EVALUATING THE KNOWLEDGE OF THOSE WHO TEACH: AN ANALYSIS OF CANDIDATES' PERFORMANCE ON THE CERTIFIED NURSE EDUCATOR (CNE) EXAMINATION

Presented in Partial Fulfillment of the
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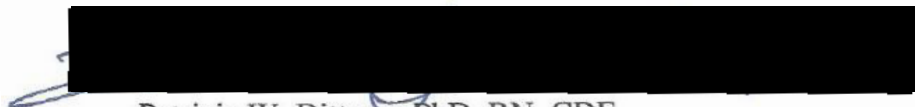Doctor of Philosophy

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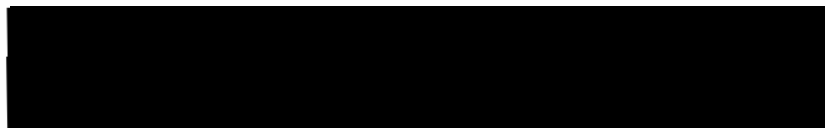
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Abstract

This quantitative, retrospective, multivariate, non-experimental study examined the first-time performance of 2,673 academic nurse educators who took the CNE examination between September 28, 2005 and September 30, 2011. Post-positivism and Abbott's system of the professions theory served as the philosophical and theoretical underpinnings of this original research which attempted to determine if a relationship existed between educational preparation or years of full-time faculty employment (independent variables) and first-time pass/fail performance on the CNE examination and in each of content areas (dependent variables). The Chi-square test of independence revealed the lack of a statistically significant relationship between educational preparation and first-time pass/fail performance on the CNE examination. Independent t-tests revealed a statistically significant relationship between Option B study participants and content area three (use assessment and evaluation strategies), ($t[2,671] = -2.20$, $p = .03$); four (participate in curriculum design and evaluation of program outcomes), ($t[2,671] = -2.06$, $p = .04$); and six (engage in scholarship, service, and leadership), ($t[2,671] = -2.34$, $p = .02$). Binary logistic regression revealed that a one year increase in full-time employment resulted in a 1.05 times greater likelihood of passing the CNE examination (OR = 1.05; 95% CI 1.03, 1.06; $p = .00$). Last, simple linear regression revealed that years of full-time faculty employment contributed to 3.2% of the variability within content area four, 2.8% within content area six, and 2.1% within content area three. The results of this study provide insight about faculty development and mentoring needs, present evidence to policy makers and nursing education leaders, and offer guidance to curricula developers.

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There are a number of people who have made it possible for me to not only begin my doctoral education, but more important, to finish it. In the long list of those to whom I owe a debt of gratitude, I'd like to start by extending a special appreciation to my dissertation committee comprised of Dr. Patricia Dittman, Dr. Patrick Hardigan, and Dr. Mary Anne Rizzolo. Dr. Dittman served as my committee chair and provided me with guidance, patience, and support. I greatly appreciate her feedback and ability to help me see things from a different perspective. Dr. Hardigan contributed to this study by sharing his statistical expertise with this novice researcher. And finally, Dr. Mary Anne Rizzolo not only offered content expertise, but she has also been my mentor and role model for nearly a decade. In addition to having a profound effect on my career, she provided me with the necessary nudge to pursue this degree. I am a better person for knowing her. Thank you one and all for sharing your wisdom and seeing me through to the end.

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I would like to recognize my current employer, Galen College of Nursing, and its board of directors, chaired by Kathryn Mershon. The College's commitment to

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Chapter One

Certification is a process used by practitioners in a particular field to demonstrate their professional competence (Institute for Credentialing Excellence [ICE], 2012). For more than fifty years, nurses, nursing organizations, and healthcare agencies have relied on certification as the standard for recognizing specialty nursing practice (American Board of Nursing Specialties [ABNS], 2005). In an effort to formally recognize academic nurse educators' "specialized knowledge, skills, and abilities, and excellence in practice" (National League for Nursing [NLN], 2012b, p. 2*),* the NLN created the Certified Nurse Educator (CNE) credential in 2005 (NLN, 2005d). This credential is the first, and remains the only, certification designed to distinguish academic nursing education as a "specialty area of practice and an advanced practice role within professional nursing" (NLN, 2012b, p.2).

During the first six years of its offering, over 2,800 academic nurse educators earned the CNE credential (NLN, unpublished data, 2011c). Even though pass rate and demographic data have been published (Ortelli, 2008a), CNE candidates' performance on the examination has not been analyzed. This study will examine the outcome data of 2,673 CNE candidates and explore the relationship between their educational preparation and years of full-time faculty employment and their first-time performance on the examination and in each of the examination's six major content areas.

Justification for Selection

Academic nurse educators are charged with the professional responsibility of formally educating nurses to fill entry-level and advanced practice positions including those requiring doctoral education. The importance of this role cannot be underestimated when considering that the health of our nation relies upon the delivery of safe patient-centered care (Cronenwett et al., 2007; Institute of Medicine [IOM], 2010; QSEN Institute, 2012). Because nurses comprise the largest group of health professionals and spend the greatest amount of time providing direct patient care, their performance plays a significant role in patient outcomes (Benner, Sutphen, Leonard, & Day, 2010). Concomitantly, it is essential that academic nurse educators possess the competence required to provide a quality education to our nation's nursing workforce in order to meet the healthcare needs of our society (NLN, 2005f).

At present, there are a number of workforce issues that challenge the advanced specialty practice of nursing education. These include a current faculty shortage (American Association of Colleges of Nursing [AACN], 2012a; NLN, 2010b) which is likely to worsen because of the number of faculty planning to retire within the next five to ten years (AACN, 2012a; Kaufman, 2007a; NLN, 2010b), fewer nurses pursuing careers in academe (Yordy, 2006), insufficient compensation for nursing faculty (AACN, 2012a; Kaufman, 2007a; Kuehn, 2007), a decrease in the number of graduate and doctoral programs designed to prepare nurses to become academic nurse educators (Benner et al., 2010), and a lack of doctoral-prepared nursing faculty (Anderson, 2000; Bartels, 2007; Berlin & Sechrist, 2002; Broom, 2009; Hinshaw, 2001), which is the preferred degree for those employed in higher education (Adams, 2002; AACN, 2008). In

addition, some advanced practice nurses (APNs) who do assume positions in academe have not received formal educational preparation for the faculty role (NLN, 2005f; Oermann, 2005; Southern Regional Education Board [SREB] Council on Collegiate Education for Nursing [CCEN], 2002; Zungolo, 2004).

Underlying these workforce issues is the lack of consensus regarding the required educational preparation of academic nurse educators, irrespective of degree. Currently, there are varied recommendations among state boards of nursing, accrediting bodies (Commission on Collegiate Nursing Education [CCNE], 2009; National League for Nursing Accrediting Commission [NLNAC], 2008), and professional nursing organizations that focus on nursing education (AACN, 2006; NLN, 2002). In order to provide evidence to policy makers, academic institutions, professional organizations, and those pursuing careers in nursing education, it is essential to have an understanding about the relationship between academic nurse educators' educational preparation and experience and their knowledge of the full scope of the faculty role. Knowledge about the requisite educational and experiential qualifications for those who teach is foundational to the establishment and ongoing development of a competent academic nurse educator workforce.

Prevalence in Nursing

Nursing is the fifth largest profession in the United States (United States Department of Labor Bureau of Labor Statistics, 2012) and comprises the largest group of health professionals (Benner et al., 2010). Although the most recent data reveal the presence of more than 2.7 million nurses in the US (United States Department of Labor Bureau of Labor Statistics, 2012), these numbers are considered insufficient to meet the

healthcare needs of our society (IOM, 2010). Present conditions indicate that an aging baby-boomer population is receiving care from an aging nursing workforce (Benner et al., 2010; Rother & Lavizzo-Mourey, 2009) with the average age of a nurse projected to be 44.1 in 2015 (Auerbach, Buerhaus, & Staiger, 2011).

Recently, Auerbach et al. (2011) identified a trend that may positively impact the supply of nurses. Between 2002 and 2009, there was a 62% increase in full-time registered nurses between the ages of 23 and 26. This trend also resulted in an increase in overall enrollments in pre-licensure nursing programs over the past decade (Auerbach et al., 2011). The capacity to accommodate increased enrollments is restricted by a shortage of nursing faculty, clinical preceptors, available clinical sites, and classroom space (AACN, 2012a; Kuehn, 2007; NLN, 2010b). In order to ameliorate the nursing shortage, it is essential to have an adequate supply of appropriately prepared nursing faculty. To accomplish this, it is necessary to have a clear understanding of the educational and experiential qualifications needed by those who fill academic nurse educator roles now and in the future.

Prevalence in Nursing Education

The most recently available data reveal that the academic nurse educator workforce is comprised of approximately 31,699 full-time and 28,252 part-time nurse nursing faculty who teach in a variety of program types and have diverse educational backgrounds (NLN, 2009d, unpublished data). The aging of this workforce is similar, albeit more severe, than the aging nursing workforce. With 48% of nursing faculty age 55 and older (Kaufman, 2007a; NLN, 2010b), these professionals are considerably older than the remainder of the academic workforce (Kaufman, 2007a; NLN, 2010b). Analysis

of faculty survey data reveals that the availability of qualified nursing faculty is insufficient to overcome the national nursing shortage now or in the foreseeable future (AACN, 2012a; NLN, 2010b). A reported 75,587 qualified applicants were denied admission to baccalaureate, graduate, and doctoral programs in 2011 due to an insufficient number of nursing faculty (AACN, 2012b). The faculty shortage is also cited as the reason for more than 119,000 (39%) qualified pre-licensure applicants for all program types being denied admission in 2008 (NLN, 2010b).

To compound this problem, large numbers of academic nurse educators plan to retire within the next 5 to 10 years. A study conducted by the NLN in conjunction with the Carnegie Foundation Preparation for the Professions Program (NLN/Carnegie Study) revealed that 21% of academic nurse educators reported that they plan to retire within 5 years and one half reported that they plan to retire within 10 years (Kaufman, 2007a). This phenomenon will cause nursing programs to lose experienced faculty while competing for a limited number of novice nurse educators who may not even possess educational preparation for the role.

Increasing the supply of nursing faculty is further challenged by noncompetitive salaries. The NLN/Carnegie Study revealed that nurse educators earn 76% of the salary earned by faculty in other academic disciplines (Kaufman, 2007b). Furthermore, increases in faculty salaries have not kept pace with compensation offered to nurses in clinical practice (Kaufman, 2007b; Yordy, 2006) or APNs (AACN, 2012a). For example, the average salary of a nurse practitioner is reported to be $91,310 compared to an average annual salary of $72,028 for a master's prepared nurse educator (AACN, 2012a).

Another cited cause of the nursing faculty shortage is attributed to the shift in graduate nursing education from teaching and administration to clinical specialization (Davis, Dearman, Schwab, & Kitchens, 1992; Fitzpatrick & Heller, 1980; Kitchens, 1985; Oermann & Jamison, 1989). This trend dates back to the 1969 ANA *Statement on Graduate Education in Nursing* which articulated the need for "the preparation of clinical nurse specialists capable of improving nursing care through the advancement of nursing theory and science" (as cited in American Nurses' Association [ANA], 1978, p. v). The call for preparing these advanced nurse specialists followed major changes in health care, namely the 1965 provision in the Medicaid program that provided health care coverage to low income citizens, which created a need for primary care providers. That same year, the first nurse practitioner program was established at the University of Colorado in order to avail underserved children in rural and urban areas primary care providers (Tropello, 2000).

The growth of the nurse practitioner movement over the next three decades was facilitated by efforts such as the creation of nurse practitioner certification examinations in 1977, the formation of the National Organization of Nurse Practitioner Faculties in 1980 (Pulcini & Wagner, 2005), and the need for cost effective health care which emerged in the 1980s (O'Brien, 2003). Provider status and the ability to directly bill Medicare for services rendered was finally granted to nurse practitioners in 1997, with the signing of the Balanced Budget Act of 1997 by President Clinton (O'Brien, 2003). It is contended that the development and acceptance of the nurse practitioner role further intensified the nurse educator shortage as the preparation of APNs greatly outpaced the preparation of faculty (Benner et al., 2010; Davis et al., 1992; Krisman-Scott,

Kershbaumer, & Thompson, 1998). As the number of faculty with formal preparation in the educator role decreased, schools of nursing were forced to hire nurses with master's degrees in their clinical specialty, but who were novice to the educator role (Halsted, 2007; Krisman-Scott et al., 1998; NLN, 2002; Zungolo, 2004).

Another issue related to nurses in an academic role is related to preparation at the doctoral level. Nursing faculty earn doctorates at rates less than other academic disciplines and only 25% of academic nurse educators hold this degree (NLN, 2009b). As a result, the master's degree remains the highest degree held by the majority of full-time nurse educators (AACN, 2012b; NLN, 2009b). Reported barriers for obtaining a doctorate include work and family responsibilities, finances, time constraints, the perceived difficulty of nursing doctoral programs (Bacharz, 2008), and the lack of available funding for doctoral education (Anderson, 2000). Nursing faculty who do hold a doctorate have abbreviated academic careers because of the delay in earning this advanced degree (Hinshaw, 2001) limiting their years of productivity and subsequent contributions to the development of the science of nursing education (Anderson, 2000). A reason for delaying doctoral education is attributed to the profession's culture which places great value on nurses working in clinical practice before pursuing a doctoral degree (Anderson, 2000). The average age for doctoral-prepared faculty is between 51.5 years and 61 years depending on academic rank (AACN, 2012b).

The most recently reported data reveal there are 309 doctoral nursing programs in the United States (AACN, 2012b). Despite the number of programs that exist, current conditions do not suggest the presence of a robust pipeline of academic nurse educators. The growing interest in clinical practice doctorates (AACN, 2012b) and growing number

of available programs (AACN, 2010a, 2011a, 2012b) is in sharp contrast to the number of research-focused doctoral programs. According to AACN (2012b), between 2006 and 2011 the number of Doctor of Nursing Practice (DNP) programs increased from 20 to 184, which exceeds the 125 research-focused doctoral programs that exist. AACN (2012b) reports that an additional 101 DNP programs are in planning stages, while only 9 research-focused doctoral programs are reported to be in development.

Of the limited number of nurses who do earn a doctoral degree, it is asserted that most are not prepared for the faculty role (Adams, 2002; SREB CCEN, 2002). Specifically, it has been contended that doctoral education does not adequately prepare its graduates for the multiple responsibilities required for employment in higher learning (Adams, 2002; Hathaway, Jacob, Stegbauer, Thompson, & Graff, 2006; Siler & Kleiner, 2001). This is attributed to doctoral nursing education's focus on the practice of nursing (Hathaway et al., 2006) and not the skills required for teaching, scholarship, and service (Adams, 2002).

Doctoral-prepared nurses also have ample employment opportunities (Potempa, Redman, & Anderson, 2008), and nearly 40% of doctoral-prepared nurses choose employment outside of academe (Edwardson, 2004). For example, healthcare organizations that qualify to participate in the American Nurses Credentialing Center (ANCC) Magnet Recognition Program create viable employment opportunities for graduates of research-focused doctoral programs. This recognition program requires healthcare organizations to conduct nursing research, thereby offering nurse scholars an environment dedicated to the development of new knowledge via a nursing research agenda (ANCC, 2012).

The prevalence of a short supply of aging nursing faculty, combined with a shift in the educational preparation of master's and doctoral-prepared nurses away from a focus on nursing education, highlights the need for research that focuses on academic nurse educators' qualifications. To help overcome these nursing faculty workforce challenges, it is necessary to gain insight about the relationship between academic nurse educators' experience and their knowledge about the full scope of the faculty role. This knowledge will serve to advance the science of nursing education by offering evidence about the essential qualifications for those assuming full-time positions in academe as well as provide data that will assist with future revisions of nurse educator curricula designed to prepare those at the master's and doctoral level.

Related Leadership Issues

Even though there are substantial challenges confronting our healthcare system, the nursing profession, and the academic nurse educator workforce, it is contended that *now* is the time for the transformation of nursing education (Benner et al., 2010; Bovbjerg, Ormond, & Pindus 2009; IOM, 2010; NLN 2005f; Tri-Council for Nursing, 2010). The catalyst for nursing education reform is the identified need for addressing the expanded expectations required of nurses practicing in the current healthcare environment. Recommended changes include redesigning pre-licensure and graduate nursing education preparation curricula, developing new pedagogies, bridging the practice-education gap, developing local articulation programs, and supporting ongoing faculty development (Benner et al., 2010; NLN, 2005f).

In order to accomplish transformation, Benner et al. (2010) assert that it is "critical to have a clear view of what high-quality nursing education is and what

programs must do to meet those standards" (p. 7). The ability to establish a clear view of high quality nursing education is impeded by the lack of consensus between professional organizations that focus on nursing education as to what constitutes appropriate preparation for the nursing faculty role (NLN, 2005f; Poindexter, 2008; Ruby, 2000). In the absence of a clear vision, those pursuing a career in academe are without clear guidance regarding how to attain the specialized knowledge, skill, and expertise required for the academic nurse educator role (Billings & Halstead, 2009; NLN, 2002, 2005; Zungolo, 2004).

An example of the lack of consensus about preparation for the faculty role is highlighted by the recommendation from AACN (2006) that nurses who have earned the DNP degree may be suitable to fill the faculty role, despite the fact that the DNP is a practice-oriented terminal degree designed to prepare advanced practice nursing experts, not nurse scientists and scholars. The academic preparation for DNPs, as outlined by the AACN (2006), does not included courses in theories of teaching and learning, assessment and evaluation, and curriculum design. As a result, faculty with an earned DNP are not typically considered educationally qualified to add to the supply of academic nurse educators needed for programs offering a doctor of philosophy degree (PhD), and may even have restricted career opportunities in academe because of limitations associated with attaining academic rank, promotion, and tenure opportunities (Billings & Kowlaski, 2008).

A very different recommendation for the academic preparation of nursing faculty is offered by the NLN (2002) which advocates for the creation of "a preferred future for the preparation of nurse educators" (p. 1). The NLN (2002) call for reform specifically

states, "the academic community should not assume that individuals are qualified to teach simply because they hold a particular credential" (p. 3), nor should they assume that "individuals can learn to be teachers, advisors, curriculum developers and educational leaders through on-the-job training or 'trial by fire'" (p. 3). The NLN (2002) contends that preparation for the academic nurse educator role should be planned as well as deliberate.

This lack of a shared vision between AACN and the NLN gives evidence to intraprofessional conflict within nursing. Specifically, there are diverse perspectives about what those who teach nursing need to know in order to perform in the role. In order to give clear direction to the phylogeny of academic nurse educators, it is necessary to understand the impact of educational preparation on nursing education knowledge.

Related Policy Issues

The issue of appropriate preparation for the faculty role is not easily rectified by policy decisions; however, its importance is highlighted by regulation. To help ensure public protection, the practice of nursing is regulated (Crawford, 2004). Nurse practice acts, which reside within each state board of nursing, define the scope of practice for practical, registered, and APN practice (National Council of State Boards of Nursing [NCSBN], 2005). In addition, state boards of nursing have oversight of nursing education programs (Crawford, 2004), which includes the establishment of educational and experiential qualifications for full and part-time nursing faculty.

A review of nurse practice acts reveal that requirements for full-time and clinical faculty as well as nursing program administrators vary from state to state. Furthermore, state boards of nursing do not consistently specify the need for formal preparation for the

nursing faculty role. This is in contrast to the NCSBN education model which recommends that nursing faculty teaching in registered nursing programs should possess either a master's or doctoral degree in nursing and that this education should include "graduate preparation in the science of nursing, including clinical practice and graduate preparation in teaching and learning, including curriculum development and implementation" (Spector, 2009, p. 55).

