results in a form of action research. The

intent was to assess the value of inclusion of supplemental podcasts as a review strategy, where the focus can be on the students' perceived value. The secondary question queried whether students felt podcasting enhanced their learning of research concepts, which fits the action research model.

The combination of qualitative and quantitative data collection in this study was used to elaborate and validate the testing findings. Compiling themes from focus group responses can be viewed from the lens of the quantitative findings. This supports the use of triangulation as the method that provides the “convergence, corroboration, and correspondence” as described in Chapter 3 (Creswell & Plano-Clark, 2011). Analysis of the data is also reviewed using the method of complementarity. Literature supports that data from both methods assists in mutual development, increasing the overall richness of the findings (Creswell & Plano-Clark, 2011).

The text in the transcription of the focus groups is the qualitative data that was analyzed, however, as the discussion unfolded during the actual process, stirrings of themes began to emerge. Gibbs (2007) depicts this as a manner of concurrent analysis, considered as a “good practice” (p. 3). Analysis through reflection, determination of cues and prompts, further asking of questions, was dynamic in nature. The transcription in and of itself was an iterative process. Through the process of transcribing the recordings, I was able to continue the analysis through listening to the recordings, and relating back to the experience of having been the facilitator and researcher. Qualitative research is often noted to be a matter of interpretation. The logic of induction was applied to the analysis of the qualitative data in determining the patterns primarily used. “Induction is the

generation and justification of a general explanation based on the accumulation of lots of particular, but similar, circumstances” (Gibbs, 2007, p. 4).

The main theme appearing relates to the premise that *Learning through Listening* is beneficial, and that listening to the podcast promoted learning of the research concepts.

The data points from the focus group discussions that substantiate this finding include:

Oh yes, I learn, well really by practice, but listening lets you think about what you’re hearing ...

My mind wanders more when I am trying to read from a book, easier to distract, and I can’t make sense even if I read it over and over again. I would do better to listen to audio.

When I was in my associates program I audiotaped every single lecture. When I listened to it I was astounded at what I heard that I heard the second time versus the first time. I would love to have podcasts to listen before tests.

And I learn better hearing things multiple times, reading when I’m tired, I couldn’t remember a word. Having things identified, explained, I can remember some.

I liked the tape ... the examples of weight I could relate to ... made sense ...

What I really liked was to put on the headphones and listen, and there were less distractions, because you could not hear the kids arguing as you would if you were just sitting in front of the computer. They know not to bother me during my study times, but you are still hearing them and it is distracting. With listening with earphones I can ignore ...

When you read things over and over it doesn’t seem to help, but the more you listen to something it really makes sense and it helps to remember.

I thought it was very helpful, especially the example with the weight I was able to understand ... what reliability was better.

I learn better by listening. I take notes, with the podcast you can pause, replay, you can’t when ... in class.

I listened to tapes when I was preparing for my certification exam and they were very helpful.

.. like to listen, can listen as often as want. Have listened to audio books before.

Honey and Mumford (as cited in Fleming, Mckee, & Huntley-Moore, 2011) define learning style as “a description of the attitudes and behaviors that determine our preferred way of learning” (p. 445). In the focus group discussions, many students were describing their attitudes concerning the behavior of listening to the podcast, as well as the concept of learning through listening in general, as a preferred method of learning.

In review of the literature on learning styles, there is an abundance of research articles depicting learning styles and instruments employed in the evaluation of the learners’ preferences and forms. The literature readily presents the view that although references to learning styles are in evidence from as far back as the 1800’s, the idea of learning styles “is not universally accepted and controversy abounds about their meaning and even their existence” (Fleming, Mckee, & Huntley-Moore, 2011, p. 444). Some of these disputes result from the multitude of survey tools, interpretations, and definitions that abound. In determining *Learning through Listening* as a resultant theme from data analysis, the interpretation of the students’ responses as a learning preference is situated in their narrative descriptions of learning at that point in time. The theme is constructed within the context of the use of the podcast and related points of view on listening as a beneficial method for learning. The research reflects that students may appear to project some stability over time in their learning preference; however, this is not considered as permanent phenomena and can be situation dependent (Fleming et al., 2011). There is an increasing focus in nursing education on self-directed learning (SDL), related to the complexity and changes in health care, the nursing profession and the need to embrace life-long learning (Abdel-Hady & Fawzia, 2013). The student’s choice to listen to the podcast is self-directed.

The next emerging theme culled from the data is *Mobility in Learning*. For the purpose of this research, mobile learning is defined as “any sort of learning that happens when the learner is not at a fixed, predetermined location, or learning that happens when the learner takes advantage of learning opportunities offered by mobile technologies” (Traxler, 2008a, p. 13). The theme of *Mobility in Learning* is relational to the main theme of *Learning through Listening*, connecting in the context that the learning can be taken to a portability format. The data points from the focus group discussions that substantiate this finding include:

The good thing I can listen when I am driving, I can listen when I’m doing the laundry, when I am cleaning the house, when I am shopping some. I think it would be a very, very good thing to do to include.

... like idea of being able to listen and can download to IPOD. Don’t need computer which is a pain to lug ...

I like that can be moving around, doing wash and other things, convenience.

Just coming to class from Kansas City can be long, there would be a ... time to hear ...

The sample demographics as illustrated earlier provided information that the participant ages ranged from 27-59 years, with a *Mean* = 43.85, *Median* = 46, and *Mode* = 32. The number of hours worked per week is reported as ranging from 24 to 55 (range 31), with a *Mean* = 38.36, *Median* = 40, and *Mode* = 40. Inferences from this data depict mature adults, working full time jobs, raising families, and taking one to two courses. My own experiential familiarity with previous course teachings also supports this premise.

The program is time compressed to facilitate completion of the BSN degree. Providing these students with a way to maximize study time through *Mobility in*

Learning is a teaching strategy supported by the theoretical framework in view of the activity fitting into the societal needs evolving from cultural and historical roots.

Approximately 70% of this sample is considered Generation Xers (1961–1981), characterized in the literature as “only wants to focus on what will benefit them” (Smith, 2010, p. 49); further traits portray these students as favoring flexibility in scheduling their learning times. Although educative strategies must be built in to reach all applicable levels of generations, the benefit of the versatility of podcasts appears to be borne out in the data.

Having identified the high percentage of Generation Xers participating in the study, it is recognized that this trend in age is reflective of many of the studies conducted on RN to BSN education (Alonzo, 2009; Kovne, Brewer, Katigbak, DJukic, & Fatehi, 2012; Lillibridge & Fox, 2005). Playing on the characteristics of the Generation Xers, a theme of *Need to Know* was reflected in many of the comments made by the students. For example:

... if a person a student had a podcast we might put a lot of weight on that podcast as far as being adequate to prepare for the quizzes .. the exams in this class and all the classes I think are difficult I think they are fairly difficult classes and they go beyond what is presented in the classroom. So I would probably just caution that I would hope it was more than podcast information as far as preparation for an exam than what you intended.

A lot of it helped with what we were learning but some of it we hadn't covered when I listened, and it wasn't on the final ... better to cover what we need...

... not everything is discussed in class that could be on the test – or don't remember, listening may help to remember more .

Anything that can help .. grade on the test, I'm for it.

These comments reflect a characterization of Generation Xers as depicted above, focusing on what will provide the most benefit for them (Smith, 2010). This correlates

with the premise that there is not enough time to spend on learning that may not be relevant to their immediate needs; this concern is factored in to the next theme.