In addition, nursing program accrediting bodies such as NLNAC (2008) and CCNE (2009) require faculty to maintain expertise in the clinical content they are teaching, but they do not specify that faculty possess expertise as an academic nurse educator. The view that advanced clinical practice expertise is essential for the teaching role, while teaching expertise can be learned on the job is a topic which has been highly debated, without resolution, for at least four decades (Davis et al., 1992; Fitzpatrick & Heller, 1980; Kitchens, 1985; Krisman-Scott et al., 1998; McKay, 1971; McLane, 1975, 1978; NLN, 2002, 2005f; Oermann, 2005; SREB CCEN, 2002; Zungolo, 2004). In order to offer guidance to state boards of nursing and accrediting bodies as they consider current policies, standards, criteria, and competencies related to the qualifications of those who teach, it is necessary to understand the relationship between educational preparation for the academic nurse educator role and full-time faculty experience on cognitive knowledge regarding the full scope of the faculty role.

<div align="center">**Problem Statement**</div>

Academic nurse educators are responsible for the educational preparation of our nation's nursing workforce, which in turn must meet society's changing healthcare needs (IOM, 2010; NLN, 2005f; Yordy, 2006). This significant responsibility is being fulfilled

by a faculty workforce that is not required to possess formal preparation for the role or certification in nursing education. At present, there is a lack of consensus by nursing education leaders, accrediting bodies, and state boards of nursing combined with a lack of evidence to guide policy makers, academic institutions, and professional organizations regarding the requisite experiential and educational qualifications essential for the academic nurse educator role.

Purpose of the Study

In 2005, the NLN established the CNE credential in an effort to recognize academic nurse educator's specialized knowledge, skill, and expertise as well as "strengthen the use of core competencies of nurse educator practice" (NLN, 2012b, p. 2). This original research will contribute to the science of nursing education by analyzing the first-time performance of a subgroup of the academic nurse educator population consisting of 2,673 candidates who took the CNE examination over a six year period. This study will analyze the relationship between the independent variables: educational preparation and years of full-time faculty employment, and the dependent variables: first-time performance (pass/fail) on the CNE examination and performance in each of the six CNE examination content areas.

Research Questions and Hypotheses

The following research questions will guide this study:

1. Is there a statistically significant relationship between educational preparation, as defined by the CNE eligibility criteria (Option A and Option B), and first-time performance (pass/fail) on the CNE examination?

$H1_0$: There is no statistically significant relationship between educational preparation and first-time performance on the CNE examination.

$H1_a$: There is a statistically significant relationship between educational preparation and first-time performance on the CNE examination.

2. Is there a statistically significant relationship between educational preparation, as defined by the CNE eligibility criteria (Option A and Option B), and performance in each of the six major CNE examination content areas?

$H1_0$: There is no statistically significant relationship between educational preparation and performance in the content area, *facilitate learning*.

$H1_a$: There is a statistically significant relationship between educational preparation and performance in the content area, *facilitate learning*.

$H2_0$: There is no statistically significant relationship between educational preparation and performance in the content area, *facilitate learner development and socialization*.

$H2_a$: There is a statistically significant relationship between educational preparation and performance in the content area, *facilitate learner development and socialization*.

$H3_0$: There is no statistically significant relationship between educational preparation and performance in the content area, *use assessment and evaluation strategies*.

$H3_a$: There is a statistically significant relationship between educational preparation and performance in the content area, *use assessment and evaluation strategies*.

$H4_0$: There is no statistically significant relationship between educational preparation and performance in the content area, *participate in curriculum design and evaluation of program outcomes*.

$H4_a$: There is a statistically significant relationship between educational preparation and performance in the content area, *participate in curriculum design and evaluation of program outcomes*.

$H5_0$: There is no statistically significant relationship between educational preparation and performance in the content area, *pursue continuous quality improvement in the academic nurse educator role*.

$H5_a$: There is a statistically significant relationship between educational preparation and performance in the content area, *pursue continuous quality improvement in the academic nurse educator role.*

$H6_0$: There is no statistically significant relationship between educational preparation and performance in the content area, *engage in scholarship, service, and leadership*.

$H6_a$: There is a statistically significant relationship between educational preparation and performance in the content area, *engage in scholarship, service, and leadership.*

3. Is there a statistically significant relationship between years of full-time faculty employment and first-time performance (pass/fail) on the CNE examination?

   $H1_0$: There is no statistically significant relationship between years of full-time faculty experience and first-time performance on the CNE examination.

$H1_a$: There is a statistically significant relationship between years of full-time faculty employment and first-time performance on the CNE examination.

4. Is there a statistically significant relationship between years of full-time faculty employment and performance in each of the six major CNE examination content areas?

$H1_0$: There is no statistically significant relationship between years of full-time faculty employment and performance in the content area, *facilitate learning*.

$H1_a$: There is a statistically significant relationship between years of full-time faculty employment and performance in the content area, *facilitate learning*.

$H2_0$: There is no statistically significant relationship between years of full-time faculty employment and performance in the content area, *facilitate learner development and socialization*.

$H2_a$: There is a statistically significant relationship between years of full-time faculty employment and performance in the content area, *facilitate learner development and socialization*.

$H3_0$: There is no statistically significant relationship between years of full-time faculty employment and performance in the content area, *use assessment and evaluation strategies*.

$H3_a$: There is a statistically significant relationship between years of full-time faculty employment and performance in the content area, *use assessment and evaluation strategies*.

$H4_0$: There is no statistically significant relationship between years of full-time faculty employment and performance in the content area, *participate in curriculum design and evaluation of program outcomes*.

$H4_a$: There is a statistically significant relationship between years of full-time faculty employment and performance in the content area, *participate in curriculum design and evaluation of program outcomes*.

$H5_0$: There is no statistically significant relationship between years of full-time faculty employment and performance in the content area, *pursue continuous quality improvement in the academic nurse educator role*.

$H5_a$: There is a statistically significant relationship between years of full-time faculty employment and performance in the content area, *pursue continuous quality improvement in the academic nurse educator role*.

$H6_0$: There is no statistically significant relationship between years of full-time faculty employment and performance in the content area, *engage in scholarship, service, and leadership*.

$H6_a$: There is a statistically significant relationship between years of full-time faculty employment and performance in the content area, *engage in scholarship, service, and leadership*.

Significance of the Study

To date, there is an absence of quantitative research that gives evidence to support the educational and experiential qualifications required to serve as a full-time faculty member. At present, the most closely related research is one study which investigated the relationship between formal preparation for the nurse educator role and years of faculty

experience on academic nurse educators' perceived and self-reported knowledge of the Core Competencies (Kirchoff, 2010). This research study goes beyond exploring participants' perceptions by analyzing full-time academic nurse educators' actual first-time performance on a certification examination which was designed using the Core Competencies of Nurse Educators© with Task Statements (NLN, 2005b) as a primary resource. The data obtained from this study will contribute to the science of nursing education by explicating the impact of education and experience on requisite knowledge for the academic nurse educator role. An explanation of how this study may contribute to nursing education, practice, research, and policy follows.

Nursing Practice

Nursing practice is directed toward providing safe, effective, quality care (Benner, et al., 2010; NCSBN, 2005; QSEN Institute, 2012) and assisting patients to attain or maintain optimal health (NCSBN, 2005). In order to accomplish this, nursing students' education should include a "scientific background, practice-based knowledge, clinical reasoning skills, and ethical comportment" (IOM, 2010, p. 8). Graduates of pre-licensure programs must pass the National Council Licensure Examination (NCLEX®) (NCSBN, 2012a) but graduates of advance practice programs are typically required to pass certification examinations (Chornick, 2008). Academic nurse educators' competence can significantly impact student outcomes and their ability to gain employment (Johnsen, Aasgaard, Wahl, & Salminen, 2002; Krisman-Scott et al., 1998; SREB CCEN, 2002). By examining the relationship between academic nurse educators' educational preparation and years of full-time employment and first-time performance on the CNE examination, the educational preparation of those who teach our nation's nursing workforce can be

examined. This information may serve to inform future recommendations regarding the educational and experiential qualifications necessary to fulfill the academic nurse educator role which may ultimately lead to an increase in the quality of nursing education, increased student success, and improved transition to the role by graduates.

Nursing Education

This study will examine the relationship between CNE candidates' educational preparation and years of employment and first-time pass/fail performance and performance in each of the CNE examination content areas. This information can be used to guide graduate and doctoral nursing program curricula designed to prepare academic nurse educators. Adams (2002), contends that "while the world of academe has changed dramatically over the last two decades, most graduate programs that prepare new faculty for their first academic positions have not" (p. 1). Understanding the appropriate preparation of nursing faculty is critical if future academic nurse educators are to be prepared for the full scope of the faculty role and prepare nurses who possess the "clinical reasoning and skilled know how" (Benner et al., 2010, p. 27) required for the current healthcare environment.

This research may also be used to better understand faculty development needs and guide the establishment of mentoring programs. In addition, findings from this study may influence recruitment and hiring efforts by making apparent the knowledge and skill expectations of potential nursing faculty with varying years of experience and preparation. It is imperative that these professionals be able to prepare graduates to work in all types of healthcare environments, including magnet designated hospitals, which are considered to be the "preferred future of professional nursing practice" (Dittman &

Aucoin, 2010, If Nursing Programs Were Magnet Designated, para. 1). With the existing and projected shortage of nurse educators, it is essential that faculty be adequately prepared and appropriately employed (Poindexter, 2008).

Results of this study may be used to guide professional organizations' recommendations regarding the minimal educational requirements for the full-time nursing faculty role. The literature reveals a longstanding philosophical divide regarding recommendations for the preparation of academic nurse educators (AACN 2006, 2008; Fitzpatrick & Heller, 1980; Kitchens, 1985; Krisman-Scott et al., 1998; NLN, 2005f; Poindexter, 2008; Ruby 2000). This is a crucial time for professional nursing organizations such as the AACN and NLN to achieve consensus, given the current trend in the development of doctoral education for nurses. At present, the development of nursing practice doctorates greatly exceeds the development of nursing doctorates focused on research, the preferred degree for those employed in higher education (Adams, 2002; AACN, 2008). Data from this study may inform the curricula in doctoral programs to ensure that there is an adequate pipeline of nurses prepared to assume roles in academe and someday lead the future of nursing education. In addition, the use of these data may be used by professional nursing organizations and nursing education leaders to clearly articulate the need for nursing education research funding as well as advance policy decisions impacting nursing education.

Public Policy

The results of this study may guide state board of nursing policy regulation of nursing education programs as well as nursing program accreditation standards related to educational criteria for the full-time faculty role. Given the shortage of qualified faculty

and the importance of their role in preparing the nursing workforce, it is essential that policy and accreditation standards be evidence-based. Because this study will provide empirical data about the demonstrated knowledge possessed by CNE candidates with diverse educational backgrounds and varied years of full-time faculty experience, state boards of nursing and accrediting bodies will now have evidence to consider when reviewing their policies and established standards.

Nursing Research

There is limited research investigating speciality nursing certification despite the fact that the first nursing specialty certification was established more than 50 years ago (Gaberson, Schroeter, Killen, & Valentine, 2003). The CNE examination is the only certification developed for academic nurse educators and is the only known certification designed to assess the knowledge of those who teach in higher education. Information gained from this study can be used to advance nursing certification research.

In addition, the study of full-time academic nurse educators' first-time performance on the CNE examination is consistent with the call for the development of the science of nursing education (Benner et al., 2010; Broome, 2009; NLN, 2008b; Valiga, 2007; Yonge et al., 2005). Faculty preparation and development have both been cited as areas that require research so that nursing education can be transformed and reform efforts can be documented (NLN, 2007a). In order to provide a meaningful effort toward the transformation of nursing education, there must be rigorous scrutiny of the preparation of academic nurse educators. Uncovering the relationship between educational preparation, years of full-time faculty experience, and demonstrated

knowledge as evidenced by the first-time performance on the CNE examination is the first step in this process.

Philosophical Underpinnings

It has been stated that research allows professions to discover the truth about the discipline (Carr, 1994). As a method for discovering this truth, quantitative research employs an "objective, formal, systematic process in which numerical data are used to quantify or measure phenomena or produce findings" (Carr, 1994, p. 716). A fundamental assumption is that these findings, or knowledge claims, are warranted, and that criteria or evidence is presented to justify these claims (Forbes et al., 1999).

The philosophical underpinning of this research study is post positivism, which takes into consideration that knowledge is conjectural and discovery of the absolute truth is not possible (Creswell, 2008). Post positivism recognizes that reality is subjective, mentally constructed, and contains multiple aspects (Crossan, 2003). The post positivistic philosophy is in contrast to positivism, which asserts that a fixed, orderly reality can be objectively studied (Polit & Beck, 2008).

Post positivism emerged from the writings of Karl Popper, who believed that absolute truth could not be attained by humans and that it is not possible to discover knowledge by first making discoveries and then justifying or warranting these discoveries as valid (Phillips & Burbules, 2000). Rather, Popper contended that discoveries are justified if they can survive tests designed to refute or falsify them. He also argued that observations are influenced by the knowledge, assumptions, theories, and hypotheses that the observer harbors (Phillips & Burbules, 2000).

Post positivism is an appropriate philosophical underpinning for this quantitative study, because this lens supports research designed to assess of factors that influence outcomes and careful numeric measurement of observations and behavior (Creswell, 2008). In addition, post positivism requires the understanding that one cannot be certain about claims of knowledge when studying individuals' actions and behaviors (Creswell, 2009). Consistent with post positivism, the results of this study cannot be claimed as absolute truths given the numerous variables that may influence CNE candidates' examination first-time performance. Rather this study will provide "data, evidence, and rational considerations" (Creswell, 2008, p. 7) that will shape knowledge about the relationship between educational preparation for the academic nurse educator role, years of full-time faculty experience, and first-time performance on the CNE examination.

Theoretical Framework

Abbott's (1988) system of professions theory is used as the theoretical framework for this study. This general theory, which comes from the field of sociology, posits that professions are interdependent systems that develop to fill vacancies and may also change and evolve to compete within a system. The systems of professions theory has been used to inform studies in fields such as occupational health nursing (Thompson, 2008), information literacy (O'Connor, 2009), integrative medicine (Lockwood, 2008), and licensed marriage, family, and child counselors (Richlin-Klonsky, 1991).

The fundamental concept of this theory is that an occupation must create a *jurisdiction of expertise* of which jurisdictions are "the link between a profession and its work" (Abbott, 1988, p. 20). According to Abbott (1988), each profession must identify the tasks that encompass its work and then make the case that these and only these

professionals are qualified to perform this exclusive scope of work. In order to claim jurisdiction, a profession must "ask society to recognize its cognitive structure through exclusive rights" (p. 59). Examples of these rights include monopoly of practice, rights of self-discipline, and control over professional training and licensing (Abbott, 1988).

Within the profession of nursing, the establishment of the Core Competencies of Nurse Educators© serves to identify the tasks that encompass the work of academic nurse educators (NLN, 2005b). In turn, these competencies served as a primary resource for creating the *2005 Academic Nurse Educator Practice Analysis* (Halstead, 2007; Ortelli, 2006), the results of which were used to develop the CNE examination's detailed test blueprint (Ortelli, 2006). It has been contended that a well-developed theory of a profession serves to assist test developers in the pursuit of answering broad, complex questions related to professionals, the nature of their cognition, and the relationship between their cognition and the ecology in which this professional competently functions (LaDuca, 1994, p. 180 as cited in Kane, 1997). Furthermore, Kane (1997) asserts that a theory of professions is instructive to the selection of certification examination content and in defending its appropriateness.

Evidence of what Abbott (1988) refers to as exclusive rights is noted in the *Scope of Practice for Academic Nurse Educators* (NLN, 2005e) which serves to further establish academic nurse educators' jurisdiction of expertise. The achievement of exclusive rights through self-discipline, monopoly of practice, and control of professional training is guided by state boards of nursing regulations. Nursing program accreditation standards also serve to create a monopoly of practice and establish control over academic nurse educators' professional training.

Abbott (1988) asserts that prestige and power of academic knowledge assists with a profession's ability to sustain its jurisdiction. Three tasks are generally accomplished by a profession's academic knowledge system: legitimation, instruction, and research. Each of these affects the professional jurisdiction's vulnerability to outside intrusion (Abbott, 1988). Within the profession of nursing, academic knowledge relates to both the science of nursing and the science of nursing education. Within the past decade, a combination of internal and external forces has resulted in an increased focus on the development of academic knowledge related to the science of nursing education. Examples of these forces include an agenda promoting the preparation of academic nurse educators (NLN, 2002), the emergence of research-focused doctoral programs with a focus on nursing education, and the establishment of a specialty credential recognizing qualified academic nurse educators (NLN, 2005d).

The creation of the Core Competencies of Nurse Educators© (NLN, 2005a), the Scope of Practice of Academic Nurse Educators (NLN, 2005e), and the CNE credential also serve as a vehicle to differentiate professionals within nursing and to legitimize what academic nurse educators do and how they do it. This phenomenon is described by Abbott (1988) as "legitimation" (p. 194). Abbott (1988) contends that "cultural forces reshape professional knowledge, change the currency of legitimation, and build the universities within which professional knowledge and education are transformed" (p. 115). Other examples of these cultural forces include position statements (NLN, 2002, 2005f), the creation of the *Excellence in Nursing Education Model* © (NLN, 2006a), and the establishment of the Academy of Nursing Education (NLN, 2007b).

Abbott (1988) also articulates that two knowledge-change processes affect professions. These processes are growth and replacement whereby knowledge growth causes professions to subdivide "in order to maintain at a constant level the amount of knowledge a given professional must know" (Abbott, 1988, p. 179). As a result, professions lose portions of their jurisdictions as isolated areas of knowledge are identified. This phenomenon is apparent within the profession of nursing as evidenced by the NLNs efforts to "distinguish academic nursing education as a specialty area of practice and an advanced practice role within professional nursing" (NLN, 2012b, p. 2) via the creation of the CNE credential.

According to Abbott (1988), occupational groups control knowledge and skill either by technique, which is the application of knowledge, or by abstraction, which involves "decontextualizing knowledge from its direct application" (O'Connor, 2009, p. 273). Technique is something that can be delegated to others, while the abstraction of knowledge takes precedence over technique (Abbott, 1988). Abstraction must be compelling enough to lay claim to its work and status as a profession, as opposed to a craft (O'Connor, 2009). An example of a mechanism designed to require academic nurse educators to demonstrate their abstraction of knowledge is the establishment of the CNE credential, which requires the ability to decontextualize knowledge in order to successfully answer examination questions.

Abbott's (1988) system theory of the professions serves as a theoretical framework for this study which examines the knowledge possessed by academic nurse educators who voluntarily take the CNE examination. Just as Abbott (1988) posits that professions develop to fill vacancies and potentially change and evolve over time, the

importance of the role of the academic nurse educator has evolved via the attempts to make this a specialized area of practice. By examining the outcome data of academic nurse educators who took the CNE examination, this study will set out to determine the relationship between educational preparation and full-time experience on the demonstration of knowledge as it relates to the full scope of the faculty role. This evidence can serve to offer guidance for the educational and experiential qualifications required for employment as an academic nurse educator.

Definition of Terms

Academic nurse educator: A registered nurse who is employed to teach in a nursing program (Practical/Vocational, Diploma, Associate, Baccalaureate, Master's or Doctorate).

Candidate: An academic nurse educator who meets the CNE examination eligibility requirements and takes the CNE examination.

CNE examination: A specialty nursing certification examination designed to "evaluate the candidate's knowledge about the full-scope of the academic nurse educator role" (NLN, 2012b, p. 4).

Certification: "The voluntary process by which a non-governmental entity grants a time-limited recognition and use of a credential to an individual after verifying that he or she has met predetermined and standardized criteria" (Durley, 2005, p. 5).

Core competencies of Nurse Educators©: Eight competencies with 66 task statements as defined by the NLN (2005a).

Credential: Evidence demonstrated via certification.

Educational preparation: The highest degree earned by a CNE candidate. This may include a doctorate in nursing, a doctorate in another field, a master's degree in nursing education, or a master's degree in nursing without a nursing education focus (NLN, 2012a).

Formal preparation for the academic nurse educator or nursing faculty role: Possessing "a master's or doctoral degree in nursing with a major emphasis in nursing education *or* nine or more credit hours of graduate-level education courses" (NLN, 2012a, p. 3).

Full scope of the faculty role: Responsibilities of full-time academic nurse educators as outlined in the Core Competencies of Nurse Educators© with Task Statements (NLN, 2005b).

Nursing faculty: A full-time academic nurse educator who teaches in a nursing program.