The theme of *Need More Time* is readily recognized as prevalent; numerous comments concern time, and there are repeated data points on the lack of sufficient time.

The data points from the focus group discussions that substantiate this finding include:

I work 12-hour shifts, and I can't keep up, there is too much busy writing, there isn't time...

You don't have a lot of time to sit down and read, too many distractions. When you're tired, you fall asleep. Maybe it was the newness – but listening seemed you know you uh got more in less time.

Especially when your taking two classes and all the papers we have to write, the courses are a lot of work.

Stress – very hard to work, take care of my family, and then still have to concentrate and do homework, study...

There isn't time to do everything – frustrating as they expect too much.

I need more time – I have to work, I have to have BSN or lose my job, I have children who need me. I went into nursing as I could accomplish ... in reasonable time. It is hard .. can't do it all..

It would be I'm too busy, I have too much to be writing up and no time to do it.

I didn't listen to it there was so much to finish and didn't have time, I'm taking two courses.

A qualitative study by Megginson (2008) identified the theme of not enough time, stating that “Issues related to time were cited unanimously by participants as a primary barrier in the quest to return to school for a BSN” (p. 51). Similar to the participants in this study on podcasting, barriers cited by Megginson included family commitment as a primary concern in returning to school for the baccalaureate degree. The lack of time, or as the theme in this research study identifies, *Need More Time*, pulls a common thread in

recognition of a central barrier to the pursuit of a BSN (Megginson, 2008). Robbins and Hoke (2013) support these findings, identifying factors such as lack of time, fear and competing student needs.

Summary Results of Focus Groups

Summarizing the process of the development of themes, a graphic design is created to depict the non-linear, interactive process, as illustrated in Figure 2.

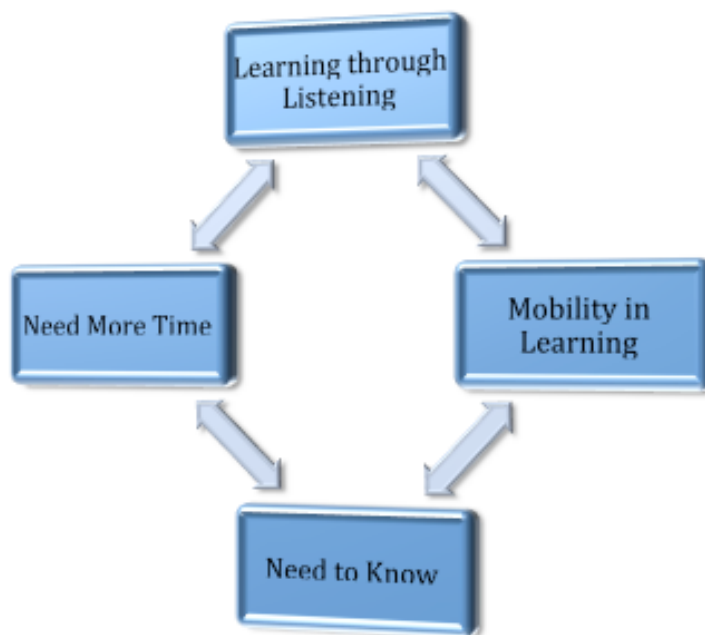


Figure 2: Development of Themes

Each of the themes has relational aspects to the others. The theoretical framework of CHAT further supports the interconnectedness of the themes. The cultural-historical perspective supports the premise that the minimum educational preparation for a professional nurse should be at the baccalaureate level (AACN, 2010; ANA, 1965;

Donley & Flaherty, 2008; IOM, 2011). The historical roots of the debate on BSN education broke ground with the publication of the 1965 ANA position paper calling for the baccalaureate degree as the minimum requirement for entry into professional nursing practice (Nelson, 2002). The culture of today's nursing profession is situated in the complex, chaotic and changing environment of health care. As more Associate Degree nurses undertake RN to BSN completion programs, the gap between nursing and other health professions' educational levels has potential to diminish.

The teacher enacts intentional actions within the social settings of the classroom to provide a tool (podcast) that is socially and culturally relevant. This action is mediated through the purposeful use of technology, progressing towards the objective of learning research concepts (Oliver, 2011). *Listening to Learn* through the podcast, the inclusion of relevant research concepts (*Need to Know*), and the mobility option (*Mobility in Learning*) designed to save time (*Need More Time*), has potential to work together to increase the students' learning.

Chapter 5

Introduction

The discussion presented in this chapter provides a summary of the investigation, organized by research question. The findings are viewed in relation to the current research and trends identified in the literature. The overall conclusions based on the design of the mixed methodology are presented. The limitations of this research study on podcasting are addressed. The conclusion provides recommendations for future research based on the outcomes of this study.

Summary of the Investigation

The primary focus of the study was to determine if there was any benefit to podcasting research concepts as a supplemental resource for RN to BSN completion students. A mixed methods research design was used. Participants were randomly assigned from a convenience sample of 14 RN to BSN students to an experimental or control group.

Research Question 1

The quantitative segment of the research study addressed the first research question: What is the effect of supplemental podcasts as a learning strategy on RN to BSN program students' test scores as measured by a test on research concepts?

H(o): There is no difference between RN-BSN completion students' research concept test scores between students who have access to supplemental podcasts as a learning strategy and those that do not have access to supplemental podcasts.

H(a): There is a difference between RN-BSN completion students' research concept test scores between students who have access to supplemental podcasts as a learning strategy and those that do not have access to supplemental podcasts.

Podcast Test Results. The experimental group received the podcast prior to the administration of the *Research Concepts Test*. The results of the study were not statistically significant at the $\rho \leq 0.05$, $F(1,12) = 4.118$, $p = 0.065$, $N = 14$. The small number of participants diminishes the power of the study. A partial eta square (η^2_p) = 0.265, indicating 26.5% of the variance can be attributed to the independent variable of the podcast. A Cohen's d was calculated for effect size, resulting in $d = 1.08$, $r = 0.48$, demonstrating a large effect size.

In 1988, Cohen suggested some general definitions for small, medium, and large effect sizes in the social sciences; Cohen labeled an effect size small if $d = .20$ or $r = .10$; medium-sized effects are $d = .50$ or $r = .30$; large magnitudes of effect were $d = .80$ or $r = .50$ (Valentine & Cooper, 2003). The Cohen's d calculated for effect size in this study is $d = 1.08$, $r = 0.48$. Cohen's d is a statistic that can be greater than one, indicating the difference between the two means is larger than one standard deviation. The effect size in the Podcast study is large; the statistical literature reports many educational researchers identify effect sizes around 0.20 to 0.25 as important related to academic achievement (Duriak, 2009; Valentine & Cooper, 2003).

The quantitative results, although not found to be statistically significant, demonstrate a trend in the means of 12 percentage points. The literature appears to place some importance to effect size, purporting assessment of the overall contribution of a study requires more than the determination of the p value (Cohen, Manion, & Morrison,

2011; Duriak, 2009; Thompson, 2000; Valentine & Cook, 2003; Wilkinson & Task Force on Statistical Inferences, 1999). In and of itself, the raw group mean difference suggests the potential value of the intervention. However, the power of the study is minimal with a group size of 14, and the effect size does not demonstrate there is any statistically significant difference in means.