CNE eligibility criteria:

    Option A: "a master's or doctoral degree in nursing with a major emphasis in nursing education or nine or more credits of graduate-level education courses" (NLN, 2012a, p. 3) and "two years or more of full-time employment in the academic faculty role within the past five years" (NLN, 2012a, p. 3).

    Option B: "a master's or doctoral degree in nursing (with a major emphasis in a nursing role other than nursing education)" (NLN, 2012a, p. 3) and "four years or more of full-time employment in the academic faculty role within the past five years" (NLN, 2012a, p. 3).

Preparation for the academic nurse educator role: the educational background of an academic nurse educator. This may include a master's degree in nursing with or without a

focus in nursing education or a doctoral degree either in nursing or another field (NLN, 2012a).

Years of full-time experience: number of years of full-time faculty employment, as defined by the academic institution (NLN, 2012a).

Chapter Summary

Nursing education is faced with complex challenges which include preparing adequate numbers of nurses for practice in a complex healthcare system at a time when there is a shortage of qualified faculty. These challenges will not be resolved in the foreseeable future given the current lack of research, policy, or consensus among professional organizations regarding the requisite qualifications for the academic nurse educator role. It has been suggested that the effective and efficient preparation for this role is essential (Benner et al., 2010, NLN 2002) and can make a significant and positive impact on the education of the nation's nurses and national healthcare (NLN, 2002; Poindexter, 2008; SREB CCEN, 2002). In order to gain a better understanding of what constitutes the specialized knowledge and skill of diverse academic nurse educators working in a variety of employment settings, CNE examination outcome data of first-time test takers will be analyzed. Results of this study will identify the relationship between educational preparation for the academic nurse educator role and years of full-time faculty experience on knowledge related to the Core Competencies of Nurse Educators©. This research may be used to guide state board of nursing and accrediting bodies as well as those who design and administer graduate and doctoral programs developed to advance nursing education knowledge. It may also serve to identify faculty development needs of our nation's academic nurse educators, while informing those who

hire nursing faculty as well as those who are considering the role. Last, the results of this study will serve to provide a basis for future nursing education research, contributing to the building of the science of nursing education.

Chapter Two

Literature Review

The purpose of this quantitative study is to identify the relationship between CNE candidates' educational preparation and years of full-time faculty experience and first-time performance on the CNE examination. This examination, which is designed to "evaluate the candidate's knowledge about the full-scope of the academic nurse educator role" (NLN, 2012b, p. 4) includes two different eligibility criteria which are based on educational preparation and years of full-time experience as a faculty member. Although these criteria address the diversity found in the educational preparation of full-time nursing faculty, what is unknown is the relationship between educational and experiential qualifications and CNE candidates' demonstrated cognitive knowledge of the full scope of the faculty role as measured by first-time performance on the CNE examination.

In preparation for this research, a review of the literature exploring the early influences on the preparation of nurse educators, doctoral and master's programs in nursing, core competencies of nurse educators, specialty nursing certification, and the certified nurse educator credential was conducted. The search was organized using the databases CINAHL Plus with Full Text, Academic OneFile, ERIC (CSA), and Medline. Search terms included nurse educator, nursing faculty, certified nurse educator, nursing certification, faculty preparation, graduate nursing education, doctoral nursing education, core competencies of nurse educators, faculty qualifications, and a combination of these terms. In addition, relevant documents from professional nursing organizations including

position statements, accreditation guidelines, and reports were examined and the integration of these findings along with a synthesis of relevant research studies is presented.

Initial Influences on the Preparation of Academic Nurse Educators

The first reported organized attempt to prepare individuals in the United States to become nurses is attributed to the training of nurse attendants in 1798 by Dr. Valentine Seaman, a physician who practiced at New York Hospital (Hermann, 1997; Hotvedt, 1914; Jordan, 1927; Palmer, 1985). It was not until 1873 that nursing formally emerged as a system of work (Baer, 1985). At this time, three conflicting nursing education models emerged, each reflecting a particular philosophy of nursing (Baer, 1985).

The first model was an adaptation of the Florence Nightingale Model. It was initialized when three independent training schools affiliated with Bellevue, Massachusetts General, and New Haven Hospitals were established in 1873 (Baer, 1985; Scheckel, 2009; Stewart, 1931). Under Nightingale's educational model, nursing students were supposed to be kept under the control of the independent training school which was to be administered and directed by nurses, not physicians or hospital administrators (Stewart, 1931). The second model emerged in 1878, when the Linda Richards model was initiated at Boston Hospital. Under this model, nursing was subjected to medical control (Baer, 1985) and their education consisted of "twelve lectures and one year of hard work" (p. 35). The third model, the professional model, was championed by Isabelle Hampton Robb in 1899 (Baer, 1985). Robb advocated for the achievement of professional recognition of nurses and facilitated the offering of the first course for

nursing program graduates at Teachers College, Columbia University (Teachers College) (Baer, 1985).

The establishment of the American Society of Superintendents of Training Schools (Superintendents' Society) in 1893 marked the first formal effort to reform nursing education (Christy, 1975). Recognized as the first professional organization for nursing in the United States (NLN, 2007a), its primary purpose was to establish and maintain a universal training standard for nurses (Benson, 1993; Christy, 1975; Fondiller, 1980). In addition, the nursing leaders who established the Superintendents' Society believed that in order to establish uniformity in training schools it was necessary to appropriately prepare *nursing teachers* (Anderson, 1991; Nutting, 1907; Robb, 1900). Their vision resulted in the first attempt to educate graduates of hospital training programs for advanced roles in teaching and administration.

In 1899, nursing leaders at the Superintendents' Society designed a course of study which was offered at Teachers College within the Department of Domestic Science (Baer, 1985; Roberts, 1921; Scovil, 1901). Despite the fact that it was established as an experiment, this offering was significant because it placed the education of nurses into an institution of higher learning (Fondiller, 1980; Kitchens, 1985; Logan, 1921). Although an expected outcome of this program was to improve the training provided in hospital training schools, it also served to advance the profession by preparing nurses so that they were qualified to teach at the collegiate level (Gosline, 2000).

Ongoing support for the need to improve the education of nurses and the concomitant advancement of the preparation of nurse educators was offered by comprehensive, landmark nursing education studies published between 1923 and 1948.

The Goldmark Report (Goldmark, 1923), which was commissioned by the Rockefeller

Foundation, initially set out to investigate the appropriate training of public health nurses

and expanded to include the investigation of the training of all nurses. Final

recommendations offered in this report included separating nurses' training from hospital

management, strengthening university schools of nursing, and improving the instruction

offered to nursing students (Gebbie, 2009).

  The Burgess Report (Burgess, 1928), conducted by the Committee on the Grading

of Nursing Schools, further supported nursing education reform and the importance of the

appropriate preparation of nurse educators. The purpose of this comprehensive survey of

the nursing profession was to analyze its supply and demand. Final recommendations

included the need to place nursing education under the direction of nurse educators, not

hospital administrators, and the need for developing a comprehensive educational

philosophy (American Journal of Nursing, 1928; Scheckel, 2009).

  The Brown Report (Brown, 1948), supported by the Carnegie Corporation, also

advocated that registered nurses receive their education in institutions of higher learning

(Gebbie, 2009). In addition, this report articulated its agreement with the principles

outlined by Association of Collegiate Schools of Nursing regarding the need for "well-

organized, competent faculty, adequate in number to carry out effectively the educational

program offered" (Brown, 1948, p. 159). The Brown Report (Brown, 1948) also

discussed the trend toward making the master's degree the minimum qualification to

teach, however it did not specify whether a master's in nursing should be created and

offered. In addition, this report warned that the availability of nurses who are adequately

prepared as faculty and available to staff current and future schools was a critical problem faced by the profession (Brown, 1948).

In summary, the formal establishment of nursing education programs articulated the need for qualified faculty. Events that initially influenced the preparation of nurse educators included the founding of the first professional nursing organization, the introduction of nursing courses in a university setting, and findings presented in comprehensive nursing education studies (Brown, 1948; Burgess, 1928; Goldmark, 1923). Recommendations such as the need to place nursing education under the direction of nurses (Burgess, 1928; Goldmark, 1923), the need for competent faculty (Brown, 1948), and the establishment of advanced education for nurse educators (Roberts, 1921), are examples of ways in which the case was being made that those who teach nursing are specialized professionals within the profession and should receive the necessary education to fulfill these responsibilities.

Doctoral and Master's Programs in Nursing

Doctoral Programs in Nursing

Early leaders in nursing education asserted that the development of nursing faculty required significant consideration given their role in shaping the future professional status of nursing (Titus & Huey, 1936). Bailey (1936) contended that nurse educators were pioneers who practiced two professions—teaching and nursing—and in order to adequately fulfill these roles it was important that they receive an education and not just training. In 1924, Teachers College offered the first doctoral program for nurses, an education doctorate (EdD). The focus of this degree was to prepare teachers of nursing and to develop nursing leaders (Robb, 2005; Scheckel, 2009).

The next established doctoral program for nurses was a PhD in nursing. Developed in 1934 at New York University, this doctoral degree was designed to focus on clinical research (Megginson, 2010; Robb, 2005). It took two decades before the second PhD program in nursing was offered at the University of Pittsburg. The program was designed to focus on research in maternal and child nursing (Megginson, 2010; Robb, 2005).

Additional differentiation in doctoral nursing education programs emerged in 1960 at which time Boston University established a professional doctorate, the doctor of nursing science (DNSc). Similar doctoral programs were established by other colleges and universities which conferred either a DNSc, a doctorate of nursing science (DNS), or a doctorate of science in nursing (DSN) (AACN, 2010a). The initial purpose of this degree was to prepare nurses for advanced, doctoral level work in clinical practice while also requiring scholarly research (Marriner-Tomey, 1990; Robb, 2005). Over time, these degrees have been considered equivalent to a PhD (AACN, 2004; McEwen & Bechtel, 2000; Scheckel, 2009) and since 2008, six institutions have officially converted an earned DNSc, DNS, or DSN to a PhD (AACN, 2010a).

One criticism of the research doctorate is that this program is not geared toward the preparation of master teachers, despite the fact that the many graduates of these programs assume faculty roles (Adams, 2002; Anderson, 2000; Edwardson, 2004; Fitzpatrick, 2001). There has been expressed concern regarding the mismatch between doctoral education and the knowledge and skills required by faculty to function effectively in their role (Adams, 2002). One potential outcome of this disparity is that it may set faculty up for failure (McKenna, 2005) given that these skills are expected of

those who fill the faculty role (Anderson, 2000; Halstead, 2007; NLN, 2002). To help

overcome this challenge, it has been recommended that nurse educators employed in

academic settings must know about teaching, learning, evaluation, curriculum

development, program outcome assessment, and effectively functioning in an academic

institution (NLN, 2002). It has also been recommended that teaching experiences

(Anderson, 2000) and preparation in teaching (AACN, 2010b), pedagogies, and

educational methods be incorporated into nursing doctoral programs (AACN, 2008).

Consistent with these recommendations, several PhD in nursing education

programs have recently emerged; however, their identification is not easily obtained. A

review of published doctoral program listings (AACN, 2010b), and professional nursing

organization websites (AACN, 2011b; NLN 2011d) all failed to provide specific

information indicating which PhD programs focus on nursing education. Entering the

term *PhD in Nursing Education* into the meta search engine MetaCrawler®, did reveal

the availability of seven programs which are listed in Appendix D. Review of these

programs' websites revealed that their purpose in offering the PhD in nursing education

is to prepare nurse educators, develop leaders in nursing education, conduct nursing and

higher education research (Nova Southeastern University [NSU], 2011; University of

Northern Colorado, 2011; Villanova, 2011), and to help alleviate the nursing faculty

shortage (Capella University, 2011; NSU, 2011; Villanova, 2011). Capella University

(2011) was the only program that specifically mentioned alignment of their doctoral

program curricula with the Core Competencies of Nurse Educators©.

Other available nursing doctoral options focus on clinical expertise and include

the nursing doctorate (ND), the doctor of nursing practice (DrNP) and the DNP

(Scheckel, 2009). At present, the predominant nursing practice doctorate is the DNP. This degree has been offered since 2005 and has been identified by AACN (2004) as the standard for APN education.

Despite its classification as a practice doctorate, it has been suggested that those with an earned DNP may serve as nursing faculty (AACN, 2006; Loomis, Willard, & Cohen, 2007), which has caused considerable controversy and contrasting opinions within the nursing profession (Chase & Pruitt, 2006; Cronenwett et al., 2011; Dracup, Cronenwett, Meleis, & Benner, 2005; Dreher, Donnelly, & Naremore, 2006; Fulton & Lyon, 2005; Hathaway et al., 2006; Malone, 2011; Meleis & Dracup, 2005; NLN, 2005f, 2007d; Silva & Ludwick, 2006; Webber, 2008). Cited limitations of the DNP degree include a curriculum design that does not include coursework related to educational theory, pedagogy, educational theory, evaluation, and academic role issues (Malone, 2011), and the perception that these individuals are not educationally prepared to allow for full participation in the academy (Chase & Pruitt, 2006). Because DNP curricula have less emphasis on theory, research methodology, and different dissertation requirements (AACN, 2004), those with a DNP degree are typically not considered qualified to serve on dissertation committees or substantially contribute to the education of nurses pursing a PhD (P. Dittman, personal communication, November 22, 2011). Furthermore, those with an earned DNP generally do not possess a history of independent research or have the educational experience to socialize doctoral students as research scholars, which are also requisite competencies for serving as faculty in a PhD nursing program (AACN, 2010b).

In summary, since their emergence in 1934, doctoral nursing programs have essentially focused on nursing research, clinical practice, or a combination of both. This

varied evolution of doctoral nursing education gives evidence to the existence of philosophical differences within the nursing profession regarding the purpose of doctoral nursing education, the results of which influence the capacity to build the science of nursing or nursing education (Adams, 2002; AACN, 2008; Broome, 2009; Hathaway et al., 2006; NLN, 2005f; National Organization of Nurse Practitioner Faculties, 2006). Just as there are multiple pathways to registered nursing licensure, doctoral preparation also provides different educational paths (Chase & Pruitt, 2006; Sheckel, 2009) all of which may possibly lead to a position in academe. What is currently unknown and has not been formally investigated is the relationship between educational preparation and demonstrated knowledge of the full scope of the faculty role, as measured by first-time performance on the CNE examination.

Master's Programs in Nursing

Graduate education was originally established in response to the need for the advanced preparation of nurses who would serve as both hospital supervisors and teachers of nursing students (Baer, 1985; Gosline, 2000; Roberts, 1921; Scovil, 1901). Similar to doctoral education, its establishment was also slow to evolve. Prior to 1955, nurses who earned a master's degree were educated in another discipline (Scheckel, 2009) due to the lack of qualified nursing faculty to teach at the graduate level (Gosline, 2000).

The first reported program to actually confer a master's degree in nursing was developed at Rutgers University in 1955. It was supported by a National Institute of Mental Health grant and focused on psychiatric nursing (Rutgers College of Nursing, 2010). Nationwide, what followed for the next 15 years was the offering of graduate

nursing programs that primarily focused on teaching and administration, otherwise known as *functional role preparation* (Fitzpatrick & Heller, 1980; Kitchens, 1985; Oermann & Jamison, 1989; Princeton, 1992).

In 1965, the ANA released its landmark position statement that promoted the baccalaureate degree in nursing (BSN) degree as the requirement for entry into nursing practice (ANA, 1965). As a result, the need for master's prepared nurses intensified. In 1969 and 1978, the ANA released its *Statement on Graduate Education in Nursing*, which advocated for the preparation of clinical nurse specialists and the advancement of nursing theory and science (ANA, 1978). This statement served to change the focus of master's degree programs in nursing from teaching and administration to advancing clinical knowledge expertise (Davis et al., 1992; Fitzpatrick & Heller, 1980; Kitchens, 1985; Oermann & Jamison, 1989) and is an educational paradigm shift that has been debated, without resolution, for more than 40 years (AACN, 2011d; Kitchens, 1985; McKay, 1971; McLane, 1975; NLN, 2002; Ruland & Leuner, 2010; Zungolo, 2004).

Early studies investigating trends in graduate education in nursing (Grossman, 1972; McKevitt, 1986; Oermann & Jamison, 1989) demonstrate this curricular paradigm shift. For example, although there was a 50% increase in the number of graduate nursing programs established between 1963 and 1972 (Grossman, 1972) and another 46% increase between 1979 and 1984 (McKevitt, 1986), these programs were found to focus on clinical specialization (Grossman, 1972; McKevitt, 1986; Oermann & Jamison, 1989). According to Grossman (1972), graduate programs that did focus on education were found to be varied and revealed a lack of agreement regarding the essential preparation for these roles. By 1992, it was reported that less than 50% of NLN-accredited master's

degree programs in nursing offered nursing education as an area of study (Bachman, Kitchens, Halley, & Ellison, 1992) and in 1995 only 1.6% of graduate nursing students were reportedly enrolled in nurse educator programs (Ruland & Leuner, 2010).

The declining trend in the number of graduate programs designed to prepare nurse educators slowly began to reverse in 1995. Ruland and Leuner (2010) reported that by 2009, the percentage of total graduate nursing students enrolled in nurse educator programs increased to 18% compared to 1.6% in 1995. Additionally, 63% of institutions offered nurse educator programs compared to only 33% in 1996. According to Ruland and Leuner (2010), the increase in the number of graduate nurse educator programs and students is a trend that does not appear to be slowing.

A review of the literature reveals that nursing education studies conducted over the past four decades have offered varied curricular recommendations for master's in nursing programs. For example, Donley, Jepson, and Perloff's (1973) survey of nurses who earned a master's degree with a focus on clinical nursing resulted in the recommendation that graduate nursing programs should offer a blend of teaching, administration, and clinical practice. McLane's (1975) exploration of the core competencies of master's prepared nurses resulted in the recommendation that all master's prepared nurse educators should be clinical experts and all master's in nursing curricula should include theories of learning and instruction, teaching strategies, evaluation, and use of technology. McLane (1975) did acknowledge that this recommendation placed a burden on curriculum developers because of the need for designing a master's in nursing program capable of preparing nurse educators for the dual role of practitioner and educator. Similarly and more recently, Gilbert-Palmer (2005)

recommended the modification of advanced practice nursing (APN) curricula to include nurse educator skills in an effort to demystify the nursing faculty role and encourage more APNs to consider a career as an academic nurse educator.

Studies by Donley et al., (1973), Gilbert-Palmer (2005), and McLane (1975) support the need for advanced clinical expertise combined with some graduate-level education courses. Other studies support the need for curricula to include opportunities to assist future nursing faculty to become a member of the academy (Choudhry, 1992; Davis et al., 1992; Davis & Williams, 1985; Hermann, 1997; Ruby, 2000; Salminen, Melener, & Leino-Kilpi, 2009; SREB CCEN, 2002). For example, there is evidence of longstanding recommendations that master's programs designed to prepare nurse educators should include a socialization process (Choudhry, 1992; Davis & Williams, 1985; Ruby, 2000); role development in the areas of teaching, research, and service requirements (Davis et al., 1992; Davis & Williams, 1985; SREB CCEN, 2002); and the incorporation of a variety of practical teaching experiences (Davis et al., 1992; Hermann, 1997; Salminen et al., 2009). The need for the implementation of these curricular recommendations is further evidenced in research which investigated the transition from expert nurse clinician to novice nurse educator. Specifically, these studies consistently identified that the lack of formal preparation for the faculty role is perceived as a challenge to the successful transition into the new role of academic nurse educator (Anderson, 2006; Dempsey, 2007; McDonald, 2004; Schoening, 2009; Schriner, 2004; Siler & Kleiner, 2001).

Despite the number of studies recommending formal preparation for the nursing faculty role (Barta, 2010; Choudhry, 1992; Davis et al., 1992; Higbie, 2010; McDonald,

2004; Ruby, 2000; Schoening, 2009; Schriner, 2004; Siler & Kleiner, 2001; SREB CCEN, 2002; VanBever Wilson, 2010) some studies have revealed negative or insignificant findings regarding the effectiveness of graduate programs designed to prepare nurse educators. For example, Oermann and Jamison's (1989) investigation of the content offered in master's programs in nursing identified that not all graduate programs designed to prepare nurse educators provided the requisite content for the teaching role. Other studies found that graduate programs were not perceived as preparing graduates for the role. A qualitative study by Young (1999) revealed that some of the novice nurse educators interviewed did not feel prepared to teach despite having received graduate preparation for the teaching role. Similarly, Dempsey's (2007) study of Irish nurse clinicians who transitioned to the academic nurse educator role revealed their master's program did not adequately prepare them for practical aspects of teaching or the application of theoretical content despite taking education courses.

Nurse educator competency research by Davis et al. (1992) revealed that novice nurse educators reported that formal preparation for the role was the least helpful compared to informal learning, experiential learning, mentoring, and continuing education. Hermann's (1992) study of nursing instructors' view of clinical teaching, revealed no significant difference in teaching strategies or perceived barriers to clinical instruction based on a nursing faculty member's educational preparation for the teaching role. Similarly, Kirchoff's (2010) investigation of the perceived competencies of nurse educators revealed no significance between those with a formal preparation for the academic nurse educator role compared to those whose graduate degrees focused on the advanced practice role. In contrast to these findings are results obtained in Gilbert-

Palmer's (2005) investigation of existing APNs' perceived level of competence in their ability to fulfill the Core Competencies of Nurse Educators©. The study revealed that despite lacking formal preparation for the nurse educator role, APNs felt competent in five of the eight core competences as a result of their clinical experience and graduate preparation as an APN.

Reasons for research findings that indicate master's programs in nursing education are not perceived as helpful for those fulfilling the academic nurse educator role may possibly be explained by Ruland and Leuner's (2010) analysis of master's programs designed to prepare nurse educators. This descriptive study revealed a lack of curricular guidance for graduate programs designed for nurse educators despite the availability of the Core Competencies of Nurse Educators©, the CNE credential, and the *Essentials of Master's Education for Advanced Practice Nursing* (Master's Essentials) (AACN, 1996). The newly revised Master's Essentials (AACN, 2011a) is described as a set of national standards that serve as the "core for all master's programs in nursing" (p. 3), that specifically "does not address preparation for specific roles, which may change and emerge over time" (p. 3). The Master's Essentials (AACN, 2011a) defines the nurse educator as a "direct care role" (p. 8), which requires graduate students preparing for this role to take course work in the areas of "physiology/pathophysiology, health assessment, and pharmacology" (p. 8) in addition to receiving "preparation across all nine Essential areas, including graduate-level clinical practice content and experiences" (p. 6).

Although guidance for the development of clinical nursing expertise is clearly delineated in the Master's Essentials (AACN, 2011a), the need for exposure to all eight of Core Competencies of Nurse Educators© is not fully articulated. The Master's

Essentials (AACN, 2011a) does indicate that "programs preparing individuals for the nurse educator role should include preparation in curriculum design and development, teaching methodologies, educational needs assessment, and learner-centered theories and methods" (p. 6). However, what is not referenced is the need for the development of requisite nurse educator competencies pertaining to use of assessment and evaluation strategies, evaluation of program outcomes, functioning within the academic environment, (NLN, 2005e, 2005b), scholarship (Boyer, 1990; NLN, 2005e, 2005b), and research (Adams, 2002; Boyer, 1990; SREB CCEN, 2002). Given that the purpose of the Master's Essentials (AACN, 2011a) is to serve as the "core for all master's programs in nursing" (p. 3) combined with the fact that a master's degree in nursing is the highest credential earned by the majority (67%) of full-time nursing faculty (NLN, 2009b), it could be considered problematic that the standards established by AACN (2011a) for graduate education emphasize the advanced development of clinical expertise and only recommends limited content relevant to the nurse educator role.

According to Ruland and Leuner (2010) and VanBever Wilson (2010), accreditation guidelines presented by the NLNAC (2008) and CCNE (2009) do not specifically guide the development of graduate nursing education programs. These two nursing program accrediting bodies reinforce the idea that the design of graduate education places value on clinical expertise over teaching expertise even as it relates to faculty preparation for the role (Fitzpatrick & Heller, 1980; Grossman, 1972; McKevitt, 1986; Oermann & Jamison, 1989; Zungolo, 2004). For example, NLNAC (2008) articulates the need for faculty to maintain expertise in the area of teaching responsibility, but the faculty degree requirements do not specify the need for master's or doctoral

preparation with a focus on nursing education. CCNE (2009) accreditation guidelines

require faculty to be academically and experientially "prepared for the areas in which

they teach" (p. 11), but academic preparation for the faculty role is outlined as "degree

specialization, specialty coursework or other preparation sufficient to address the major

concepts included in courses" (p. 11) taught by the faculty member. Furthermore, CCNE

lists the "ongoing development in pedagogy" (CCNE, 2009, p. 11) as an example of a

way in which the parent institution can provide and support faculty rather than making

this a requirement to maintain a teaching role.

In summary, as was the case with the development and evolution of doctoral

nursing education, epistemological differences exist within the nursing profession

regarding the preparation of academic nurse educators at the master's level. The focus of

master's in nursing programs has shifted from teaching and administration to advancing

clinical knowledge expertise. Presently, the NLN (2002, 2005b, 2005e, 2005a, 2006a)

and the SREB CCEN (2002) are the only two professional nursing organizations

advocating that increased attention should be paid to the competencies specific to the

academic nurse educator role. Recent commentary regarding the preparation of academic

nurse educators by Benner et al. (2010) articulates gaps in the quality of teaching

development and the need for profound changes in the preparation of nurse educators.

Despite this, the newly revised Master's Essentials from AACN (2011a) delineates the

need for master's program graduates to possess "broad knowledge and practice expertise

that builds on entry level competency" (AACN, 2011c, para. 8) without a clear

expectation for the development of pedagogical expertise for those preparing for careers

in academe. To date, recommendations by professional nursing organizations regarding

the educational preparation of academic nurse educators have not been supported by research. An outcome of this study will provide information about the impact of educational preparation and possessed knowledge about the full scope of the academic nurse educator role as demonstrated by first-time performance on the CNE examination.

Core Competencies of Nurse Educators

With the development of graduate nursing education programs emerged the need for establishing common core competencies for master's prepared nurses. The need for this competency development was identified in the literature as early as1952; however, it appears that further interest in the creation of these competencies did not resume until the early 1970s (McLane, 1978). During this 20 year period, recommendations were made for the establishment of a common core of graduate nursing courses and the need for the delineation and differentiation of roles for nurses prepared at the master's and doctoral level (McLane, 1975). Despite these recommendations, there was a lack of consensus regarding graduate nurses' purpose, function, or the requisite preparation for the role (McLane, 1975, 1978).

An early attempt at competency development for nurses prepared at the graduate level is noted in research conducted by Gerhart (1973) who focused on the identification of competencies of nursing directors of junior colleges. The complexity of this role was described by Gerhart (1973) who asserted that nursing program administrators were required to navigate both the college and health care environments while promoting both general and specialized vocational nursing education. The literature does not reveal any further discussion regarding the use or ongoing development of the competencies developed by Gerhart (1973).

The second noted attempt at competency development for nurse educators was performed by Choudhry (1992) and Davis et al. (1992). These researchers conducted independent studies in order to define competencies specific for the novice nurse educator role. Choudhry (1992) identified five competencies which were listed as the *teacher role*, *practice role*, *research role*, *service/governance role*, and *role for personal and professional growth*. Davis et al. (1992) identified three competencies, *the teacher*, *service*, and *research role*. Although reference to these competencies is found in the literature, their adoption by a professional organization or academic institution is not noted.

The next major attempt to create nurse educator competences occurred in 2002 at which time the SREB CCEN established and validated 35 competency statements "in response to the growing concern for adequate numbers of well-prepared nurse educators" (SREB CCEN, 2002, p. 4). When developing these competencies, SREB CCEN (2002) made the assumption that a nurse educator was a skilled healthcare provider who met professional nursing standards and possessed graduate preparation as advanced generalist or specialist. The final competency statements related to the *teaching*, *scholarship*, and *collaboration* roles required of academic nurse educators who teach in all program types (SREB CCEN, 2002). As a result of this competency development, the SREB CCEN (2002) recommended that graduate programs must review their curricula in order to integrate nurse educator competencies. Davis, Stullenbarger, Dearman, and Kelley (2005) later advocated for the use of the nurse educator competencies developed by the SREB CCEN (2002) in the development of a competency-based graduate nursing program

curriculum. Since their development, adoption or widespread use of these competencies by academic institutions or nursing faculty is not noted in the literature.

The most recent research that resulted in academic nurse educator competency development began in December 2001, when the NLN began its work on developing competencies for nurse educators with the meeting of the *Think Tank on Graduate Education Preparation for the Nurse Educator Role* (Halstead, 2007). Members of the Think Tank developed the position statement, *The Preparation of Nurse Educators* (NLN, 2002), an initial list of nurse educator competencies, and charged the *NLN's Task Group on Nurse Educator Competencies* to complete this work (Halstead, 2007). The task group, chaired by Dr. Judith Halstead and staffed by the NLN's Senior Director of Professional Development, Dr. Mary Anne Rizzolo, conducted an extensive review of the literature related to educator competencies. This work was posted on the NLN website for public comment (M. Rizzolo, personal communication, April 1, 2010) and the final version was published on the NLN website in 2005 (NLN, 2005b).

The final Core Competencies of Nurse Educators© consist of eight core competencies *(facilitate learning, facilitate learner development and socialization, use assessment and evaluation strategies, participate in curriculum design and evaluation of program outcomes, function as a change agent and leader, pursue continuous quality improvement in the nurse educator role, engage in scholarship, and function within the educational environment)* and 66 task statements intended to exemplify the knowledge, skills, and attitudes required of academic nurse educators (NLN, 2005b). Subsequently, Halstead (2007) compiled the synthesis of the literature that was produced by the *NLN's Task Group on Nurse Educator Competencies,* along with "gaps in the body of

knowledge about educator competencies" (Halstead, 2007, p. 13) and research priorities related to each competency in her book, *Nurse Educator Competencies: Creating an Evidence-Based Practice for Nurse Educators* (Halstead, 2007). A comparison of the various nurse educator competences that have been developed over the past twenty years is presented in Appendix E.

Since their development, the Core Competencies of Nurse Educators© have been applied in a variety of ways. Specifically, the task statements contained within these core competencies were used to create a national practice analysis of the academic nurse educator (Fabrey & Walla, 2005), the results of which were used to develop the CNE examination detailed test blueprint (Halstead, 2007; Ortelli, 2006). In addition, these competencies reportedly serve to guide the development of graduate programs that focus on nursing education (Halstead, 2007) and their incorporation into graduate curricula has been recommended by independent researchers (Higbie, 2010; Kalb, 2008; Ramsburg, 2010; VanBever Wilson, 2010). The Core Competencies of Nurse Educators© have also served to define the roles and responsibilities of academic nurse educators who teach in all types of nursing programs within various educational settings (Halstead, 2007), and are the focus of nursing education research (Gilbert-Palmer, 2005; Higbie, 2010; Kirchoff, 2010; Poindexter, 2008; Ramsburg, 2010; VanBever Wilson, 2010). These research studies are relevant to this study's investigation of CNE examination outcome data given that the CNE detailed test blueprint (NLN, 2005b) is based on the Core Competencies of Nurse Educators© with Task Statements (Halstead, 2007; Ortelli, 2006).

The first noted published study related to the use of the Core Competencies of Nurse Educators© was conducted by Gilbert-Palmer (2005) who investigated APNs' perceived acquisition of these competencies. Other research studies associated with the Core Competencies of Nurse Educators© have focused on deans' and directors' minimal and preferred qualifications and competencies of novice nurse educators (Poindexter, 2008), nurse educators' perceived attainment of the core competencies (Higbie, 2010), the perceived practical application of the core competencies (Ramsburg, 2010), and the relationship between formal preparation for the nurse educator's role on perceived knowledge of the core competencies (Kirchoff, 2010). One quasi-experimental, pretest-intervention-posttest design study was conducted by VanBever Wilson (2010) who had 30 nursing faculty members rate their perceived knowledge of the Core Competencies of Nurse Educators© before and after attending a workshop designed to teach participants about the core competencies.

Key findings of these studies reveal noteworthy implications. For example, Poindexter (2008) observed that deans and program directors expected entry level nurse educators to possess competent to proficient levels within each of the eight core competency domains prior to assuming a faculty position in a prelicensure nursing program. Findings by Higbie (2010) and Ramsburg (2010) offer insight about the perceptions of academic nurse educators from various program types with various educational backgrounds. Data obtained by both researchers (Higbie, 2010; Ramsburg, 2010) revealed that faculty with doctoral degrees had an increased number of years of teaching experience. In addition, these study participants reported higher levels of perceived competence in each of the eight competency domains.

These findings are in contrast to Gilbert-Palmer's (2005) research which revealed that APNs felt competent in five of the eight competencies despite having no formal preparation for the academic nurse educator role or teaching experience. According to Gilbert-Palmer (2005), APNs reported that they felt competent in their ability to facilitate learning, facilitate learner development and socialization, use assessment and evaluation strategies, pursue continuous quality improvement in the nurse educator role, and engage in scholarship, but did not perceive themselves to be competent in their ability to participate in curriculum design and evaluation of program outcomes, function as a change agent and leader, or function within the educational environment.

Although some findings observed by Higbie (2010) and Ramsburg (2010) were similar, other findings by these two researchers are conflicting. For example, Higbie (2010) observed that nursing faculty who had more than one semester of formal coursework in curriculum design, testing and measurement, and teaching strategies, reported higher levels of perceived competence in each of the eight competency domains. Conversely, Ramsburg (2010) found no significant difference in skill acquisition based on professional development that focused on curriculum and instruction. Furthermore, Ramsburg's (2010) study revealed that nursing faculty participants perceived themselves to be *proficient* in each of the eight core competencies, whereas Higbie's (2010) study indicated that nursing faculty only perceived themselves to be proficient in four of the core competencies (facilitate learning, facilitate learner development and socialization, use assessment and evaluation strategies, and pursue continuous quality improvement in the academic nurse educator role).

Of the studies which investigated the Core Competencies of Nurse Educators©, Kirchoff's (2010) investigation of newly hired academic nurse educators most closely relates to this researcher's study. Specifically, Kirchoff (2010) compared the perceived competencies of novice nurse educators to the perceived competencies of experienced nurse educators. Kirchoff (2010) defined novice nurse educators as those with "one year or less of previous teaching experience" (p. 13) and experienced nurse educators as those with "greater than one year of previous teaching experience" (Kirchoff, 2010, p, 12). Additionally, Kirchoff (2010) compared the perceptions of those with an earned master's degree in nursing education compared to the perceptions of those with an earned master's degree in advanced practice. Kirchoff's (2010) analysis serves as a precursor to this study, which will also investigate the relationship between years of full-time faculty experience and formal preparation for the academic nurse educator role on candidates' actual demonstrated cognitive knowledge of the Core Competencies of Nurse Educators© as measured by first-time performance on the CNE examination. What Kirchoff (2010) discovered was that neither years of teaching experience nor educational preparation significantly impacted academic nurse educators' perceived attainment of the Core Competencies of Nurse Educators©, and that both novice and experienced nurse educators and those with and without formal preparation for the academic nurse educator role had similar perceptions regarding their perceived competence in each of the eight core competencies.

In summary, the development of nurse educator competencies gives formal recognition to the belief that the role of the academic nurse educator is a distinct specialized area of practice within the profession of nursing. These competencies serve to

give definition to the advanced practice role of the nurse educator; guide graduate and

doctoral program curricular development; outline plans for role development for novice

and experienced nursing faculty; and provide the public with evidence of how academic

nurse educators achieve the requisite knowledge, skill, and ability to perform in the role

(Halstead, 2007). The development of nurse educator competencies is consistent with

Abbott's (1988) system of the professions theory which asserts that the defining feature

of a profession is its defined expertise.

<div align="center">Specialty Nursing Certification</div>

Specialty Nursing Certification Definition and Attributes

The first nursing specialty certification program was introduced in 1945 by the

American Association of Nurse Anesthetists (American Association of Nurse

Anesthetists, 2012). In 1976, the ANA appointed an independent study committee to

evaluate the state of nursing accreditation, licensure, and certification (American Journal

of Nursing, 1979). One outcome was the following definition by the Committee for the

Study of Credentialing in Nursing, which defined certification as

> a process by which a non-governmental agency or association certifies that an
> individual licensed to practice a profession has met certain predetermined
> standards specified by that profession for specialty practice. Its purpose is to
> assure various publics that an individual has mastered a body of knowledge and
> acquired skills in a particular specialty. (p. 678)

Other relevant definitions for certification are offered by two professional bodies.

The National Organization for Competency Assurance, which is now known as the ICE,

is a membership organization for certification bodies (ICE, 2012) and has defined

professional certification as:

> the voluntary process by which a non-governmental entity grants a time-limited
> recognition and use of a credential to an individual after verifying that he or she

has met predetermined and standardized criteria. It is the vehicle that a profession
or occupation uses to differentiate among its members, using standards,
sometimes developed through a consensus driven process, based on existing legal
and psychometric requirements. (Durley, 2005, p. 1)

The ABNS is a professional organization for specific to specialty nursing certification (ABNS, 2009a). Established in 1991, the mission of ABNS (2009a) is to "promote the value of specialty nursing certification to all stakeholders" (American Board of Nursing Specialties, para. 2). ABNS defines certification as "the formal recognition of the specialized knowledge, skills, and experience demonstrated by the achievement of standards identified by a nursing specialty to promote optimal health outcomes" (ABNS, 2005, A position statement on the value of specialty nursing certification, para. 1).

As indicated in these definitions, certification differs from licensure, which is a mandatory process conferred by a governmental agency for the purpose of assuring the public of safe entry level practice (Schoon & Smith, 2000). Certification also differs from accreditation, which is "a voluntary, self-regulatory process by which non-governmental associations recognize educational institutions or programs that have been found to meet or exceed standards and criteria for educational quality" (NLNAC, 2008, p. 1). Last, certification differs from a certificate, which is a document that indicates completion of an educational offering, such as a workshop or continuing education offering, whose content is determined by the provider (Fordham & Martinez, 2005).

A review of the literature and professional nursing certification organizations reveals that the concept of specialty nursing certification has characteristic attributes (Ortelli, 2008a). Typically, it is a voluntary process; however, for advanced practice registered nurses (APRNs) it may be mandatory (Chornick, 2008). The reason for this is

the absence of a national licensure examination for APRNs, which leads boards of nursing to use certification as an assessment method to evaluate APRNs' competency and a prerequisite for practice (Chornick, 2008). When certification is voluntary, it does not provide a registered nurse additional legal rights, rather it grants title protection indicating that predetermined standards have been achieved (Ridenour, 2003).

Another attribute of certification is that it is conferred as a time-limited recognition (Ortelli, 2008a). A review of the most frequently conferred specialty nursing certifications (Wade, 2009) reveals that certification credentials are typically awarded for three to five years (American Association of Critical-Care Nurses Certification Corporation, 2011, 2012; ANCC, 2011; Competency and Credentialing Institute, 2011; Oncology Nursing Certification Corporation, 2012). Prior to the conclusion of the certification period, the certified nurse must fulfill the certification renewal requirements which typically include taking a multiple choice examination or demonstrating proof of engaging in professional development or continuing education activities (National Organization for Competency Assurance, 1996).

As part of the credentialing process, candidates are required to meet specifically outlined eligibility requirements (Cary, 2000; Raudonis & Anderson, 2002; Smolenski, 2005). Nursing certification organizations commonly require an active license as a registered nurse, defined practice requirements relevant to the certification specialty, and specified educational preparation relevant to the scope of the specialty nursing practice role (Ortelli, 2008a). Last, specialty nursing certification serves to validate and recognize registered nurses' specialized knowledge skill, experience, and expertise (ABNS, 2005; APRN Group Dialogue Group Report, 2008; NLN, 2012). This attribute distinguishes

certification from nursing licensure, which serves to assure the public that a graduate of a nursing program possesses the knowledge, skill, and ability to safely practice as an entry level professional (NCSBN, 2005).