Quantitatively, that is what the researcher is looking for, a difference between the groups under study. Duriak (2009) advocates that it is important to determine the effect size, assessing the strength of the study's findings. Cohen, Manion, and Morrison (2011) describe an effect size as a "way of quantifying the difference between the two groups" (p. 617). This is particularly salient to this study, where there is an experimental group receiving an intervention, contrasted with a control group that did not have any treatment. In essence the effect size is a measure of the effectiveness of the treatment, which "characterizes the degree to which sample results diverge from the null hypotheses" (p. 617) as it operates through the use of standard deviations (Cohen, Manion, & Morrison, 2011).

The effect size is "critical information that cannot be obtained solely by focusing on a particular *p*-value such as .05" (Duriak, 2009, p. 918). The Task Force on Statistical Inference of the American Psychological Association, as noted by Duriak, recommends that some form of effect size estimate should be performed when reporting research results. This is especially relevant when the sample size is small, as in this podcast study. The magnitude of the effect size can be suggestive for support for the premise of the value of providing podcasts to students.

Another important statistical result in this research study is the partial eta square,

$(\eta^2_p) = 0.265$, measuring the proportion of the variance in the dependent variable (*Research Concept Test*) attributable to the factor (Podcast). Although this statistic is not considered a perfect measure of effect size, the Institute of Education Sciences reports the partial eta square as acceptable, and publishable (What Works Clearinghouse, 2010). The podcast represents 26.5% of the variance observed in the *Research Concept Test* scores.

Other points discussed in the literature concern the practical value of the research, review of prior relevant research and how the outcomes of the research should be placed into an appropriate context (Duriak, 2009; Valentine & Cooper, 2003). It is important to be aware of the findings of prior work in one's areas of interest. The review of the literature supports podcasting as a beneficial teaching and learning strategy. The level of statistical significance "tells us very little about the practical significance or relative impact of the effect size, and should not be used as a stand-alone measure of how much the intervention matters" (Valentine & Cooper, 2003, p.4).

Assessment through multiple variables segues well with the education of nurses in evidence-based practice. In assessing a patient, one has to look holistically at all parameters, draw inferences from various sources (vital signs, lab values, medication effects, patients' complaints, physical findings), to use clinical reasoning in making a decision on what you hope will be the right intervention. And just as in accepting or rejecting a null hypothesis, different types of errors can occur. It makes sense that more parameters would be included in review of research results.

Research Question # 2 Findings

A survey tool was administered and focus group sessions were held to answer the

second research question.

Question 2: How do students in a RN to BSN completion program perceive the value of learning research concepts through listening to podcasts?

- Do students feel podcasting enhanced their learning of research concepts, and if so, in what ways?

Survey Results. A close-ended question survey tool was administered with the research concept test, applicable to the experimental groups' perceptions of podcasting as a learning strategy. Eight-five and seven tenths percent (85.7%) of the respondents indicated a preference for listening to podcasts over reading their textbooks, podcasts increased their understanding of course concepts, and that listening to the podcasts was time well spent. The findings from the survey indicated student perceptions of the podcasts as being beneficial to their understanding of research concepts. Cronbach's alpha was generated through SPSS to assess the reliability of the survey question responses of the sample, with 0.892 demonstrating good reliability. The results from the survey are aligned with the focus group results.

Focus Group Results. Focus groups were held on the last day of the course, after the control groups had been provided access to the podcasts. Themes emerging from the focus group discussion points were *Listening through Learning*, *Mobility in Learning*, *Need to Know* and *Need More Time*. Participants expressed listening as enhancing their learning; appreciated the convenience of the portability and mobility in their active, chaotic lives; preferred material to be focused on necessary content promoting success in coursework; and embraced any potential for providing time for students to meet other family, courses, and employment responsibilities. The survey results responses of

preference for listening over reading, increasing understanding of course concepts, and listening to the podcasts was time well spent, all relate to the focus group theme of *Listening through Learning*. Of interest, although *Need More Time* presented as a main theme, only one participant indicated they did not have time to listen to the podcast.

Need More Time. Although many factors are identified as barriers for diploma and ADN nurses returning to school, the greatest challenge recognized was the need to work full time (61.4%) (McEwen, Pullis, White & Krawtz, 2013). Full time employment and family responsibilities provides little time for pursuit of higher education. The need for more time was a significant finding from this research study, identified as a theme reflective of relevant data points. Although the time needed to be engaged in the rigor of a higher degree program can be daunting, the pressures exerted by threats to employment can siphon away any intrinsic desires. Not only is the time to manage the academic work problematic, the accommodation to push forward expeditiously in compressed course schedules compounds the time issue.

When a nurse decides to seek higher education, the decision should reflect a desire to learn, expand intellectually, inherent with motivation to undertake the necessary rigor to complete a bachelors' degree. This intrinsic motivation is a contributing factor to being successful, even with stressful work and family schedules (Smith, 2010). As a result of improved patient outcomes, government reports, quality agencies' recommendations, and compliance commissions' mandates, employers in the health care sector are revamping their positions (Nelson, 2002). This has resulted in a change in hiring practices to accept only applicants who have a BSN, as well as a change in policy requiring current nursing staff to return to school and obtain a BSN within a set time

frame, or risk loss of employment. The resultant extrinsic motivation could work against any desire for self-actualization, and may become a resented burden when taken under duress. A study by Weiler (2005) on motivation, critical thinking and learning theory reports that “there have actually been negative correlations found between the number of extrinsic motivators” (p. 47) and student performance.

Also related to the time factor is the length of the podcast. Advocates for podcasts in education promote audios should be no longer than 10 to 20 minutes, and if more time is needed, then topics should be divided into chunks as opposed to a longer continuous podcast (Billings & Kowalski, 2007; Cebeci & Tekdal, 2006). The podcast for the research study was 18 minutes long; this was based on consideration for the time constraints noted in the RN to BSN population, as well as recommendations from the literature.

Need to Know. A finding from this research that is reflective of a large percentage of RNs enrolled in BSN completion programs is generational characteristics. As identified in the findings, this study identified approximately 70% of the sample as generation Xers, born between 1961 and 1981 (Smith, 2010). Many differences exist in the literature concerning the years delineated to a specific categorization of a generation; there are many variables to consider related to cultural, socioeconomic and individual traits. However, there is a certain credence that is accepted on what is considered generational differences. Lyn Pesta (2014) depicts the Xers as valuing leisure time, supplying a relevant mantra as “Work to live, not live to work” (p. 84). This ideology is reflected in the finding of the theme *Need to Know*. With the pressure to return to school, negative attitudes can interfere with the learning process. McEwen et al.’s (2012) study

reflected faculty concerns that students expected “to be handed a grade of an A for doing minimal work”, and “RNs just want to buy a degree and not put in the time to really receive a quality education” (p. 554).

Mobility in Learning. Podcasting may have a unique attribute to be a learning preference for multiple generations. In this research study, Boomers, Xers and Yers were all represented. Multitasking has become routine, and the theme of *Mobility in Learning* aligns with this precept. Although there were discussion points during the focus group sessions about the activities that can be accomplished while listening to the tapes, the literature reflects that the majority of students open the file on their computers and listened through that mode. (Hew, 2009; Jowitt, 2008). A survey study by Jowitt (2008) supports the premise of the fit with generations X and Y, and demonstrates the connection between *Mobility in Learning* with *Need More Time*, with responses highlighting ability to multitask while listening.

Learning through Listening. The data points from the focus groups identified *Listening through Learning* as a major theme. Weiler (2005) purports that “educators recognized years ago that only a small percentage of the general population prefer to learn by reading” (p. 49). Multiple innovative teaching strategies that are theoretically situated and evidenced based need to become integrated into faculty practice. Cebeci and Tekdal (2008) discuss one of the concepts underlying this theme; for many people, listening may be more attractive and less tedious than reading, demonstrating an important characteristic of this learning method. Perhaps one of the most important pedagogic characteristics offered by podcasting is learning through listening. As

motivation can be a factor in learning, students who do not like reading may be motivated to listen (Cebeci & Tekdal).

Learning Research Concepts

Research concepts are an example of an area that is lacking in the educational preparation of RNs from ADN and diploma schools; knowledge and experience have been limited. This has been identified as a major aspect of the current study; research is a critical course that is the basis for nursing practice. Bloom, Olinzock, Radjenovic, and Trice (2013) support the need for students to be skilled in the process of evidence-based practice, an essential outcome for preparation as a baccalaureate nurse. These authors agree that students enter completion programs with “preconceived notions that research is not real nursing, boring, not useful, and so forth” (p. 220). Through the undertaking of this study on podcasting, it is hoped that elements of the application to practice can be understood, and the students can gain an appreciation for the importance of learning essential research concepts as a compulsory element of the role of a baccalaureate prepared professional nurse.

Limitations of the Study

As well as being an identified theme of the actual research findings (*Need More Time*), the aspect of time was felt to be a deterrent for participation in the podcast research project. Although the benefit seemed that it would outweigh the time commitment, students’ questions, comments, and perceived attitude on overloaded course work had a negative effect on recruitment of volunteers for the study. Gunning (1986) supports this premise, which appears to have the same sentiment today as when she wrote the article approximately 28 years ago. She wrote “Nursing students function under a

great deal of time pressure and do not want to spend time in activities in which they do not believe there is a benefit” (p. 12). This piece also aligns with the generational issue noted in the research study, as well as the *Need to Know* theme.

This type of situation can create a severe limitation of the value in the power of the quantitative portion of the study. Besides the small sample size (N=14), the methodology of convenience sampling inhibits generalization of the results of the study. Another limitation of this research concerns the statistical significance. Statistical significance was not reached within the parameter of a 95% confidence interval.

Conclusions/Recommendations

Research

The literature supports effect size as an important parametric to report, and that there has been a congruence of opinions in the research community that there is more to significance than the p value as a standalone determinant. In the current study on the effect of podcasts on students’ test scores, the effect size demonstrated a large magnitude. There was a trend of over 12 % between the means, and over 25% of the variance could be attributed to the podcast. The qualitative findings demonstrated students as perceiving the podcasts as beneficial to their learning; they appreciated the mobility and style of learning, and indicated the podcasts would actually be efficient as a time saving study aide. The survey results were also suggestive of the beneficial aspects of review podcasts, with higher percentages agreeing that the podcasts increased their understanding and learning of research concepts. This suggests that there is potential benefit from having podcasts as a supplemental learning strategy, and that further research is needed with a larger sample. Further research in nursing education is needed to discover creative ways

to meet the needs of an increasingly complex, diverse group of learners. It takes evidence based teaching practices to produce evidence based nursing practitioners.

Nursing Education Practice

It is vital that the educator knows where the students are coming from, especially in respect to socio-cultural and historical factors. The application of CHAT to nursing education provides for planning intentional activities mediated through the motivation, emotions and teaching strategy. Time constraints and motivational factors should be addressed in planning teaching strategies to meet students' needs, without compromising the rigor of the educational process. Faculty lack expertise in working with completion students (McEwen et al., 2013), and their development in innovative teaching strategies can benefit student learning.

Incumbent on the faculty in RN to BSN completion programs is recognizing the unique challenges and needs of students; this requires providing a program that is expedient, yet rigorous. Innovative strategies are needed, and podcasting has the potential to deliver recursion on key concepts (*Need to Know*), in a manner that can promote learning (*Learning through Listening*), any time and place that is adaptable to competing needs (*Mobility in Learning* and *Need More Time*). Vygotsky's Cultural Historical Activity Theory (CHAT) can provide a framework inclusive of: examination of socio-cultural influences, generational aspects of multi-tasking, an understanding of the profession's history, the students' backgrounds, need to learn complex theories, and technology in teaching. Mediating intentional learning through a rigorous, rich and relevant curriculum needs to include relations (Doll, 1993). Evidence based learning strategies that encompass understanding of students' complex needs was the driving force

of this research. The foundation of nursing education needs to be entrenched in evidence based teaching practices in the promotion of higher education and life-long learning.

Summary

As discussed in the review of the literature, the debate on educational preparation for entry into the profession of nursing has a long-standing history. The realization that the minimal education requirement for entry into the profession of nursing should be a baccalaureate degree dates back decades. Over 50 years have passed, and the nursing profession has yet to reach this goal. The National Council of State Boards of Nursing (2012) reports only 40% of NCLEX examinees graduated from a baccalaureate program. The Institute of Medicine's (2010) landmark report on *The Future of Nursing* sparked a firestorm of activity within the nursing education community to increase capacity of existing RN-BSN completion programs, as well as rapid development of new programs to meet the expected surge in demand.

The IOM's goal is that by the year 2020, 80% of RNs will hold a minimum of a Bachelor's Degree in Nursing (BSN). Although this 'perfect vision' of advancing nursing education will be years in the making, the recognition that higher education is empirically linked to better patient outcomes has created a demand from the health care sector for BSN prepared nurses. Today's health care environment is far different than half a century past when it was initially expressed that a higher standard in pre-licensure education was needed. It is critical in today's world to face "the fact that the whole world has changed, that it will continue to change, and that the nurse of the past will not return" (Nelson, 2002, conclusion para 3). Nurses need education that prepares leaders and collaborators in transforming systems of care from a stance of evidence based practice; instead of

remaining the least educated among professional health care providers, we need to be proactive in raising educational standards and promotion of evidence based practice. Investigation of teaching strategies through research is needed to provide evidence-based teaching.

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Appendix A



APPROVAL OF PROTOCOL

September 27, 2013

Joanne McDermott
jomcderm@ku.edu

Dear Joanne McDermott:

On 9/27/2013, the IRB reviewed the following submission:

Type of Review:	Initial Study
Title of Study:	The Effect of Supplemental Podcasts as a Learning Strategy on RN to BSN Completion Program Nursing Research Course Student Test Scores.
Investigator:	Joanne McDermott
IRB ID:	STUDY00000287

The IRB approved the study effective 9/27/2013.

1. Any significant change to the protocol requires a modification approval prior to altering the project.
2. Notify HSCL about any new investigators not named in original application. Note that new investigators must take the online tutorial at https://rgs.drupal.ku.edu/human_subjects_compliance_training.
3. Any injury to a subject because of the research procedure must be reported immediately.
4. When signed consent documents are required, the primary investigator must retain the signed consent documents for at least three years past completion of the research activity.

Please note university data security and handling requirements for your project:
<https://documents.ku.edu/policies/IT/DataClassificationandHandlingProceduresGuide.htm>

You must use the final, watermarked version of the consent form, available under the "Documents" tab in eCompliance.