Specialty Nursing Certification Research

The most recent available data reveal that nearly 500,000 registered nurses worldwide are certified by one of 39 organizations, offering 122 credentials (ABNS, 2009b). Despite the length of time that certification has been available and the number of registered nurses who are credentialed, it has been stated that "certification research is in its infancy with much of the certification data being inconsistent, culled from small or unique samples, or gleaned from studies with other methodological limitations" (Cary, 2001, p. 42). The *International Study of the Certified Nurse Workforce* (Cary, 2001), was the first study of its kind to contribute to the body of nursing certification knowledge. A random sample of 19,452 nurses from 23 certifying organizations in the U.S., its territories, and Canada studied certified nurses' demographic characteristics, practice, and attributed benefits and rewards of certification. According to Cary (2001) "almost all respondents reported that certification brought about at least one change in their practice" (p. 42). Based on this evidence, it was suggested that certification may provide the opportunity to practice in a manner that improved outcomes and further research was recommended (Cary, 2001).

A certification bibliography made available by ABNS (2011) reveals that specialty nursing certification research primarily focuses on descriptive studies (Cary, 2001; Ortelli, 2008b; Piazza, Donahue, Dykes, Griffin, & Fitzpatrick, 2006; Redd & Alexander, 1997; Wyatt & Harrison, 2010) and the results of role delineation studies

(Baghi, Panniers, & Smolenski, 2007; Barnsteiner, Wyatt, & Richardson, 2002; Becker, Kaplow, Muenzen, & Hartigan, 2006; Biel, Eastwood, Muenzen, & Greenberg, 1999; Niebuhr, & Muenzen, 2001; Ortelli, 2006; Villanueva, Thompson, Macpherson, Meunier, & Hilton, 2006). Within the past decade, seven studies investigating certified nurses and patient outcomes have been noted (Frank-Stromberg et al., 2002; Hart, Bergquist, Gajewski, & Dunton, 2006; Kendall-Gallagher & Blegen, 2009; Krapohl, Manojlovich, Redman, & Zhang, 2010; Nelson et al., 2007; Newhouse, Johantgen, Pronovost, & Johnson, 2005; Simonson, Ahern, & Hendryx, 2007) with the majority of these studies being published in only the past five years (ABNS, 2011). A criticism of certification research is the reported paucity of empirical evidence which supports the ability to make significant inferences about the impact of specialty nursing certification (Bekemeier, 2007; Cary, 2000; Frank-Stromberg et al., 2002) and the contention that specialty nursing certification research is often supported by nursing certification bodies (Bekemeier, 2007).

Within specialty nursing certification research, the perceived value of certification is the most replicated study. These studies used the Perceived Value of Certification Tool© (PVCT), an 18-item, Likert-type instrument developed by Gaberson et al. (2003). The original study, which investigated the perceptions of certified perioperative nurses, identified three factors which represented the value of certification—personal value, professional practice, and recognition by others (Gaberson et al., 2003). In addition, the study revealed that more than 90% of the participants agreed that certification enhances feelings of personal accomplishment, provides personal satisfaction, validates specialized knowledge, indicates professional growth and attainment of a practice standard, provides

evidence of professional commitment and a professional challenge, and enhances professional credibility (Gaberson et al., 2003).

Because this study was limited to perioperative nurses, Gaberson et al. (2003) recommended that additional research be conducted to study the perceived value of certification by nurses in other specialties as well as to "noncertified nurses, employers, professional colleagues in other health care disciplines, and patients" (p. 276). To that end, the PVCT has subsequently been used to study the perceived value of certified, noncertified, and administrative perioperative nurses (Byrne, Valentine, & Carter; 2004; Sechrist, Valentine, & Berlin, 2006); certified, noncertified, and infusion nurse managers (Biel, 2007); emergency room nurses (Grief, 2007); oncology nurses (Brown, Murphy, Norton, Baldwin, & Ponto, 2010); and certified nurses from 20 different nursing clinical specialties, noncertified nurses, and nurse managers (ABNS, 2006; Niebuhr & Biel, 2007). The repeated use of the PVCTs has consistently shown that regardless of status or role, certification is valued (Niebuhr & Biel, 2007).

Recommendations offered by researchers investigating the perceived value of certification commonly include the need for additional perception studies (Biel, 2007), the need for overcoming barriers to certification (Brown et al., 2010; Niebuhr & Biel, 2007), and the need for institutional support for certification (Biel, 2007; Brown et al., 2010). Some researchers investigating the perceived value of certification have also contended that certification has the potential to affect nursing excellence and influence patient safety and satisfaction (Byrne et al., 2004). Neither an analysis of specialty nurses' performance on certification examinations or recommendations for the conduct of

such research is noted in the literature. This finding is significant given that this research study will add knowledge to the specialty nursing certification research literature.

<div align="center">**The CNE Credential**</div>

Establishment of the CNE Credential

The CNE credential is one of the latest certifications to become available to registered nurses and is the only certification designed specifically for academic nurse educators (Ortelli, 2008b). Interest in certification for nursing faculty was initially identified in round three of a 1999 Delphi survey that asked whether the NLN should consider developing a certification program. Approximately two-thirds (67%) of the respondents reacted favorably and 48.6% indicated they would be interested in seeking certification (NLN, 2003).

As part of the ongoing exploration of the feasibility of creating a credential for nursing faculty, the NLN conducted a needs assessment in 2003. Two surveys were created and administered via e-mail. One survey was targeted to deans/directors/chairs of nursing programs and the other was targeted to nursing faculty. Results of the needs analysis revealed that 84% of deans and directors recognized the role of nurse educators as a specialty and 80% saw certified educators as beneficial to their programs and felt certification would motivate faculty to promote program excellence. Deans and directors indicated that certification is of particular importance because of the need to rely more on part-time and even full-time faculty who have not had formal preparation as educators. Of the deans and directors who responded, 64% indicated their interest in becoming certified. Of the faculty who responded, 92% considered the role of nurse educator as a

specialty, 81% did not hold any certification in nursing, and 76% expressed an interest in becoming certified (NLN, 2003).

The decision to move forward with the development of a certification program for academic nurse educators was approved by the NLN Board of Governors in May 2003. At that time, over 100 specialty-nursing certifications existed, but none of these focused on the academic nurse educator role (NLN, 2003). This initiative was supported by simultaneous work conducted at the NLN which focused on the development of the Core Competencies of Nurse Educators© (NLN, 2005b), which served to inform the CNE examination test blueprint (Halstead, 2007; Ortelli, 2006). The creation of the CNE examination was also consistent with the NLN's mission, which at that time was to promote "excellence in nursing education to build a strong and diverse nursing workforce" (NLN, 2011e, "National League for Nursing Revises Mission Statement," para. 1). In February 2011, the words "to advance the nation's health" (NLN, 2011e, "National League for Nursing Revises Mission Statement," para. 1) were added to the NLNs mission statement in response to the IOM's (2011) report recommendations contained in the *Future of nursing: Leading change, advancing health* (NLN, 2011d).

The CNE examination currently resides within the NLN's Academic Nurse Educator Certification Program (ANECP). It is developed, administered, supervised, and evaluated by the NLN Certification Commission (Commission) which is an "independent and autonomous body" (NLN, 2008a, p. 14) within the NLN. The Commission is solely responsible for all ANECP policies, decisions related to eligibility requirements, certification and recertification standards, and examination assessment instruments (NLN, 2008a, p. 14). The mission of the ANECP, is to "recognize excellence in the

advanced specialty role of the academic nurse educator" (NLN, 2012b, p. 2) and the

goals of CNE certification are designed to:

1. Distinguish academic nursing education as a specialty area of practice and an advanced practice role within professional nursing.
2. Recognize the academic nurse educator's specialized knowledge, skills, and abilities and excellence in practice.
3. Strengthen the use of core competencies of nurse educator practice.
4. Contribute to nurse educators' professional development. (NLN, 2012b, p. 2)

Both the mission and the goals of the ANECP are consistent with the stated

purposes of credentialing programs. Specifically, credentialing programs exist in order to

advance a profession, establish professional standards, and identify individuals with

specific knowledge and skill. Additionally, they provide the individual with a sense of

accomplishment and professional pride, and allow professionals to demonstrate

commitment to the profession and lifelong learning (Durley, 2005).

In order to sit for the CNE examination, candidates must meet the eligibility

criteria. Two pathways exist for eligibility and are based on years of full-time experience

and educational preparation (Appendix F). Criteria for Option A apply to academic nurse

educators who have formal educational preparation for the academic nurse educator role

(NLN, 2012a). Criteria for Option B apply to academic nurse educators whose

educational preparation is in a role other than nursing education (NLN, 2012a). It is

important to note that even though the CNE eligibility requirements refer to a doctoral

degree in nursing, when registering for the examination candidates are offered the

opportunity to indicate a doctoral degree in an area other than nursing. The experiential

and educational eligibility requirements reflect that the CNE credential is intended to

recognize expertise (NLN, 2012a), not serve as a mechanism for entry into the academic

nurse educator role. Furthermore, requirements for prior clinical practice experience are not included as part of the eligibility requirements.

CNE Research

To date, there is an absence of quantitative research regarding candidates' overall first-time performance on the CNE examination or first-time performance in each of the content areas. Existing published research pertaining to the CNE credential includes a descriptive study of the characteristics of candidates who took the CNE examination between 2005 and 2007 (Ortelli, 2008b). This study provides information about candidates' highest degree earned, primary teaching area, years of full-time experience, and projected retirement along with overall pass rate data.

A review of the literature reveals one study which limits the participants to those who have earned the CNE credential. Barta (2010) conducted a multiple case study to investigate the beliefs of CNEs in order to gain insight about the thoughts and actions underpinning their teaching practice. A stated outcome of this study was to obtain data that could be used to guide the effective preparation of nurses to become effective teachers. As a result of this study, Barta (2010) recommended the need for future research to compare differences between noncertified and certified nurse educators (p. 148).

Two other studies have included CNEs as participants. Ramsburg (2010) applied the *Dreyfus Skill Acquisition Model* to nurse educators' professional development, which resulted in a recommendation that additional research into the "skill acquisition levels of those having passed the Certified Nursing Educator exam" (p. 179) is needed. Higbie's (2010) investigation of the perceived levels of nurse educators' attainment of the Core Competencies of Nurse Educators© revealed that those who earned the CNE credential

rated their competency level higher than those who did not earn the credential. Furthermore, as a result of Higbie's research findings (2010), CNE preparation was recommended as a strategy to help increase academic nurse educators' competence in each of the core competencies.

In summary, the creation of the CNE examination is an example of an effort employed by a professional nursing education organization, the NLN, to establish the academic nurse educator role as a specialized area of practice with a jurisdiction of expertise. The CNE credential serves as a mechanism for asking "society to recognize its cognitive structure through exclusive rights" (Abbott, 1988, p. 59). The creation of this credential serves as a vehicle to differentiate professionals within nursing and to recognize the advanced specialty role of the academic nurse educator. Since its establishment in 2005, there has not been an analysis of the first-time performance of those who have taken the CNE examination. The outcome of this study will serve to fill this gap in the literature.

Chapter Summary

The purpose of this review of the literature is to support the need for the exploration of the relationship between educational preparation and years of full-time faculty experience on first-time CNE examination performance. A result of this literature review revealed recurring themes. Consistently noted was the identification of the need for formal preparation for the academic nurse educator role, a lack of consensus within the profession of nursing regarding the requisite preparation for the role, a lack of empirical evidence to guide the ongoing development of graduate and doctoral nursing education, and a lack of empirical evidence to support a formal recommendation for the

requisite educational and experiential qualifications to fulfill the academic nurse educator role. In addition, there is a lack of CNE outcome data analysis despite the fact that this examination has been available since September 28, 2005. Given the longstanding efforts to ensure the adequate preparation of nursing faculty (Brown, 1948; NLN, 2022; Robb, 1900; Roberts, 1921), the intent to establish academic nursing education as a specialty area of practice (NLN, 2005e), the call for the building of the science of nursing education (NLN, 2008b), and the shortage of qualified faculty (AACN, 2012a; NLN, 2010) it is relevant and necessary to understand academic nurse educators' demonstrated knowledge and the relationship their educational preparation and year of full-time experience has on their knowledge about the competencies that define their role.

Chapter Three

Methods

The purpose of this study is to examine CNE candidates' demographic characteristics of educational preparation and years of full-time faculty employment in order to determine whether a relationship exists between these independent variables and the dependent variables of first-time pass/fail performance as well as first-time performance in each of the six CNE examination content areas. This chapter describes the methodology used to conduct this study by outlining the research design, assumptions, setting, sampling plan, procedures, instrumentation, and data analysis plan. In addition, limitations of this study are presented.

Research Design

This quantitative study will employ a retrospective, multivariate, non-experimental design. A secondary analysis of existing CNE examination outcome data obtained directly from the NLN ANECP will be performed. As a result of using this design, the subjects in this study could not be randomly assigned to an experimental or control group and the independent and dependent variables were not manipulated. A benefit of conducting a secondary analysis is that it is an efficient and economical way to analyze outcome data in order to provide empirical findings (Polit & Beck, 2008). A potential disadvantage is that the researcher has no control over the data collection. As a result, the researcher is likely to lack the ability to assess the accuracy of the data, which may threaten validity (Magee, Lee, Guiliano, & Munro, 2006). With regard to the

existing data used for this study, this researcher was involved in the initial determination

of how demographic and score data would be collected and reported. Therefore, it was

possible for the researcher to recognize data inaccuracies and follow up with the NLN

ANECP for clarification.

A non-experimental design is considered a strong and useful method for

discovering new meaning and describing what exists (Coughlan, Cronin, & Ryan, 2007;

Trochim & Donnelly, 2007). This is appropriate for this study given that CNE outcome

data have not previously been analyzed. A limitation of this design is that it does not

contribute to the discovery of cause and effect (Trochim & Donnelly, 2007; Valente,

2003).

By conducting a correlational analysis, "the degree of relationship between two

variables" (Nunnelly & Bernstein, 1994, p. 120) is described. Considered less rigorous

than experimental studies (Creswell, 2008), correlational analysis "is useful in specifying

the form and degree of imperfect relationships among variables and constructs"

(Nunnally & Bernstein, 1994, p. 120). The independent variables under investigation in

this study are CNE candidates' educational preparation, as defined by CNE examination

eligibility Option A or B, and years of full-time faculty employment. The dependent

variables are CNE candidates' first-time performance on the CNE examination (pass/fail)

and scores earned in each of the six examination content areas.

In addition to conducting correlational analysis, regression analysis was also

conducted. The purpose of conducting these analyses is to "assess specific forms of the

relationship between variables" (Daniel, 2005, p. 410), with the overall objective of

predicting or estimating "the value of one variable corresponding to a given value of

another variable" (Daniel, 2005, p. 410). Specifically, estimations of the independent variables, educational preparation, and years of full-time faculty employment were made relative to CNE examination performance.

Research Assumptions

Research assumptions rely on the acceptance of principles "as being true based on logic or reason, without proof" (Polit & Beck, 2008, p. 748). For the purpose of this study, the following assumptions are foundational to this research:

- the Core Competencies of Nurse Educators© accurately reflect the knowledge, skill, and abilities required of academic nurse educator practice;

- a criterion referenced exam is able to measure the knowledge component of academic nurse educator competence;

- CNE candidates meet the eligibility requirements;

- CNE candidates answer demographic questions truthfully;

- the examination scores a CNE candidate receives are equal to his or her true ability plus some error attributed to the examination itself, examination conditions, or the examinee.

Setting

The participants included in this study consist of academic nurse educators (CNE candidates) who took the CNE examination between September 28, 2005 and September 30, 2011. This sample size was selected because it contains the first full six years of CNE examination outcome data. In addition, this sample included all data available at the time this research study was initiated.

Sampling Plan

Sampling Strategy

The sampling strategy for this study is a non-probability, convenience sampling of CNE candidates (study participants) who took the CNE examination between September 28, 2005 and September 30, 2011. Study participants represent all nursing program types (practical, diploma, associate degree, baccalaureate, master's, and doctoral) and possess a minimum of two years of full-time faculty experience. A weakness inherent in non-probability, convenience sampling is that it is considered weak with regard to external validity, which limits the generalizabilty of conclusions (Trochim & Donnelly, 2007).

Eligibility Criteria

Study participants must meet the CNE examination eligibility criteria, which were originally established by the NLN's Governance, Policy and Procedure Committee (GPPC) in 2005. This committee was established by the NLN in 2004 as a precursor to the NLN Certification Commission, which is the current body responsible for the CNE examination (NLN, 2008a). In preparation for the initial offering of the CNE examination, the GPPC was charged with creating policies and procedures, defining the scope of practice for academic nurse educators, and determining the eligibility criteria for the CNE examination (NLN, 2004).

Eligibility requirements were determined based upon a review of the results of the *2005 Academic Nurse Educator Certification Practice Analysis*, state board of nursing requirements for nurse educators, nursing program accreditation standards and criteria, and the NLNs position statement on the preparation of nurse educators (Ortelli, 2006). With regard to educational preparation, the GPPC determined that all CNE candidates

must possess a master's or doctoral degree in nursing. Furthermore, those who possess formal preparation for the faculty role, as outlined in Option A, are required to have two years of full-time faculty experience within the past five years. Candidates who do not possess formal preparation for the faculty role are required to have four years of full-time faculty experience within the past five years (Option B). Eligibility requirements for the CNE examination are presented in Appendix F.

Inclusion criteria. All CNE candidate records from September 28, 2005 to September 30, 2011 that were coded as first-time test takers are included in this study. In addition, records that include complete information about a candidate's years of full-time faculty employment, eligibility option (Option A or B), pass/fail status, and sub scores for each of the six examination content areas were included. The rationale for only including candidate records that contained these data is based upon the research questions guiding this study.

Exclusion criteria. All CNE candidates identified as *retesters* are excluded from this study. The reason for excluding these candidates is because the impact of retaking the CNE examination on subsequent CNE examination performance is unknown. Furthermore, the literature suggests that test scores tend to improve with repeat test administrations (Geving, Webb, & Davis, 2005; Raymond, Neustel, & Anderson, 2007). In addition, candidates whose files had incomplete data related to the independent variables (eligibility criteria, years of full-time faculty experience) and the dependent variables (pass/fail status, sub-scores for examination content areas 1-6) were excluded from the study.

Protection of Human Subjects

The data used for this study were supplied by the NLN ANECP, and permission

to use the data was provided by the parent organization, the NLN (Appendix B). In

addition, this study was approved by the Institutional Review Board (IRB) at NSU prior

to conducting the study (Appendix A). This study presents no foreseeable risks to the

participants given that the CNE outcome data provided by the NLN ANECP do not

contain any personal identifiers such as name, age, gender, racial group, or place of

employment.

Permission is granted by each candidate to use the data at the time of examination

registration as indicated in the *Certified Nurse Educator Candidate Handbook* (NLN,

2012b). Specifically, as a condition of registering for the CNE examination, all

candidates are required to read and acknowledge understanding of an agreement of

authorization and confidentiality, which includes language that states, "I understand and

agree that the NLN may also use anonymous and aggregate application and examination

data for statistical analysis" (NLN, 2012b, p. 14). To be included in this study,

participants must have completed the survey, which is part of the online registration

process.

Risks and Benefits of Participation

No gifts or honorariums were given to any study participant. There were no

anticipated risks to the participants given the anonymity of the data being analyzed.

Benefits of participation were limited to the knowledge gained about CNE examination

performance which is reported as aggregate data.

Data Storage

Confidentiality was maintained during the research process along with ensuring appropriate security efforts. CNE outcome data is maintained on this researcher's personal computer which is password protected and only used by and accessible to the researcher. Printed data are saved in a locked file cabinet in this researcher's home. All data will be securely maintained for three years, after which time the data will be shredded and computer files will be erased. Access to the data is limited to the researcher, members of the researcher's dissertation committee, and the NLN, who owns the data.

<p style="text-align:center">Instrumentation</p>

The instrument used in this study is the CNE examination, which is designed to evaluate full-time academic nurse educators' knowledge about the full-scope of the faculty role (NLN, 2012b). The examination was developed through a collaborative effort between the NLN ANECP and Applied Measurement Professionals, Inc. (AMP) (NLN, 2012b). An independent testing agency, AMP provides measurement services to certification organizations, government agencies, professional associations, and private industry (AMP, n.d.). In their work with the NLN ANECP, AMP assumes responsibility for the testing sites, examination security, administration, scoring, and statistical analysis, and maintaining an item bank of approved examination items (NLN, 2012b). The NLN is responsible for determining the CNE examination test blueprint, examination approval, establishing the passing standard, and determining the eligibility criteria.

The CNE examination is based on classical test theory which is a theoretical model that "collectively considers a pool of examinees and empirically examines their success rate on an item (assuming it is dichotomously scored)" (Fan, 1998, p. 357). In

classical test theory, the primary focus is on test-level information and not item-level information. The p value of an item indicates examinees' success and is used as the index for the item difficulty. The point biserial correlation coefficient is used to discriminate between higher ability examinees and lower ability examinees. A limitation of this theoretical model is that the observed score is sample dependent and the item difficulty and item discrimination are sample dependent (Fan, 1998).

The CNE examination consists of 150 multiple-choice items written at the recall, application, and analysis level. Each item contains four options, of which only one option is the correct answer. A maximum testing time of three hours is permitted for this linear, computer-based examination (NLN, 2012b). Because a linear examination is non-adaptive, it allows for the administration of a paper/pencil examination via a computer. It should be noted that two administrations of the CNE examination employed paper/pencil testing, not computer-based testing. The first paper/pencil testing was administered on September 28, 2005 to 213 candidates, and the second administration was to a group of eight candidates in September 2006. All computer-based testing occurs at testing centers located throughout the United States (NLN, 2012b).

Validity

With regard to testing, validity refers to "the degree to which all accumulated evidence supports the intended interpretation of test scores for the proposed purpose" (AERA et al., 1999 as cited in McDonald, 2007, p. 232). Validity is not a static property of the instrument, rather it refers to the ways in which accurate interpretations can be made about a test-taker's knowledge or ability (Oermann & Gaberson, 2009). In an effort to develop a construct and content-valid certification examination, the NLN, in

conjunction with AMP, administered a practice analysis survey designed to examine the practice responsibilities of full-time academic nurse educators. The administration of a practice analysis is considered to be an acceptable way to obtain empirical data about the knowledge and skills required for a profession (Kane, 1997). Practice analysis results were then used to develop the test specifications of the examination. Following this process is important because it is the link between practice analysis results and the development of test specifications, which provides the necessary evidence to support the validity of the certification examination scores (Kane, 1997).

In order to accomplish this essential link, the NLN established a Practice Analysis Committee (PAC) that was charged with developing, administering, and analyzing the *2005 academic nurse educator practice analysis* survey results. The PAC consisted of eight appointed academic nurse educators who represented the diversity found in academic nursing education with regard to ethnicity, geography, program type, and years of full-time faculty experience and educational preparation (Ortelli, 2006). To develop the survey instrument, PAC members reviewed resources that described the responsibilities of full-time academic nurse educators, including position descriptions from all program types, state board of nursing requirements for nurse educators, nursing program accreditation standards and criteria, and the Core Competencies of Nurse Educators©, which served as a primary resource (Halstead, 2007; Ortelli, 2006).

The *2005 academic nurse educator practice analysis survey* was administered to a sample population of academic nurse educators who were current NLN members as well as nonmembers with an e-mail address contained in the NLN membership database (Ortelli, 2006). Obtaining a sample from a professional association database is considered

a common and acceptable method for obtaining a valid population of sufficient size (Ortelli, 2006). To ensure adequate representation of the academic nurse educator profession, e-mail addresses were randomly selected from sub lists of academic nurse educators employed in practical nurse, diploma, associate degree, baccalaureate, master's, and doctoral nursing programs (Ortelli, 2006). When considering the data obtained from the practice analysis survey respondents, it is important to note that the sampling was considered representative of the academic nurse educator population and the response rate was considered appropriate (Fabrey & Walla, 2005). Detailed information about this survey's methodology, sampling, estimation of reliability, and results was reported by Ortelli (2006b).

Approximately 97% of the survey respondents indicated agreement that the practice analysis survey at least adequately addressed the responsibilities of the academic nurse educator (Ortelli, 2006). In addition, upon reviewing the survey results, members of the PAC agreed that the ratings obtained were consistent with descriptions in the literature about academic nurse educator work responsibilities along with their own professional judgments (Ortelli, 2006). To help ensure content validity, decision rules were established to determine which tasks should not be included on the detailed test blueprint. The purpose of eliminating specific tasks was based on the intent of ensuring that the examination reflected the responsibilities of CNE candidates (Ortelli, 2006). The outcome of evaluating the practice analysis survey results was the creation of CNE examination's detailed test blueprint (Appendix G) which is publically available in the *Certified Nurse Educator (CNE) Candidate Handbook* (NLN, 2012b). Definitions for each of the examination's six content areas are presented in Appendix H.

Content validity for the CNE examination is also established via the process used for item development. CNE examination item writers are given item writing training which provides an overview of the mission and goals of the certification program, the examination development process, the test specifications, and information about the principles of test development (NLN, 2005c). The test development (TD) Committee, whose members are CNEs representative of the CNE population, is responsible for reviewing examination items "for content, accuracy, and relevancy to the academic nurse educator role" (NLN, 2011a, The Academic Nurse Educator Certification Program, para. 3). The primary way in which items are considered relevant is based on the determination by members of the TD committee that an item is linked to the CNE examination detailed test blueprint. By using accepted practices of examination development, construct and content validity for this study's instrument, the CNE examination, are established.

Reliability

In order to ensure the adequacy of the *2005 academic nurse educator practice analysis* survey results, the coefficient alpha between tasks and between respondents was reviewed and evaluated (Ortelli, 2006). Specifically, the coefficient alpha was used "to determine the extent to which tasks were consistently rated within each of the eight survey sections" (Ortelli, 2006, p. 245). An acceptable weighted grand mean value of .919 was obtained, indicating that a consistent collection of academic nurse educator practice-related tasks (Ortelli, 2006). In addition, intraclass correlation provided information regarding the "extent to which respondents agreed on the significance and importance" (Ortelli, 2006) of academic nurse educator practice-related tasks. The respondent reliability estimate (intraclass correlation) was .990, which was also

considered very acceptable (Ortelli, 2006). Complete information about the reliability

estimates for each of the CNE examination content areas is presented in the following

table. Copyright permission to use this table is provided in Appendix H.

Table 1.

CNE Examination Content Area Reliability Estimates

		Reliability (consistency)		
Survey Sections	**# of Tasks**	**Between Respondents (Intraclass)**	**Between Tasks (Coefficient Alpha)**	**Number of Respondents[a]**
I. Facilitate learning	25	.996	.892	442
II. Facilitate learner development and socialization	14	.994	.888	478
III. Use assessment and evaluation strategies	20	.978	.922	396
IV. Pursue personal development in the academic nurse educator role	11	.991	.872	412
V. Participate in curriculum design and evaluation of program outcomes	27	.983	.962	369
VI. Function as a change agent and leader	28	.994	.951	284
VII. Engage in scholarship of teaching	9	.995	.880	413
VIII. Function effectively within the institutional environment and the academic community	9	.990	.907	405
Weighted Grand Means		**.990**	**.919**	
Total Tasks	143			

(Table 1 continued)
Note. Adapted from "Defining the Professional Responsibilities of Academic Nurse Educators: The Results of a National Practice Analysis," by T. A. Ortelli, 2006, *Nursing Education Perspectives, 27*(5), p. 244.
[a]Only those who responded to every task in each section with a rating of 1 to 5 were included for these analyses.

Scoring

The passing score for the CNE examination was established following a standard setting study which relied on the judgment of academic nurse educators representative of the CNE population. To determine the passing standard, a modified Angoff technique was used. This methodology requires content experts to evaluate each examination item in order to "determine the score that would best differentiate minimally-competent academic nurse educators deserving to be awarded certification from those who have not demonstrated sufficient knowledge" (NLN, 2012b, p. 21).

The CNE examination is criterion-referenced, which means that candidates are evaluated based on a predetermined performance level, not how the candidate performed relative to other candidates (Bond, 1996; McDonald, 2007). Because the correct number of responses required to pass the CNE examination may vary depending on the difficulty of a particular form of the examination, statistical equating procedures are used to ensure the consistency of the passing standard for each form of the examination (NLN, 2012b). Each new version of an examination form is equated to the initial or anchor version of the examination to ensure that the same amount of knowledge is demonstrated regardless of the test form administered.

The CNE examination consists of 150 multiple-choice items of which 130 items count toward the candidate's final score and pass/fail determination. There is no penalty for incorrect answers and candidates are able to bookmark an item and return to it, time

permitting. The final score is based on the number of items answered correctly as opposed to achieving a specific passing standard for each of the content areas. The remaining 20 items are pretest items, which may be used on future forms of the CNE examination based on a statistical analysis of their performance. Candidates are unaware of which items are counted for scoring (NLN, 2012b).

Prior to leaving the testing center, candidates receive their score report. Included in this computerized report is information specifying whether the candidate passed or failed the examination along with raw scores indicating the total number of questions answered correctly overall, and the number of questions answered correctly in each of the six major content categories. The raw score earned by the candidate determines whether the candidate passed or failed the examination. The number of questions required to answer the examination correctly is determined by the TD committee in conjunction with AMP.

Data Analysis Plan

Statistical analysis for this research study was conducted using the software IBM® SPSS® Statistics Premium Grad Pack v20.0 (SPSS® v20.0). When conducting the data analysis, only independent and dependent variable data that were complete, were analyzed. Candidate records that indicated the data was from a retest were not included in this study, which sought to analyze the performance of candidates taking the CNE examination for the first time. Data cleaning was conducted prior to creating the data files and is described in the following section.

Data Cleaning

When using a large, secondary dataset, it is incumbent upon a researcher to ensure appropriate data cleaning and preparation prior to performing statistical analysis (Magee et al., 2006). The data provided for this research study was electronically sent by the NLN ANECP to this researcher in two separate files. The first Excel file, 'CNE_data_1211,' contained 4,011 candidate records covering the testing period 09/28/2005-09/30/2011. The second Excel file, 'CNE_survey_01012010-12312011,' contained 1,483 candidate records containing demographic data for candidates who tested between 01/04/2010 and 09/30/2011. The two files were merged using a match for student ID and completion date. The purpose of merging these two files was to supply missing demographic data so that all of the variables of interest were contained in a single file.

Following the merging of these files, 3,906 candidate records remained. A systematic process was then used to remove records that were missing data. Specifically, candidate records were removed if data were missing for one of the dependent variables (pass/fail data and sub scores for each of the six content areas) or an independent variable (eligibility option, years of full-time faculty employment). Missing data were not treated or estimated and only complete, observed values were used for analysis. Of the 3,906 discrete records available, 60 records were removed because the record indicated the candidate was *absent* or a *no show*, 187 records were removed because the record indicated the candidate was a *retester*, and 986 records were removed because of missing data or being a duplicate record. Missing data were evaluated to determine if a pattern

was noted, of which no patterns were observed. Following the cleaning of the data, 2,673 candidate records were available for analysis.

In order to perform statistical analysis, the categorical independent and dependent variables were coded as follows: eligibility Option A = 1; eligibility Option B = 2; fail exam = 0; pass exam = 1. Additionally, categorical demographic data were coded. The study participants' highest degree earned was coded as master's in nursing = 1; doctorate = 2. The type of program in which the candidate indicated teaching responsibility was coded as: practical/vocational = 1; diploma = 2; associate = 3; baccalaureate = 4; master's = 5; doctorate = 6. Last, academic rank was coded as: other = 0; instructor = 1; assistant professor = 2; associate professor = 3; professor = 4. Once all data were appropriately coded, the data were then transferred into SPSS® v20.0.

Descriptives

Descriptive statistics are provided in order to present an accurate overview of the study participants' characteristics (Polit & Beck, 2008). For this study, demographic data indicating participants' eligibility option (A or B), years of full-time faculty employment, highest degree earned, employment setting by program type, and academic rank, are presented in Chapter Four. In order to permit assumptions to be made about this sample compared to the general academic nurse educator population, inferential statistics, using national faculty census data (NLN, 2009a) are described, when available. In addition, descriptive statistics were used to describe and summarize the dependent variable data associated with pass/fail status, and sub scores for each of the six CNE examination content areas. Pass/fail status, which is a categorical outcome, has been reported as

counts and proportions. Score data, which is a continuous outcome, has been reported as averages.

Reliability Testing

With regard to the data used for this study, reliability refers to the consistency of examination scores over time and pertains to the assessment results, not the assessment instrument (Oermann & Gaberson, 2009). In order to help establish reliable CNE examination results, members of the TD committee review pretest item statistics. Specifically, members review the *p*-value and point biserial index (pbi) of pretest items to determine if they should be included as scored items on future forms of the CNE examination. An item's *p*-value, which may range from 0 to 1.00, indicates the percentage of candidates who correctly answered the item (Oermann & Gaberson, 2009). Even though an item with a *p*-value of .80 and above is generally considered easy (Oermann & Gaberson, 2009), CNE examination pretest items are not automatically eliminated based on *p*-value alone. The quality of the construction of the item is also considered and is determined by evaluating the pbi, which discriminates between high scoring candidates who answered an item correctly compared to low scoring candidates. The pbi ranges from -1.00 to 1.00. The higher the positive value, the more the item discriminates between high and low scoring candidates (Oermann & Gaberson, 2009). Pretest items in which the correct answer has a negative pbi or an incorrect option has a positive pbi are typically not included as scored items on future forms of the examination.

AMP is the independent testing agency contracted to provide measurement services to the ANCEP. In this capacity, AMP assumes responsibility for conducting statistical analyses of the examination items, ensuring that each form of the examination

possesses internal consistency and ensuring that different forms of the examination are equivalent. The statistical practices used by AMP have been reviewed by the National Commission for Certifying Agencies (NCCA) who granted accreditation to the ANECP in 2009. NCCA standards serve to ensure that certification programs adhere to established standards of certification practice (NLN, 2011b). The CNE examination has been determined by NCCA to meet the requirements for internal consistency and examination equivalency.

CNE pass rate data are evaluated in order to determine if the CNE examination scores reflect consistency over time, with different test-takers. First-time pass rate data from 2005 to 2011 revealed that the pass rate for first-time test takers was 84.24%, 83.68%, 84.04%, 81.41%, 80.45%, 79.93%, and 77.02% respectively (NLN, 2011c). In addition to pass rate data, available reliability estimates for each form of the CNE examination (NLN, 2009c; NLN, 2010a, NLN 2011f) were evaluated. Reliability estimates serve to demonstrate if items on an examination measure the same construct (Oermann & Gaberson, 2009). When evaluating reliability estimates, the closer the score is to one, the more reliable the data (Oermann & Gaberson, 2009). Reliability estimates for each form of the CNE examination are presented in Table 2. It should be noted that reliability estimates for each of the examination's six content areas are unavailable.

Table 2

CNE Examination Reliability Estimates

Year	Exam	Reliability Estimates
2009	NENLN03	.80
	NENLN04	.75
2010	NENLN03	.86

(Table 2 continues)

(Table 2 continued)

Year	Exam	Reliability Estimates
2010	NENLN04	.89
2011	NENLN03	.81
	NENLN04	.85

Hypothesis Testing

In order to assure that the data meet the conditions required to produce valid data, the mean, median, mode, standard deviation, and range were analyzed for variables with continuous data (content area sub scores and years of full-time faculty employment). The mean, median, and mode are referred to as measures of central tendency and indicate the strength in which the data cluster toward the mean (Polit & Beck, 2008). Disparities between the mean and median help indicate if or how the distribution of scores is skewed (Polit & Beck, 2008).

Measures of variability are indicated by the standard deviation and the range (Polit & Beck, 2008). In order to understand how close scores are to the mean, the standard deviation is evaluated. If, for example, the standard deviation related to final score data is a large number, this could indicate that a large number of candidates are failing. The range of data helps indicate how aligned the scores are with the mean. A small range indicates that the scores are clustered closer to the mean (Polit & Beck, 2008).

In order to determine whether the assumptions of normality are met, the continuous independent variable (years of full-time faculty employment) and the continuous dependent variables (content area sub scores) were analyzed using Q-Q plots and the Shapiro-Wilk test. Q-Q plots provide a graphical comparison of the distribution

of a given variable to the normal properties and serve to help the researcher check the distributional assumption for a data set (Filliben, 2006). The Shapiro-Wilk statistic tests whether a sample comes from a normal distribution (Prins, 2006). Even though both of these tests revealed that this study's data are not normally distributed, parametric statistics will be used because of the large ($n = 2,673$) sample size of this study (Daniel, 2005).

When analyzing the effects of the independent variables on the dependent variables, the generalized linear model was used. The generalized linear model allows the dependent variable to be linearly related to factors via a specified link function and allows the dependent variable to have a non-normal distribution (IBM, 2011). The generalized linear model, which incorporates logistic and linear regression, is appropriate for this research study because the data are not normally distributed, the dependent variable of first-time performance is non-continuous, and the effects of the predictor variables (Option A and Option B and years of full-time faculty experience) may not be linear in nature (Statsoft, n.d.). Results of these data are presented in Chapter Four.

The purpose of this study is to analyze the relationship between the independent variables educational preparation and years of full-time faculty employment, and the dependent variables of CNE examination performance as measured by first-time pass/fail performance and performance in each of the six CNE examination content areas. Four research questions guided the selection of the analysis of data and are as follows:

1. Is there a statistically significant relationship between educational preparation, as defined by the CNE eligibility criteria (Option A and Option B), and first-time performance (pass/fail) on the CNE examination?

$H1_0$: There is no statistically significant relationship between educational

preparation and first-time performance on the CNE examination.

$H1_a$: There is a statistically significant relationship between educational

preparation and first-time performance on the CNE examination.

2. Is there a statistically significant relationship between educational preparation, as

defined by the CNE eligibility criteria (Option A and Option B), and performance

in each of the six major CNE examination content areas?

$H1_0$: There is no statistically significant relationship between educational

preparation and performance in the content area, *facilitate learning*.

$H1_a$: There is a statistically significant relationship between educational

preparation and performance in the content area, *facilitate learning*.

$H2_0$: There is no statistically significant relationship between educational

preparation and performance in the content area, *facilitate learner development*

and socialization.

$H2_a$: There is a statistically significant relationship between educational

preparation and performance in the content area, *facilitate learner development*

and socialization.

$H3_0$: There is no statistically significant relationship between educational

preparation and performance in the content area, *use assessment and evaluation*

strategies.

$H3_a$: There is a statistically significant relationship between educational

preparation and performance in the content area, *use assessment and evaluation*

strategies.

$H4_0$: There is no statistically significant relationship between educational

preparation and performance in the content area, *participate in curriculum design*

and evaluation of program outcomes.

$H4_a$: There is a statistically significant relationship between educational

preparation and performance in the content area, *participate in curriculum design*

and evaluation of program outcomes.

$H5_0$: There is no statistically significant relationship between educational

preparation and performance in the content area, *pursue continuous quality*

improvement in the academic nurse educator role.

$H5_a$: There is a statistically significant relationship between educational

preparation and performance in the content area, *pursue continuous quality*

improvement in the academic nurse educator role.

$H6_0$: There is no statistically significant relationship between educational

preparation and performance in the content area, *engage in scholarship, service,*

and leadership.

$H6_a$: There is a statistically significant relationship between educational

preparation and performance in the content area, *engage in scholarship, service,*

and leadership.

3. Is there a statistically significant relationship between years of full-time faculty

   experience and first-time performance (pass/fail) on the CNE examination?

   $H1_0$: There is no statistically significant relationship between years of full-time

   faculty experience and first-time performance on the CNE examination.

$H1_a$: There is a statistically significant relationship between years of full-time faculty experience and first-time performance on the CNE examination.

4. Is there a statistically significant relationship between years of full-time faculty experience and performance in each of the six major CNE examination content areas?

$H1_0$: There is no statistically significant relationship between years of full-time faculty experience and performance in the content area, *facilitate learning*.

$H1_a$: There is a statistically significant relationship between years of full-time faculty experience and performance in the content area, *facilitate learning*.

$H2_0$: There is no statistically significant relationship between years of full-time faculty experience and performance in the content area, *facilitate learner development and socialization*.