Sincerely,

Stephanie Dyson Elms, MPA
IRB Administrator, KU Lawrence Campus

Human Subjects Committee Lawrence
Youngberg Hall | 2385 Irving Hill Road | Lawrence, KS 66045 | (785) 864-7429 | HSCL@ku.edu | research.ku.edu

Appendix B

The Effect of Supplemental Podcasts as a Learning Strategy on RN to BSN Completion Program Nursing Research Course Student Test Scores.

Adult and Graduate Studies

MidAmerica Nazarene University

_____ Signature of Faculty Supervisor	_____ Date		
<u>Jeanne McDermott</u>	<u>10-11-2013</u>		
_____ Signature of Principal Investigator	_____ Date		
_____ 13625 South Murlen Road Olathe, Kansas 66062			
_____ Street Address	_____ City	_____ State	_____ Zip
_____ 913-971-3836	_____ Phone Number	_____ jhmcdermott@mnu.edu	_____ Email Address

<u>ACTION OF THE IRB</u>	
<input checked="" type="checkbox"/> Full Acceptance	
<input type="checkbox"/> Acceptance dependant on minor modifications	
<input type="checkbox"/> Major modifications required	
<input type="checkbox"/> Denied (See letter for comments for conditional and denied research)	
<u>Jeanne McDermott</u>	<u>10.14.13</u>
_____ IRB member signature	_____ Date
_____ IRB member signature	_____ Date

Appendix C

Adult Informed Consent Statement

The Effect of Supplemental Podcasts as a Learning Strategy on RN to BSN Completion Program Nursing Research Course Student Test Scores.

INTRODUCTION

The Department of Curriculum and Teaching at the University of Kansas supports the practice of protection for human subjects participating in research. The following information is provided for you to decide whether you wish to participate in the present study. You may refuse to sign this form and not participate in this study. You should be aware that even if you agree to participate, you are free to withdraw at any time. If you do withdraw from this study, it will not affect your course work or evaluation, and this research project **is not** associated in any way with your program of study. This research is a dissertation project in the researcher's doctoral program at the University of Kansas. As such, this research is authorized by the University of Kansas, and refusal to participate in this study will not affect your right to any services you may be receiving or may receive from the University of Kansas or to participate in any programs or events of the University of Kansas.

The purpose of the study is to investigate the effect of supplemental podcasts as a learning strategy on RN to BSN completion program nursing research course student test scores. The expectation for bachelor prepared nurses is to interpret research, apply to practice, identify areas where research is needed, and participate in research on the unit level. Researching potential teaching strategies that may assist in learning critical research material is needed to determine the efficacy of innovative instructional methodologies. The utilization of podcasts combined with other approaches to knowledge acquisition could have the potential to assist in learning the theoretical aspects of Nursing Research class content, and provide perspectives for application to practice.

PROCEDURES

If you agree to participate in the study, you will be asked to sign this informed consent statement and a copy will be provided to you. In experimental studies, randomization of participants increases the reliability of the testing results. You will be asked to reach into a bag and pick a marble, color coded to either be in the experimental group or the control group. Directions will then be provided to the experimental group as to how to access Podcasts that provide a review of major course content as identified in the course objectives, and this group will be asked to listen to the podcasts before the following week's class. After class the following week, the researcher will administer the post-podcast test to both groups, consisting of 30 multiple choice questions, a demographic component, and closed survey questions related to group designation, podcast usage and effect if applicable. Do not put your name on the test. After the test is turned in, a test review will be done, and the podcasts will be placed in the main course management site for access by all students in the class. After class on Week 5, a 30 minute focus group session will be held to discuss your perceptions of potential benefits, barriers, and opinions about podcasting as an educative

teaching strategy. This session will be audiotaped to allow the researcher to transcribe the recording to identify similar themes, and the benefits and barriers that are discussed. This recording will be stored in the researcher's office in a locked filing system, and will be deleted after the project is completed. There will be no individual identifiers attached to the material.

RISKS

There are no risks to any individual participant apparent in this study.

BENEFITS

There is a potential benefit as there will be an additional study medium via the podcasts available.

PAYMENT TO PARTICIPANTS

There is no compensation provided for volunteering to be a participant in this study.

PARTICIPANT CONFIDENTIALITY

Your name will not be associated in any publication or presentation with the information collected about you or with the research findings from this study. Instead, the data collected by the researcher will be in aggregate form and have no recognizable source as to the identity of the participants in this study. Your identifiable information will not be shared unless (a) it is required by law or university policy, or (b) you give written permission.

REFUSAL TO SIGN CONSENT AND AUTHORIZATION

You are not required to sign this Consent and Authorization form and you may refuse to do so without affecting your right to any services you are receiving or may receive from the University of Kansas or to participate in any programs or events of the University of Kansas. However, if you refuse to sign, you cannot participate in this study.

CANCELLING THIS CONSENT AND AUTHORIZATION

You may withdraw your consent to participate in this study at any time. You also have the right to cancel your permission to use and disclose further information collected about you, in writing, at any time, by sending your written request to: *Joanne McDermott, MidAmerica Nazarene University, 2030 E. College Way, Olathe, Kansas 66062*

If you cancel permission to use your information, the researchers will stop collecting additional information about you. However, the research team may use and disclose information that was gathered before they received your cancellation, as described above.

QUESTIONS ABOUT PARTICIPATION

Questions about procedures should be directed to the researcher(s) listed at the end of this consent form.

PARTICIPANT CERTIFICATION:

I have read this Consent and Authorization form. I have had the opportunity to ask, and I have received answers to, any questions I had regarding the study. I understand that if I have any additional questions about my rights as a research participant, I may call (785) 864-7429 or (785) 864-7385, write the Human Subjects Committee Lawrence Campus (HSCL), University of Kansas, 2385 Irving Hill Road, Lawrence, Kansas 66045-7568, or email irb@ku.edu.

I agree to take part in this study as a research participant. By my signature I affirm that I am at least 18 years old and that I have received a copy of this Consent and Authorization form.

Type/Print Participant's Name

Date

Participant's Signature

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Appendix D

Podcast Research Test and Survey

Thank you for participating in this research study. The following is the post-Podcast research test. It is a multiple choice format with one correct answer per question. This is not a part of your course grade in any way. Do not put your name on the form. Following the test there are some questions that will provide demographics used to describe the sample and will be in summary form. There are also some survey questions related to the Podcast usage, experience and perceptions. These should only take a few minutes to complete. Upon completion of the test, you will be provided with the answers, and the control group will be given access to the podcasts for further study as desired. I hope this project has helped to demonstrate some of the processes that you have been learning about in this class. The profession of nursing is based on evidence, and as practicing nurses, your experience and knowledge is invaluable as the profession continues to move forward with best practice.

Research Test: Mark your answers directly on this form. Thank You!

1. Please indicate which group you were in based on the random picking of the red or green candy:
 - a. Experimental group - with supplemental podcast - green candy
 - b. Control group - did not receive supplemental podcast - red candy

2. Which of the following research methods emphasize the meaning of an experience?
 - a. qualitative
 - b. quantitative
 - c. experimental
 - d. scientific

3. A researcher investigates the effect of frequent position changes on healing of decubitus wounds. The study would be described as:
 - a. Applied Research
 - b. Basic Research
 - c. Descriptive Research
 - d. Phenomenological Research

4. When an individual has given informed consent for participating in a study, which of the following inferences can be made?
 - a. The person has given approval to the design and methodology of the study.
 - b. The participant has a thorough understanding of how the results of the study will be used.
 - c. The subject has access to a toll free phone number to reach the researcher and research staff.
 - d. The individual has the choice as to whether to participate or not and understands what participation requires.

5. What basic principle ensures prospective subjects the right to choose whether or not they want to participate in a research study?
 - a. altruism
 - b. beneficence
 - c. right to privacy
 - d. respect for human dignity

6. If an instrument demonstrates a high level of reliability, which of the following assumptions about its' validity would be true?
 - a. High validity of the instrument is ensured.
 - b. High level of reliability has no effect on its' validity.
 - c. High level of reliability is not sufficient for validity.
 - d. High level of reliability negates validity testing.

7. There are many ways that participants are obtained for research studies. When random sampling is used, which of the following can be assumed about the participants?
 - a. Participants have characteristics that match other samples.
 - b. Each participant has an equal chance of selection.
 - c. Each participant has been selected systematically.
 - d. Participants have been selected based on set criteria.

8. What is the first step in a scientific investigation?
 - a. Perceiving a question.
 - b. Drawing conclusion.
 - c. Reporting your results
 - d. Testing hypothesis.

9. Data collection techniques that are often employed in Qualitative studies include which of the following?
 - a. physiologic measures and self-reports
 - b. focus groups and interviews
 - c. closed ended surveys
 - d. scales and questionnaires

10. Which of the following is the most common instrument used to gather data in qualitative research?
- a scale
 - the researcher
 - the SPSS computer package
 - machines that measure biophysiologic data
11. Which type of scale is used to measure gender, age-class, religion, type of disease and blood group?
- nominal measurement scale
 - ordinal measurement scale
 - ratio measurement scale
 - interval measurement scale
12. What is the primary purpose for reviewing relevant literature?
- select the research design
 - answer the research question
 - delineate the existing knowledge base of an identified problem
 - determine statistical treatment of data research
13. The researcher is doing a literature review about nursing interventions in postoperative pain management. She finds useful information credited by Johnson in an article written by Carey. If the researcher uses the article written by Carey to discuss Johnson's findings, Johnson's work is considered a secondary source.
- True
 - False
14. . Which of the following studies represents qualitative research?
- A study measuring differences in blood pressure before, during and after exercise
 - A study measuring nutrition and weight loss/gain in clients with diabetes
 - A study examining oxygen levels after endotracheal suctioning
 - A study examining client's reaction to stress after receiving diagnosis of cancer.
15. What does the researcher need to understand about data collected when both open-ended and closed-ended questionnaires are included in a survey tool?
- closed-ended questions directly provide qualitative data
 - open-ended questions directly provide quantitative data
 - closed-ended questions provide quantitative data
 - open-ended questions would not be used to collect qualitative data

16. Which of the following is a piece of qualitative data from a research study on the labor and delivery experiences of teenage girls?
- 30% have cesarean sections
 - "The pain was horrible!"
 - 2 hour interview one day after delivery
 - 20.2 hours in labor
17. What is the term for the 'degree to which an instrument measures what it is suppose to measure'?
- internal consistency
 - sensitivity
 - equivalence
 - validity
18. When Evidence Based Practice forms the basis of a nurse's professional practice, what are important areas to consider when delivering patient care?
- Patient's values, research, and experience.
 - Physician's orders, procedure manuals, and scientific research.
 - Experience, expert opinion, and patient's condition.
 - Research studies, physician's progress notes and patient's quality of life.
19. Which of the following is an example of inductive reasoning?
- Reasoning from all chronically ill patients to a single chronically ill patient.
 - Using a standard nursing care plan to care for a specific patient.
 - Reasoning from a single diabetic patient to all diabetic patients.
 - Using a computerized nursing care plan to care for insulin-dependent diabetic patients.
20. What type of setting is used when an applied research study is conducted seeking to solve a clinical problem?
- Controlled
 - Laboratory
 - Natural
 - Simulated
21. In the hypothesis: "The utilization of podcasts for test reviews improves test scores of nursing students when compared to test scores without podcast reviews." Which is the dependent variable?
- Nursing students
 - Test scores
 - Utilization of podcasts
 - Without podcasts

22. A nursing manager needs to choose between multiple systems of electronic charting. She asks her staff to document patient care on 5 different systems. What type of scale is the manager using when she asks the staff to rank the systems from most user friendly to least user friendly?
- nominal
 - ordinal
 - interval
 - ratio
23. The primary goal in an experimental research study is to isolate and identify the effect produced by which variable?
- dependent
 - extraneous
 - confounding
 - independent
24. For data collection to be valid, what must occur?
- The tool must be thorough
 - The tool must be unbiased
 - The tool must measure what it is supposed to measure
 - The tool must be accurate all of the time
25. As a general rule, what is the level of significance researchers tend to use?
- 99%
 - 95%
 - 50%
 - 5%
26. An inter-professional research initiative between dietary and nursing plans to investigate the effects of nutrition on wound healing. Patients recovering from burn injuries are randomly assigned to two groups. One group received protein supplements and the second group did not. What type of variable is the supplemental protein?
- dependent
 - independent
 - extraneous
 - intervening
27. Which of the following statistical methods synthesize findings from several studies?
- descriptive analysis
 - inferential analysis
 - meta analysis
 - multivariate analysis

28. Which among the following is the most important characteristic of a sample?
- Randomization
 - Representativeness
 - Location
 - Appropriate number
29. Which of the following is not true about Pure Experimental Research?
- There is a control group
 - There is an experimental group
 - Selection of subjects in the control group is randomized
 - There is a careful selection of subjects in the experimental group
30. Which of the following studies is based on quantitative research?
- A study examining expressions of bereavement in spouses of clients with terminal cancer.
 - A study examining client's feeling before, during and after chemotherapy.
 - A study exploring the factors influencing weight control behavior.
 - A study measuring the effects of sleep deprivation on patients healing.
31. What is the term used to describe individuals who provide data in a research study?
- population
 - data points
 - numbers
 - sample

References

Fain, J. (2009). Reading, understanding and applying nursing research. Philadelphia: F.A. Davis.
Melnik, B. & Fineout, E. (2011). Evidence-based practice in nursing and healthcare. Philadelphia: Lippincott, Williams & Wilkins.
Polit, D. & Beck, D. (2012). Resource manual for nursing research: Generating and assessing evidence for nursing practice.

Demographics and Survey Portion

Which of the following represents your primary nursing educational program?

- Associate Degree
- Diploma

Gender

- Male
- Female

Age: _____

What is your current GPA? _____

Number of years employed as a Registered Nurse: _____

Approximately how many hours per week are you working in your current position? _____

Do you have access to a portable device such as an IPOD or MP3 player?

- a. Yes
- b. No

Have you ever listened to Podcasts for educational purposes?

- a. Yes
- b. No

Have you ever listened to Podcasts for entertainment purposes?

- a. Yes
- b. No

How many times did you listen to the Podcasts?

- a. 0
- b. 1
- c. 2

How was listening to the Podcasts accomplished?

- a. Through the computer.
- b. Downloaded to a portable player.

To what extent do you agree or disagree with the following statements:

P1. I would rather read the textbook than listen to the Podcasts.

Strongly Disagree 1 2 3 4 5 Strongly Agree

P2. I would rather study my notes than listen to the Podcasts.

Strongly Disagree 1 2 3 4 5 Strongly Agree

P3. I did not have time to listen to the podcasts.

Strongly Disagree 1 2 3 4 5 Strongly Agree

P4. I enjoyed listening to the Podcasts.