$H2_a$: There is a statistically significant relationship between years of full-time faculty experience and performance in the content area, *facilitate learner development and socialization*.

$H3_0$: There is no statistically significant relationship between years of full-time faculty experience and performance in the content area, *use assessment and evaluation strategies*.

$H3_a$: There is a statistically significant relationship between years of full-time faculty experience and performance in the content area, *use assessment and evaluation strategies*.

H4$_0$: There is no statistically significant relationship between years of full-time faculty experience and performance in the content area, *participate in curriculum design and evaluation of program outcomes*.

H4$_a$: There is a statistically significant relationship between years of full-time faculty experience and performance in the content area, *participate in curriculum design and evaluation of program outcomes*.

H5$_0$: There is no statistically significant relationship between years of full-time faculty experience and performance in the content area, *pursue continuous quality improvement in the academic nurse educator role*.

H5$_a$: There is a statistically significant relationship between years of full-time faculty experience and performance in the content area, *pursue continuous quality improvement in the academic nurse educator role.*

H6$_0$: There is no statistically significant relationship between years of full-time faculty experience and performance in the content area, *engage in scholarship, service, and leadership*.

H6$_a$: There is a statistically significant relationship between years of full-time faculty experience and performance in the content area, *engage in scholarship, service, and leadership.*

Research Question One

The first research question examined the relationship between the categorical independent variable, educational preparation as defined by eligibility criteria Option A and Option B and the categorical dependent variable, first-time success or failure on the CNE examination. The Chi-Square test of independence was used to analyze the

observed and expected frequencies of pass/fail data. The Chi-square statistic determines if any discrepancies noted between the observed and expected frequencies could have occurred by chance alone (Daniel, 2005). If the Chi-square statistic reveals significance, the phi-correlation is used as a posttest to analyze the correlations between educational preparation (Option A and Option B) and pass/fail status.

In order to further analyze the relationship between the dichotomous independent variable (Option A and Option B), and the dichotomous dependent variable (pass/fail), binary logistic regression was performed. Binary logistic regression is appropriate to answer research questions that contain a dichotomous dependent variable (Daniel, 2005). The results of this analysis provide information about the probability of success to the probability of failure on the CNE examination for study participants based on their educational preparation as defined by the CNE eligibility criteria, Option A or Option B.

Research Question Two

The second research question examined the relationship between educational preparation and first-time performance in each of the six CNE examination content areas. In order to determine the strength of the relationship between educational preparation and first-time performance, the point-biserial correlation statistic was used. The reason this statistic was selected is because one variable is dichotomous (independent variable) and the other variable is continuous (dependent variable) (Trochim, 2006a). Point biserial scores range from -1.00 to +1.00, with zero reflecting no relationship (Trochim, 2006a).

The *t*-test for independent samples was also used to assess the significance of the difference between the means of the independent groups (Daniel, 2005). In this research, significance was tested for the difference in the means of the sub scores for each of the

six content areas between Option A and Option B study participants. When using the *t*-test, the homogeneity of variances assumptions must first be tested using the Levene's test of equal variances. This statistic tests the null hypothesis that variances for the dependent variable (score data) are equal and in all probability the sample is obtained from the same population (Filliben, 2006).

Research Question Three

The third research question examined the relationship between the continuous independent variable, years of full-time faculty employment, and the categorical, dichotomous dependent variable, first-time success or failure on the CNE examination. In order to determine the extent in which these two variables are related, the point-biserial correlation was used. This statistic was selected because one variable is continuous (years of full-time faculty employment) and the other variable is dichotomous (pass/fail). It should be noted that when performing a point-biserial correlation using SPSS® v20.0, the Pearson's *r* statistic is actually used.

In addition, binary logistic regression was used to further understand the relationship between years of full-time faculty employment and first-time success or failure on the CNE examination. Logistical regression serves to analyze the relationship between one or more independent variables and a categorical, dichotomous dependent variable (pass/fail status) (Polit & Beck, 2008). Logistic regression also models the probability of an outcome rather than predicting group membership (Polit & Beck, 2008).

Research Question Four

The fourth research question examined the relationship between years of full-time faculty employment and first-time performance in each of the six examination content

areas. In order to assess the relationship of the difference between the means of the independent groups, the Pearson's *r* statistic was used. This correlation coefficient designates the magnitude of the relationship between two variables that are measured on at least an interval scale (Polit & Beck, 2008).

To further assess the relationship between years of full-time faculty employment and performance in each of the six CNE examination content areas, simple linear regression analysis was used. The purpose of employing this statistical analysis is to estimate the mean value of sub score data assumed to exist at a given value of years of full-time faculty experience (Daniel, 2005). The simple linear regression model is presented in Chapter Four.

Limitations

Threats to Internal Validity

Internal validity is the "approximate truth about inferences regarding cause and effect or causal relationships" (Trochim & Donnelly, 2007, p. 158). This concept refers to the "degree to which it can be inferred that the experimental treatment (independent variable), rather than uncontrolled extraneous factors, caused observed effects" (Polit & Beck, 2008, p. 756). Because this study is non-experimental, and investigates the relationships between the independent and dependent variables rather than contributing to the discovery of a cause and effect, internal validity to not relevant to this particular research study (Trochim & Donnelly, 2007).

Threats to External Validity

External validity refers to "the degree to which study results can be generalized to setting or samples other than the one studied" (Polit & Beck, 2008, p. 753).

Generalization of this study would extend to the academic nurse educator population

teaching in all program types, regardless of their certification status, educational

preparation, or years of full-time faculty experience. One threat to external validity

inherent in this study is the need for study participants to meet eligibility criteria which

specify the requirement of a master's degree in nursing or doctoral degree and either two

or four years of full-time faculty experience. Given the various educational and

experiential qualifications possessed by faculty teaching in all program types, the

demographic characteristics of this study population may limit generalizability.

Another threat to external validity is the fact that obtaining data from a secondary

database limits observations to study participants who have voluntarily chosen to take the

CNE examination. In addition, because participants in this study intended to take a

certification examination, they may have engaged in specific preparation designed to

achieve success. As a result, certification preparation may pose another threat to external

validity if it had an impact on examination performance. Last, although this study's

sample is relatively large and consists of 2,673 academic nurse educators who teach in all

program types, it does not represent the 28,252 faculty who are employed in a part-time

or adjunct capacity (NLN, 2009d) or who do not possess a minimum master's degree in

nursing.

Chapter Summary

This chapter described the methodology used for this retrospective, multivariate,

non-experimental study. This research attempts to discover the relationship between two

different independent variables, educational preparation, and years of full-time faculty

employment on the performance of study participants who took the CNE examination for

the first time. Because this is a retrospective, secondary analysis of existing data, there is no intervention by the researcher or attempt to describe a cause and effect. This study's research design, assumptions, setting, sampling plan, procedures, instrumentation, data analysis plan, and limitations are outlined in order to provide context to the data that are presented in Chapter Four.

Chapter Four

Results

This chapter describes the data collected, descriptive statistics, hypothesis testing,

and results of the data analyzed to answer each of the four research questions. The

purpose of this quantitative, retrospective multivariate, non-experimental study was to

determine if there is a relationship between study participants' educational preparation or

years of full-time faculty employment and their first-time pass/fail performance on the

CNE examination and first-time performance in each of the six CNE examination content

areas. This sample consisted of 2,673 academic nurse educators who were first-time test

takers and took the CNE examination between September 28, 2005 and September 30,

2011. The research plan consisted of the use of Chi-square test of independence, binary

logistic regression, point-biserial correlation, Pearson's r statistic, t-test for independent

samples, and simple linear regression. Statistical analysis was performed by this

researcher using SPSS® v20.0 software.

Descriptives

In order to provide an overview of the study participants, demographic data are

presented. Specifically, information pertaining to study participants' educational

preparation as defined by the CNE examination eligibility criteria Option A or B, highest

degree earned, years of full-time faculty employment, employment setting by program

type and academic rank are presented. Demographic data associated with study

participants' gender, age, and race are not reported because this information was not

included in the secondary data set provided by the NLN ANECP.

Educational preparation

Two eligibility options are available to academic nurse educators who wish to pursue the CNE credential. Option A is designed for those who have formal educational preparation for the academic nurse educator role, and Option B is applicable for those who do not possess formal educational preparation for the role. Appendix F provides the eligibility criteria required to qualify to take the CNE examination (NLN, 2012a, unpublished).

Eligibility option frequency data, which are presented in Table 3, reveal that 61.5% of study participants self-reported meeting the qualifications for Option A and 38.5% self-reported meeting the qualifications for Option B. Consistency is noted when comparing this more recent data to previously reported data which revealed that of the 917 candidates who took the CNE examination between September 28, 2005 and September 28, 2007, 64.8% met the criteria for Option A and 35.2% met the Option B criteria (Ortelli, 2008b).

Table 3

Educational Preparation (Option A and B) Frequency and Percent Data

Eligibility Option	n	%
Option A	1,645	61.5
Option B	1,028	38.5
Total	2,673	100.0

Highest degree earned

A review of study participants' highest degree earned reveals that the largest percentage (66.3 %) of all study participants reported having a master's degree and 26.8 % reported having a doctoral degree. It should be noted that 187 study participants did

not provide this information. As explained in Chapter Three, a systematic process was
used to remove or retain records that were missing data. Records were deleted if
independent variable data were missing and retained if missing data were limited to
demographic data not being studied. Frequency data associated with the study
participants' highest degree earned are presented in Table 4.

Table 4

Highest Degree Earned Frequency and Percent Data

Highest Degree Earned	*n*	%	Valid %
Master's Degree	1,771	66.3	71.3
Doctoral Degree	715	26.8	28.7
Total	2,486	93.0	100.0
Missing	187	7.0	
Total	2,673	100.0	

To better understand highest degree earned data based on educational preparation,
an analysis of the data within each eligibility option was conducted. As indicated in
Figure 1, within Option A, 69.7 % reported a master's degree as the highest degree
earned compared to 73.7 % of Option B participants who reported a master's degree as
the highest degree earned. A slightly greater percentage of Option A study participants
(30.3 %) reported a doctoral degree as the highest degree earned compared to 26.3 % of
Option B study participants.
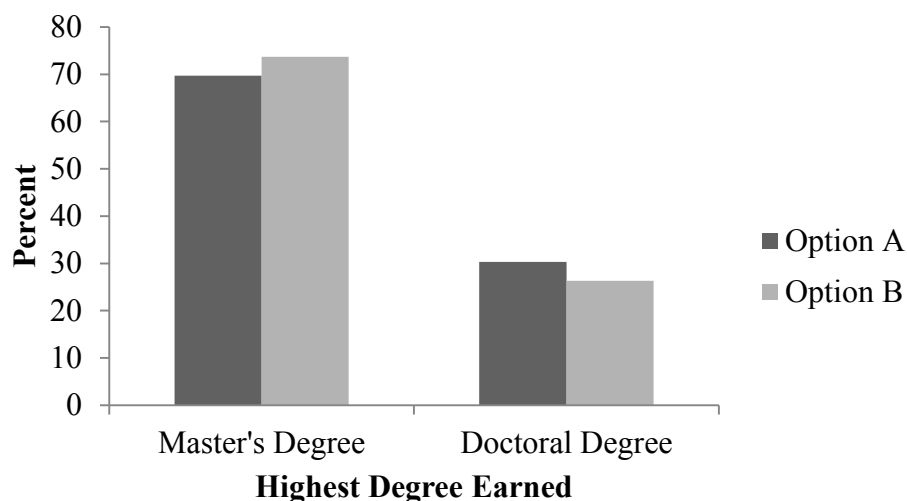
Figure 1. A comparison of the highest degree earned by Option A and Option B study participants.

Last, in order to permit assumptions to be made about this sample compared to the general academic nurse educator population, this study's population was compared to the most recent and available national faculty census data representing all nursing education program types (NLN, 2009b). It should be noted that the NLN (2009b) data include full-time faculty with a baccalaureate or *other* degree reported as the highest degree earned, whereas this study is limited to faculty with a master's or doctoral degree. When comparing the data, similarities where noted. Specifically, faculty census data (NLN, 2009b) indicated that 67% of nursing faculty reported a master's degree as the highest degree earned compared to 66% of participants in this study. A doctoral degree was reported as the highest degree earned by 25% of national faculty census participants and 27% of this study's participants. Figure 2 provides a comparison of the study participants' highest degree earned with national faculty census data (NLN 2009b).
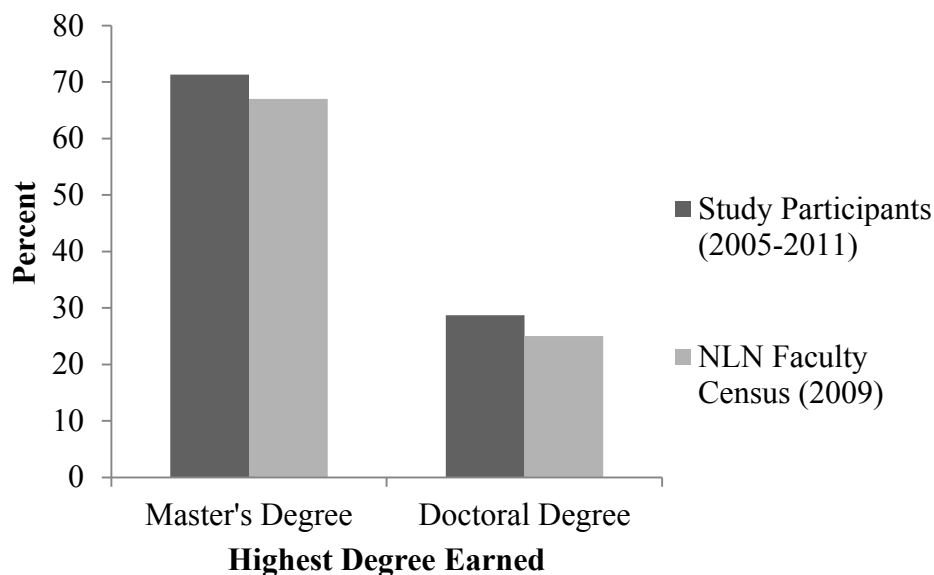
Figure 2. Highest degree earned by study participants (2005-2011) compared to 2009 NLN Faculty Census Data. Adapted from "Full-Time Nurse Educators by Highest Earned Credential: 1996, 2002, 2006, and 2009," by National League for Nursing, 2009, retrieved from http://www.nln.org/researchgrants/slides/pdf/FC0809_F04.pdf

Years of Full-time Faculty Employment

Eligibility requirements for the CNE examination also specify an experiential requirement of full-time employment (as defined by the institution) in an academic faculty role (NLN, 2012a, p. 3). A minimum of two or four years of full-time employment within the past 5 years is required and is based on educational preparation (Appendix F). As indicated in Table 5, Option A study participants who have 2 years of full-time experience comprise the largest subgroup of all participants ($n = 221$), which is followed by Option A study participants who have 3 years of full-time experience ($n = 190$). Furthermore, Option A participants with two or three years of full-time experience comprise 25 % of Option A study participants and 15.4% of all study participants. It is important to recognize that these two subgroups within Option A do not have a

comparable match with Option B participants because of the CNE eligibility

requirements, which stipulate 4 years of experience.

Table 5

Years of Full-Time Faculty Employment Frequency and Percent Data

Years of Full-Time Experience	n			%	Cumulative %
	Option A	Option B	Option A and B	Option A and B	Option A and B
2	221	0	221	8.3	8.3
3	190	0	190	7.1	15.4
4	135	99	234	8.8	24.1
5	122	123	245	9.2	33.3
6	93	91	184	6.9	40.2
7	64	65	129	4.8	45.0
8	60	59	119	4.5	49.5
9	31	42	73	2.7	52.2
10	71	58	129	4.8	57.0
11	40	39	79	3.0	60.0
12	33	46	79	3.0	62.9
13	35	24	59	2.2	65.1
14	30	32	62	2.3	67.5
15	51	47	98	3.7	71.1
16	42	26	68	2.5	73.7
17	38	29	67	2.5	76.2
18	39	23	62	2.3	78.5
19	29	21	50	1.9	80.4
20	46	33	79	3.0	83.3
21	20	17	37	1.4	84.7
22	22	8	30	1.1	85.8
23	17	14	31	1.2	87.0
24	24	21	45	1.7	88.7
25	31	21	52	1.9	90.6
26	19	16	35	1.3	91.9
27	10	11	21	.8	92.7
28	25	9	34	1.3	94.0
29	11	9	20	.7	94.7
30	29	13	42	1.6	96.3
31	11	4	15	.6	96.9

(Table 5 continues)

(Table 5 continued)

Years of Full-Time Experience	n			%	Cumulative %
	Option A	Option B	Option A and B	Option A and B	Option A and B
32	8	8	16	.6	97.5
33	14	4	18	.7	98.1
34	10	4	14	.5	98.7
35	9	4	13	.5	99.1
36	4	2	6	.2	99.4
37	1	1	2	.1	99.4
38	3	2	5	.2	99.6
39	2	1	3	.1	99.7
40	1	1	1	.0	99.8
41	1	1	2	.1	99.9
42	1	0	1	.0	99.9
43	1	0	1	.0	99.9
45	1	0	2	.1	100.0
Total	1,645	1,028	2,673	100.0	

Analyses of the mean, median, and mode, known as measures of central tendency, were also conducted and are presented in Table 6. The mean, which is the sum of all scores divided by the number of scores (Polit & Beck, 2008) is 11.6 years of full-time employment for all study participants, 11.1 years for Option A study participants, and 12.5 years for study participants identified as Option B. It is expected that the mean number of years of full-time employment is greater for participants identified as Option B given the minimum experiential requirement for this option is four years, compared to two years which is the minimum number of years required for Option A.

The median, which is the "value above and below which 50% of the scores lie" (Polit & Beck, 2008, p. 758), is 9.0 years for all study participants, 7.0 years for participants identified as Option A, and 10.0 years for participants identified as Option B.

The fact that the mean is greater than the median suggests that years of full-time employment data is positively skewed (Filliben, 2006). A positive skew is also known as a skew to the right because a graphic display reveals that tail of the distribution curve points to the right (Polit & Beck, 2008). The significance of this finding is that a disproportionately high number of study participants have fewer years of full-time experience. Additional information about the normalcy of the data associated with full-time experience and how it met the assumptions required for the statistical tests used is presented in the hypothesis section of this chapter. The last measure of central tendency is the mode, which is "the value that occurs most frequently within the distribution of scores" (Polit & Beck, 2008, p. 758). As indicated in Table 6, the mode is 5.0 years for all study participants, 2.0 years for participants identified as Option A, and 5.0 years for participants identified as Option B.

In addition to examining the measures of central tendency, the dispersion or variability of full-time employment data was measured by evaluating the range, standard deviation, and percentile data (Polit & Beck, 2008). The range, which is calculated by taking the highest value minus the lowest value (Polit & Beck, 2008), grossly describes the variability of scores. The range of scores evident in this data indicates that study participants most likely represent the full spectrum of full-time nursing faculty, that is, those with the minimal years of full-time experience (two or four years) as well as those nearing retirement with 45 years of full-time employment. Despite the wide range, a review of percentile data, which is presented in Table 7, further supports that a disproportionate number of study participants have fewer years of full-time experience.

For example, the 50th percentile for Option A participants is 7.0 years and 10.0 years for Option B participants.

The standard deviation indicates on average how much scores deviate from the mean and how spread out the data points are (Polit & Beck, 2008). When data values are all equal, the standard deviation is zero, whereas when a high proportion of data points are far from the mean, the standard deviation is large. As indicated in Table 6, the standard deviations for years of full-time experience range from 8.0 years to 9.2 years, which means that years of full-time employment are not clustered around the mean (Polit & Beck, 2008) which signifies that a greater number of study participants are at the extremes of the distribution. In the case of this study, a greater number of study participants are clustered at the lower end of the distribution.