Strongly Disagree 1 2 3 4 5 Strongly Agree

P5. The Podcasts increased my understanding of the course concepts.

Strongly Disagree 1 2 3 4 5 Strongly Agree

P6. I felt listening to the Podcasts was tedious and boring.

Strongly Disagree 1 2 3 4 5 Strongly Agree

P7. I wish other courses had Podcasts available.

Strongly Disagree 1 2 3 4 5 Strongly Agree

P8. Listening to the Podcasts was a waste of time.

Strongly Disagree 1 2 3 4 5 Strongly Agree

P9. Listening to Podcasts did not increase my learning of the concepts.

Strongly Disagree 1 2 3 4 5 Strongly Agree

P10. Listening to the podcasts was time well spent.

Strongly Disagree 1 2 3 4 5 Strongly Agree

THANK YOU VERY MUCH FOR YOUR ASSISTANCE!

PODCAST SCRIPT

Nursing is our profession, and as you have been learning in this course, as professional nurses we need to contribute to the generation of nursing knowledge, and the way we do this is through research – nursing research is a major means by which nurses can generate knowledge.

The first step in planning a research study is determining what it is you want to know – what question do you want answered. Will this product have better patient outcomes than another? Are we getting more infections on Unit A than B? How do we explore a family's feelings upon being approached to donate a loved ones organs? Are there more sentinel events in the last few hours of a 12-hour shift? This area appears to be showing up more in the literature as we work towards improving patient outcomes.

One important query concerning the research question itself is: What does the literature show? Who has already studied this, and what was the quality of the research, what are the findings? What is the existing knowledge base situated in the scholarly literature about the issue? How trustworthy is the source? Is it the original research you are reviewing, as in a primary source, or something another author is discussing, as in a secondary source? How do we really know that their interpretation is accurate and not skewed in some manner? Is one expert opinion valuable – which is the lowest level of evidence, or

should we seek a meta- analysis of many studies that are deemed rigorous. A meta-analysis synthesizes findings from several studies, and if you remember Bloom's original taxonomy, synthesis represents the highest order of thinking.

A lot of consideration has to be given to who will be participating in the study. The use of human subjects is highly regulated and can never be taken for granted. Informed consent is a critical precept of any type of research project. An individual has the choice as to whether to participate or not and should have a thorough understanding of what that participation requires. Each person has the right to withdraw at any time without fear of any adverse consequences. All research has to follow the principle of **respect for human dignity**, and any pressure, coercion, or infidelity is against the ethical tenets of research. Internal Review Boards, or IRB's, are strict in their reviews to exact compliance. Universities, and health systems, all require projects to go through their IRB, and that all researchers have to take training that highlights ethical responsibilities when undertaking research on human subjects.

Moving to the actual design of the study, there are two main research methodologies, Quantitative and Qualitative.

Quantitative research is more closely aligned with what would be viewed as the classical scientific paradigm. Quantitative research involves gathering data that is absolute, such as numerical data, so that it can be examined in as unbiased a manner as possible.

A quantitative experimental study is set up with controls and a very clear design. The type of tools used is intended to minimize any bias. The result of quantitative research is a collection of numbers, which can be subjected to statistical analysis for interpretation of the results. The tests look for statistical significance in differences in the results, or for strength on how the results could be correlated. When the analysis is performed, computer software is used. There needs to be reliability and validity testing of any scales, equipment, questionnaires, survey tools and such that are used in the presumption of the findings being significant, with only a small chance of error. How the researcher feels about the results does not matter in the least! Remaining separate from the research emotionally is a key aspect of quantitative research, the researcher has to be careful and remove any semblance of their own potential bias. With quantitative research, when using a true random sample of the population of interest in sufficient numbers, the results yielded can be more easily generalized to the whole population that the sample is drawn from.

There are four types of measurement scales in Quantitative research. There is Nominal, also called categorical. This is the assignment of numbers to simply classify characteristics into categories; it is a type of “naming” or “labeling” system. There is **no** relationship between categories. A good example is gender. Each participant is noted as male or female. Blood Type is another example; each person only has one of that characteristic!

Next comes the ordinal scale, which sorts categories on the basis of their standing relative to one another. It is similar to “Rank-ordering”, which does not indicate the magnitude of difference (strength). For example, think about the order of runners finishing a race: 1st, 2nd or 3rd. This doesn’t tell you what the difference in the placement was, it could be 10 minutes between the first and second, or 1 minute. Think of the Olympics and the races being measured on an ordinal scale.

The last two categories tend to be described together as they are very similar. These are the Interval and Ratio levels. Both levels are clumped together because both exhibit consistent interpretation. The difference is that in ratio levels of measurement, there is an absolute zero point. A zero point represents absolutely none of the property. Years experience is an example. Other examples of ratio levels of measurement include heart rate, age, length and weight. There are limited examples of interval level, with temperature as a good example, where zero has a meaning. Interval/Ratio level scales are the richest, more sophisticated form of measurement; these scales are used when the distance between any two numbers are known and of equal size.

These scales have **NO** relation to qualitative research. Let’s discuss some aspects of qualitative methodology. Often the data presented from qualitative research will be much less concrete than pure numbers as data. Instead, qualitative research may yield stories, or pictures, or descriptions of feelings and emotions. The interpretations given by

research subjects are given weight in qualitative research, so there is no seeking to limit their bias. At the same time, researchers tend to become more emotionally attached to qualitative research, and so their own bias may also play into the results. Qualitative Data can be collected in focus groups, interviews, and open-ended survey questions. This needs to be differentiated from a closed ended survey, which would quantify the data, and is used in quantitative research. My study is actually a mixed study – the quantitative will measure the difference between the post-podcast scores, and then qualitative data will be obtained during the last week in a focus group discussion of how you felt about learning through listening to the podcast. This type of research can provide richer, more descriptive data, and it is considered a way of triangulating, which can increase the value of the research.

Now we will make some comparisons between quantitative and qualitative research. A key concept in quantitative research is the use of variables, while the concepts in qualitative research methods are expressed more in motives, meaning-making and feelings.

Quantitative research methods and measures are usually universal, like formulas for finding the mean, or average, median and mode for a set of data, whereas, in qualitative research, each study is approached individually and individual measures are developed to interpret the primary data, taking into account the unique characteristics of the research. Qualitative research data can be in the forms of words, images, narrative transcripts, etc. Research findings in quantitative research can

be illustrated in the forms of tables, graphs and pie-charts, whereas, research findings in qualitative studies is usually presented in analysis by only using words.

In many forms of quantitative research, the researcher is testing a hypothesis that involves distinct variables, with an independent and dependent variable. In complex studies, there can be more than one independent and dependent variables. The researcher manipulates the independent variable to study the effect on the dependent variables. Anytime variables are being examined in a research study, it is indicative of a quantitative methodology. In quantitative research, the researcher sets the level of significance that the data analysis has to achieve in order to determine whether they can accept their hypothesis as true, or reject it if it doesn't reach that standard. Most researchers would set the level at 95%, which means that they would expect 95 out of 100 times their premise would be correct; they are willing to risk that it can be in error at a 5% probability, or 5 times out of 100. Depending on what it is being tested, some researchers want to see a 99% level of confidence, but this rigor could prevent some studies that could be helpful to be abandoned, so it really depends on what is being studied. The researcher has to set the limit before the study begins. The level of confidence only applies to quantitative data. A key point is that the data is in the form of numbers from precise measurements, and as stated, most research is performed with the 95% level of confidence.

In Quantitative Research, the theory is largely causal and is deductive. The Procedures are standard, and the ability to replicate is assumed. Analysis proceeds by using statistics, tables, or charts and discussion is on their relationship to the hypothesis or question. Contrasting this with Qualitative Research, wherein the theory is often inductive. Analysis of qualitative research often proceeds by extracting themes or generalizations from evidence and organizing data to present a coherent, consistent picture. Qualitative Research tends to construct social reality, study cultural meaning, focusing on interactive processes and events. Authenticity is really the key. The researcher is involved in the subject, and could be considered the actual instrument for the collection of the data.

Let's talk a little about some research terminology. A sample is the term used to describe the individuals who will provide data in a research study. Important features of an experimental design, which is always quantitative, is that of manipulation, which includes the researcher's ability to manipulate the independent variable (IV) and observe the effects on the dependent variable (DV). Randomization is a key concept. The researcher has the ability to assign subjects to an experimental or control group whereby subjects have an equal chance of being assigned to each group. Random assignment increases the probability that subjects are equally dispersed in the experimental and control groups.

Selecting a sample in qualitative research is very different. The focus is on developing a rich understanding through seeking in-depth

understanding of a phenomenon. One aim in qualitative research is to identify participants who are extremely knowledgeable on the topic of interest. Choosing participants is often intentional, and small numbers are the norm.

You should also be familiar with forms of quantitative research identified as Applied and Basic research. Basic research is referred to as pure research. Its' major purpose is to obtain empirical data that can be used to develop, refine, or test a theory without immediate concern for direct application to clinical practice. An important aim is to generate knowledge for the sake of knowledge production and theory construction, rather than looking to solve an immediate problem. It is likely to be conducted in a controlled environment such as a laboratory. Applied research is conducted to gain knowledge that can be used in a practical setting; this research is conducted in the natural setting where the application would occur. Applied research seeks to find solutions to more immediate problems.

The next important concepts I am going to discuss concerns Reliability and Validity. These are important attributes for instruments that are used for data collection. How trustworthy is the data collected by the instrument? An initial important realization is that nothing is perfect. Measurement error refers to how well or poorly a particular instrument performs in a given population. Remember the instrument is a device that measures a concept or variable of interest. Instruments can be questionnaires, surveys, and rating scales. A Likert scale is an example

of an instrument that is commonly used for data collection. A pain rating scale is an example of a Likert scale

Reliability is the degree to which an instrument or test consistently measures what it is supposed to measure. Reliability is expressed numerically as a coefficient; there are a few ways to test for reliability. There is test-retest reliability, which measures the degree to which scores are consistent over time. The researcher administers an instrument/test; and then after 2–4 weeks has passed, re-administers the same test. A statistical correlation is performed between the two scores and this is reported as the test-retest reliability coefficient (r). A score above 0.7 is desirable, above 0.8 better. But if it was perfect, that would be questionable.

Then there is internal consistency reliability, which is the degree to which an instrument/test possesses internal consistency; meaning the extent to which items in an instrument “hang together” and measure what it is supposed to measure. For example, if a survey tool had a question that asked the participant to rate statements from strongly agree to disagree, and two choices are: “I value my privacy” and “My privacy is very important to me”. The same participant should rate those two items similarly. That is what encompasses the “hang together” idea. To assess this internal consistency, a statistical procedure is used called “Cronbach’s Alpha;” this is reported as a reliability coefficient (r).

The last type of reliability testing I am going to mention is inter-rater reliability, which is the degree to which two observers watching the same event independent of one another agree on the scoring or interpretation. This is very popular in nursing studies where judgments are made by two or more data collectors. Think about a skills check-off. Do you think students prefer certain faculty members to others? Every examiner's interpretation of the criteria could be perceived differently. To assess the degree of consistency among raters, a statistical procedure called "Cohen's Kappa Statistic" is used and reported as a reliability coefficient. This way all faculty members can be trained on how to use the tool consistently, providing fairness among those being evaluated.

Now we have to determine if the results demonstrate validity. Remember that this is the degree to which a test measures what it is supposed to measure. The question is not whether a test is "valid or not valid;" rather "valid for what and for whom".

An important precept regarding validity is that a test has to have reliability to be valid; however, the tool may pass on reliability but not on validity.

Here is an example: If you kept weighing yourself on a scale that was not properly calibrated, and you always weighed 120 pounds, you are consistently getting the same results, time after time, the scale demonstrates reliability, however the results are invalid.

Now that we have talked about research and have a good understanding of the many concepts and their importance, let's bring it to the realm of the basis of our practice, which is EBP.

It is more than the results of the research studies. There are two other components that comprise evidence-based practice. There is the practitioner's experience as well as the patient's values and beliefs. We have to make reasonable judgments based on these parameters, with the continuous use of the nursing process – to plan our direction, and be able to quickly change course – our world is never static, can be in constant flux, and we are always aware of the chaos and ambiguity in which we are performing our duties.

We need to be always thinking about how to make things better, and to do this a good understanding of research is critical. Thank you for listening. I really appreciate your time.

Appendix F

Letter to Pilot Students

Greetings!

At this time I am preparing to do my dissertation research. My study examines the "Effect of Supplemental Podcasts as a Learning Strategy on RN to BSN Completion Program Nursing Research Course Student Test Scores". Prior to conducting the actual study, I would like to collect reliability data on the podcast post-test. The test consists of 30 questions on research content that aligns with the research course that you have completed in Module 5. There is no preparation expected; the test will not be used for any other purpose than to collect test reliability and item statistic data. No names will be used in any part of piloting the test.

There is also a short survey at the end of the research test related to the use of podcasts as a supplemental study aide. As Podcasts had been provided to your class in Maternal and Women's Health as a supplemental teaching strategy, you can answer the survey questions from that experiential context. The survey will then be assessed for reliability and factor analysis. Your name should not be included on the tool, and anonymity will be maintained.

There are no risks associated with your participation, and your participation is strictly VOLUNTARY. This research project is not associated in any way with your program of study. This is a dissertation project in the researcher's doctoral program at the University of Kansas. As such, this research is authorized by the University of Kansas, and refusal to participate in this study will not affect your right to any services you may be receiving or may receive from the University of Kansas or to participate in any programs or events of the University of Kansas. There is a potential benefit related to exposure to the research content through taking the podcast post-test. There is evidence in the literature that supports repetition and increased exposure to content leads to improved learning outcomes. There are no risks to any individual participant apparent in this study. There is no compensation provided for volunteering to be a participant in this pilot study of the research tools.

If you agree to participate in this pilot test, completion and submittal of the test/survey tool located at the linked website (Survey Monkey) will be assumed as informed voluntary consent. You do not have to complete the test and/or survey and may quit at any time. Your name will not be associated in any publication or presentation with the information collected about you; the data collected will be in aggregate form and have no recognizable source as to participant identity. Your identifiable information will not be shared unless (a) it is required by law or university policy, or (b) you give written permission.

Any questions about this request should be directed to me at jhmcdermott@mnu.edu. If you have any additional questions or require further explanations about your rights as a research participant, call (785) 864-7429 or (785) 864-7385, write the Human Subjects Committee Lawrence Campus (HSCL), University of Kansas, 2385 Irving Hill Road, Lawrence, Kansas 66045-7568, or email irb@ku.edu.

I appreciate your consideration. Thank you,

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