Last, the shape of the distribution of the data is measured by evaluating skewness and kurtosis. Skewness measures the degree and direction of asymmetry and has a value of zero in a normal distribution (Filliben, 2006). As indicated in Table 6, the skewness for this data is 1.0. Because this number is positive, it indicates that tail of the distribution curve points to the right (Polit & Beck, 2008) and that a greater number of study participants have fewer years of full-time experience. Kurtosis measures the peakedness or flatness of the tails of this distribution and in a normal distribution has a value close to zero. The kurtosis values for full-time employment is .127 for Option A study participants and .397 for Option B study participants. These values indicate that the distribution curve is more peaked than a normal distribution, and the tails of the curve are heavier meaning that there is a higher probability of extreme values (Filliben, 2006). An indication of the shape of the data distribution is presented later in this chapter (Figure 9)

and further discussion about the normalcy of the data is discussed in the hypothesis section of this chapter.

Table 6

Years of Full-Time Faculty Employment Descriptive Statistics

Statistic	Option A	Option B	Option A and B
n	1,645	1,028	2,673
Mean	11.1	12.5	11.6
Median	7.0	10.0	9.0
Mode	2.0	5.0	5.0
SD	9.2	8.0	8.8
Minimum	2.0	4.0	2.0
Maximum	45.0	45.0	45.0
Range	43.0	41.0	43.0
Skewness	1.0	1.0	1.0
Kurtosis	.127	.397	.183

Table 7

Years of Full-Time Faculty Employment Percentiles

Eligibility Option	Percentile						
	5th	10th	25th	50th	75th	90th	95th
Option A	2.0	2.0	3.5	7.0	17.0	25.0	30.0
Option B	4.0	5.0	6.0	10.0	17.0	25.0	29.0

Employment Setting by Program Type

The CNE examination is designed for eligible nursing faculty who teach in all types of nursing education programs. When registering for the CNE examination, study participants were asked to provide information about the one program type in which the majority of teaching, student advisement, and leadership responsibilities are assumed. As indicated in Table 8, the greatest number of faculty (*n* = 1,040) reported teaching in an associate degree program, followed by those who reported teaching in a baccalaureate program (*n* = 914). The remaining programs had substantially fewer study participants,

which is an expected finding, given the number of these types of programs that are available.

Table 8

Employment Setting by Program Type Frequency and Percent Data

Employment Setting	n	%	Valid %
Diploma Program	191	7.1	7.6
Associate Degree Program	1,040	38.9	41.6
Baccalaureate Program	914	34.2	36.6
Master's Program	177	6.6	7.1
Doctoral Program	20	.7	.8
Total	2,497	93.4	100.0
Missing	176	6.6	
Total	2,673	100.0	

In order to compare employment setting by program type between Option A and Option B study participants, an analysis of the data within each eligibility option was conducted. As indicated in Figure 3, within Option A, the greatest percentage of participants (41%) reported teaching in an associate degree program, followed by 36% who reported teaching in a baccalaureate program. Employment in a master's or doctoral program was reported by 9% of study participants, while practical/vocational programs and diploma programs each had a reported 7%. Similar percentages were noted for those identified as Option B. Current national data identifying the percentage of faculty teaching in various nursing education programs were not available in the literature and therefore a comparison could not be made.

Employment Setting by Program Type
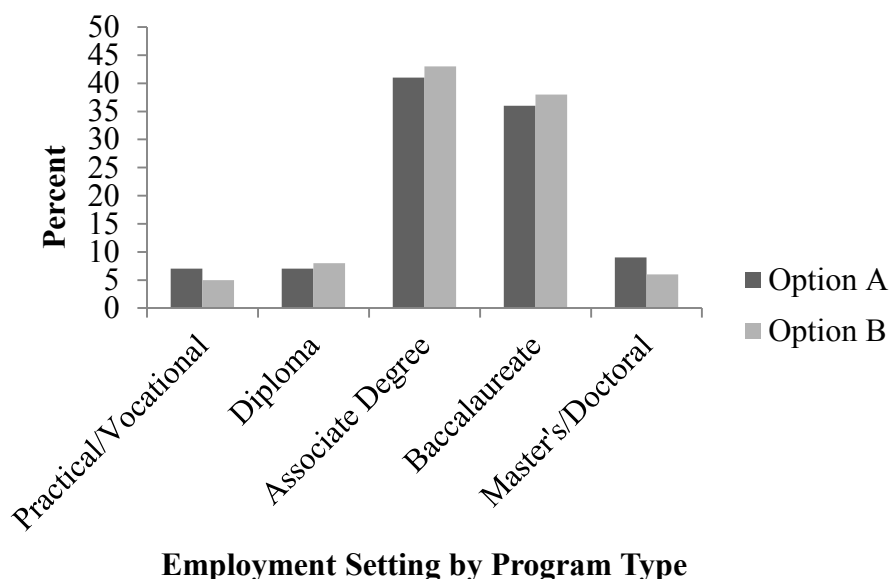
Figure 3. Employment setting by program type for Option A and Option B study participants.

Academic Rank

Upon registering for the CNE examination, study participants were asked to provide information about their current academic rank. As indicated in Table 9, the rank of instructor was reported by the largest number of study participants ($n = 875$), followed by 677 participants who reported holding the rank of assistant professor. These frequencies are not unexpected when considering that the mean numbers of years of full-time experience of all study participants is 11.6. It should be noted that 377 study participants did not provide information about their academic rank.

Table 9

Academic Rank Frequency and Percent Data

Academic Rank	*n*	%	Valid %
Instructor	875	32.7	38.1
Assistant Professor	677	25.3	29.5
Associate Professor	421	15.8	18.3
Professor	323	12.1	14.1
Total	2296	85.9	100.0

(Table 9 continues)

(Table 9 continued)

Academic Rank	*n*	%	Valid %
Missing	377	14.1	
Total	2673	100.0	

In order to determine if differences exist in academic rank between Option A and Option B study participants, an analysis of the data within each eligibility option was conducted. As indicated in Figure 4, within Option A, the greatest percentage of participants (34.5 %) reported holding the rank of instructor, compared to 30.0 % of Option B participants. A slightly greater percentage of Option B participants reported holding the rank of assistant professor (27.4%) compared to Option A participants (24.0%). The remaining academic ranks were reported by fewer than 20% and are consistent between Option A and Option B.
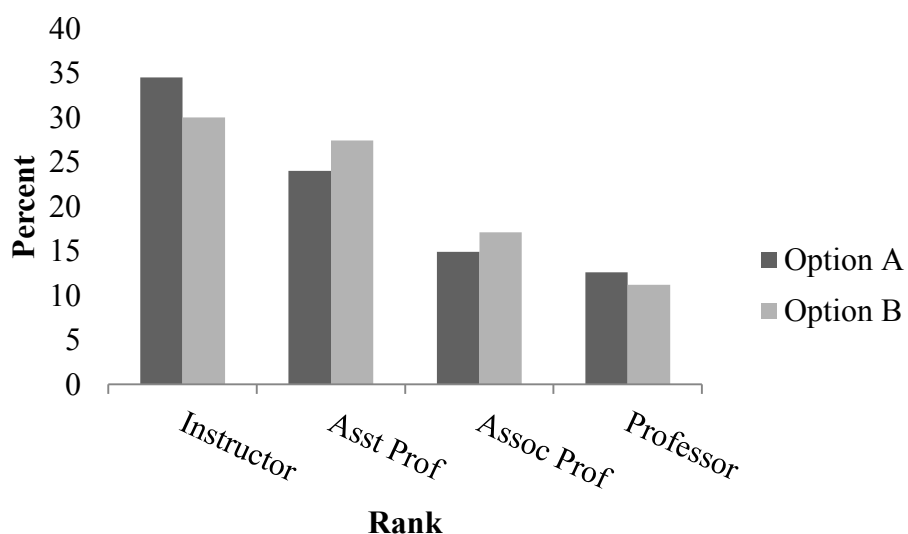
Figure 4. Academic rank for Option A and Option B study participants.

Responses to the Measurements

The CNE examination consists of 150 multiple-choice items, of which 130 items count toward the candidates' final score. The remaining 20 items are included for

pretesting purposes (NLN, 2012b). The passing point for the CNE examination is a raw

score that ranges from 94 (72.3%) to 98 (75.4%), depending on which form of the

examination was administered for testing (Clark & Fabrey, 2005; NLN, 2011f). The

following section presents study participants' first-time pass rates based on educational

preparation, years of full-time faculty employment, and the demographic characteristics

of highest degree earned, employment setting by program type, and academic rank.

First-Time Performance (Pass/Fail) on the CNE Examination

Educational preparation. Analysis of the data reveals an overall pass rate of

83.1%. Option A study participants passed at a rate of 82.6% while Option B study

participants passed at a slightly higher rate (83.9%). Table 10, provides frequency and

pass rate data based on educational preparation.

Table 10

First-Time Pass Rates Based On Educational Preparation

	Option A		Option B		Option A and B	
Examination Outcome (Pass/Fail)	*n*	%	*n*	%	*n*	%
Pass	1,359	82.6	862	83.9	2,221	83.1
Fail	286	17.4	166	16.1	452	16.9
Total	1645	100.0	1028	100.0	2673	100.0

Years of full-time faculty employment. To better understand pass rate data

based on educational preparation, it is important to examine pass rate data relative to

study participants' years of full-time faculty employment. As previously described, years

of full-time faculty employment data revealed that a disproportionate number of study

participants have fewer years of full-time faculty experience. Furthermore, the mean

(11.1) and median (7.0) years of full-time employment are less for Option A study participants compared to Option B study participants whose mean years of full-time experience is 12.5 years with a median of 10.0 years.

Figure 5 provides pass rate data for Option A and Option B participants with various years of full-time employment. The lowest pass rate (76.5%) was produced by Option A study participants with two to five years of full-time employment ($n = 668$). It is worth noting that Option A study participants with two to five years of full-time employment comprise 40.6% of all Option A study participants and 25 % of all study participants. This finding is significant given that years of full-time faculty employment is one of the independent variables. The highest pass rates (93.9%) among all study participants were produced those identified as Option A with 21 to 25 years of full-time employment ($n = 114$). Within Option B study participants, those with two to five years of full-time employment ($n = 222$) also had the lowest pass rate (78.8%), while those with 31 years or more of full-time employment ($n = 32$) had the highest pass rate (90.6%).
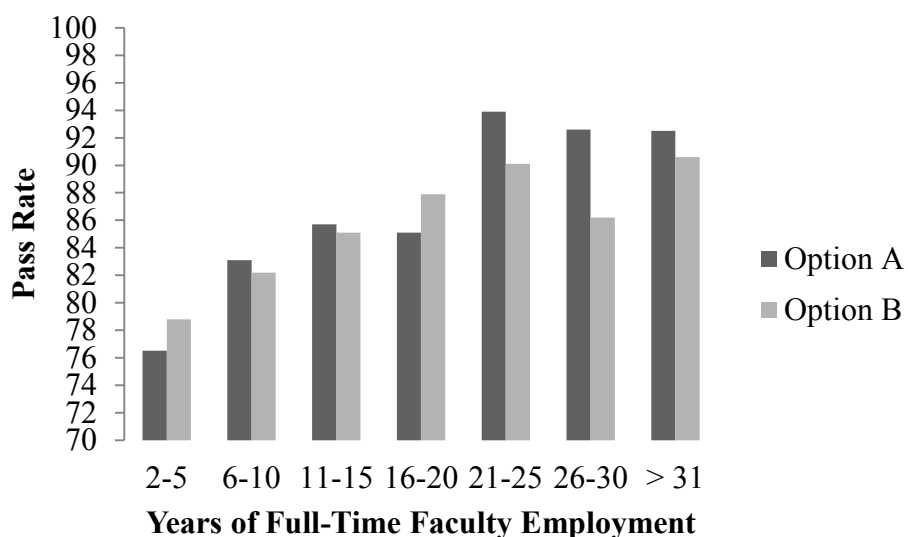
Figure 5. First-time pass rates at various years of full-time employment based on study participants' educational preparation.

Highest degree earned. Pass rate data for Option A and Option B study participants based on their highest degree earned are presented in Figure 6. As indicated, the pass rate for study participants with a doctoral degree was higher (88.1%) than the pass rate for study participants with a master's degree (81.9%). This difference was noted to be statistically significant ($r = .08$, $p = .00$, $\alpha = .01$). Further analyses of these data revealed that in addition to having more education, study participants with a doctoral degree also had more years of full-time employment ($M = 15.6$ years) compared to study participants with a master's degree ($M = 10.2$). Furthermore, the median years of full-time experience for study participants with a doctoral degree (15.0) is similar to the mean, unlike the median years of full-time experience for those with a master's degree. The fact that the median is less than the mean suggests that there is a disproportionate number of study participants with a master's degree in nursing with fewer years of experience.
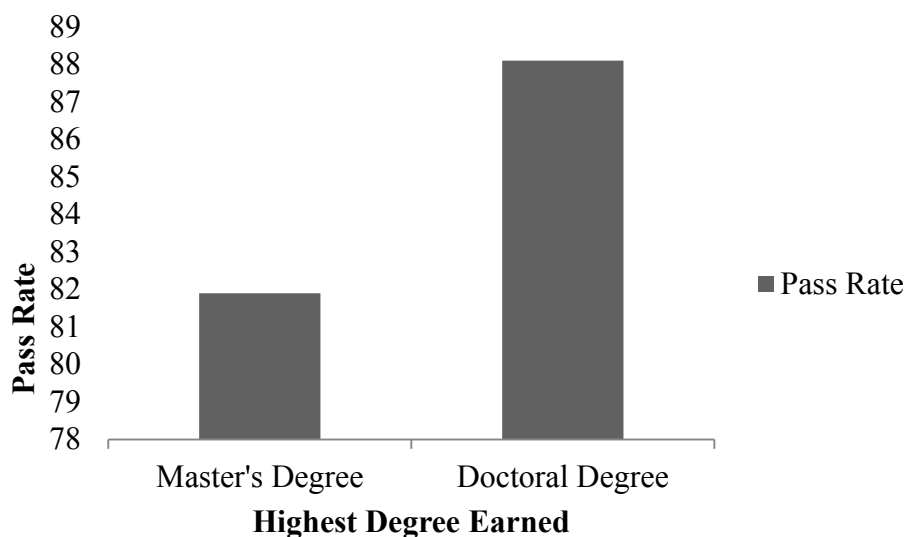
Figure 6. First-time pass rates based on study participants' highest degree earned.

Additional pass rate analyses were conducted for Option A and Option B study participants. As indicated in Table 11, Option A study participants with a master's degree in nursing produced a mean pass rate of 80.6%, which is lower than the mean pass rate for Option B study participants with a master's degree in nursing (83.8%). It should be noted that the mean (9.2) and median (6.0) number of years of full-time employment was lower for Option A study participants with a master's degree in nursing compared to mean (11.7) and median (10.0) number of years of full-time employment possessed by Option B study participants. The fact that Option A study participants have fewer years of full-time employment combined with a lower pass rate is consistent with other data that indicate that lower pass rates are associated with fewer years of experience (*Figure 5*).

Study participants with a doctoral degree had a higher mean pass rate and years of full-time employment compared to study participants with a master's degree. The highest mean pass rate was noted for Option A participants with a doctoral degree (88.4%). With

regard to years of full-time employment, this subgroup also had the highest mean (15.9)

and median (15.0) number of years of full-time employment.

Table 11

First-Time Pass Rates Based on Highest Degree Earned

Variable	n	Years of Full-Time Employment M	Mdn	Pass Rate
Option A				
Master's	1,072	9.2	6.0	80.6
Doctoral	466	15.9	15.0	88.4
Combined	1,538	11.0	7.0	82.6
Option B				
Master's	699	11.7	10.0	83.8
Doctoral	249	15.2	13.0	87.5
Combined	948	12.5	10.0	83.9

Note. For all study participants, the overall pass rate is rate is 83.1 %; the years of full-time employment mean is 11.6 and the median is 9.0. A total of 187 study participants did not provide information about their highest degree earned.

Employment setting by program type. As previously mentioned, the CNE

examination is available to qualified academic nurse educators teaching in all program

types. A review of the first-time pass rates in each of the programs, as presented in Figure

7, reveals a general upward trend in the pass rate as the level of education increases. The

lowest pass rate (69.0%) is associated with study participants who teach in a

practical/vocational nursing program. Those teaching in diploma and associate degree

programs demonstrated similar pass rates of 81.2% and 82.5%, respectively. Study

participants teaching in a baccalaureate program produce an even higher pass rate

(86.2%), and the highest pass rates are produced by those teaching in master's (91.0%)

and doctoral programs (90.0%).
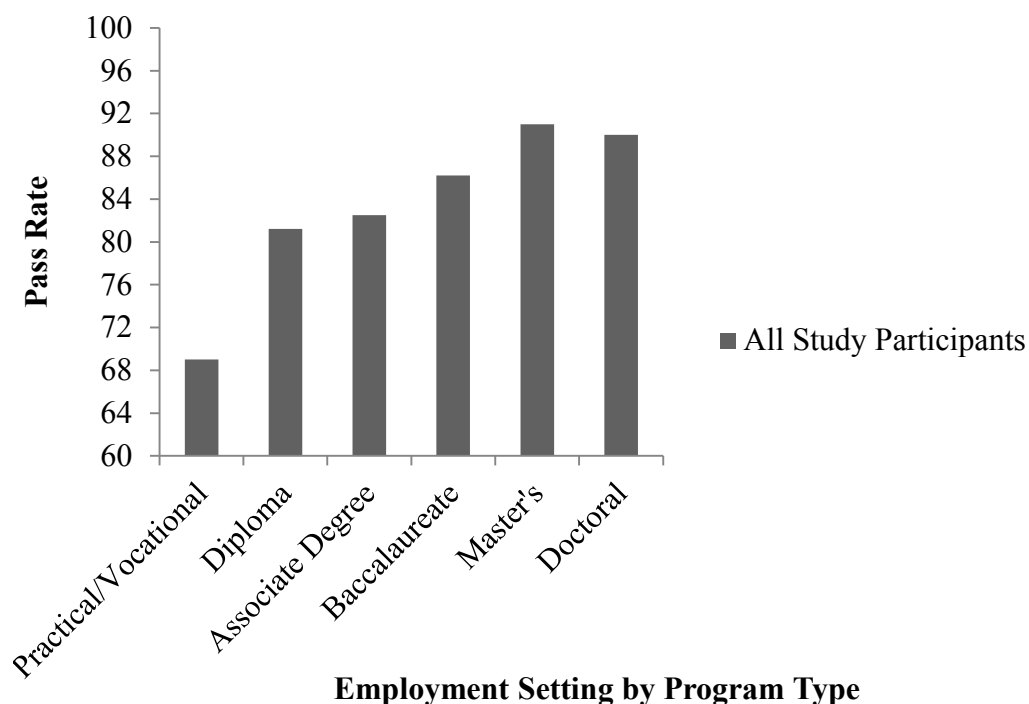
Figure 7. First-time pass rates based on study participants' employment setting by program type.

Further analysis of employment setting pass rates was conducted based on the study participants' reported educational preparation. As indicated in Table 12, Option A study participants teaching in practical/vocational nursing programs not only demonstrated the lowest pass rates, they also had the lowest mean and median number of years of full-time employment. Within Option A participants, there was a noted increase in the pass rate with each successive degree offered. This was typically associated with a progressive increase in the mean number of years of full-time experience, with the exception of Option A study participants teaching in diploma programs.

Pass rate data along with mean and median years of full-time employment are also presented in Table 12 for Option B study participants. Again, the general trend is an increase in pass rates with each successive level of education, with the exception of

associate degree study participants. This subgroup had a slightly lower pass pate than those teaching in diploma programs combined with the fewest number of mean years of full-time experience.

Table 12

First-Time Pass Rates Based On Employment Setting by Program Type and Educational Preparation

		Years Full Time Employment		
Employment Setting	*n*	*M*	*Mdn*	Pass Rate
Option A				
PN/VN	108	8.4	5.0	67.6
Diploma	113	12.0	8.0	78.8
Associate	630	9.6	6.5	81.7
Baccalaureate	551	11.8	8.0	86.8
Master's	127	17.0	16.0	89.8
Doctoral	9	11.2	4.0	88.9
Option B				
PN/VN	47	12.7	10.0	72.3
Diploma	78	14.1	12.0	84.6
Associate	410	11.8	10.0	83.7
Baccalaureate	363	12.5	10.0	85.4
Master's	50	17.1	17.0	94.0
Doctorate	11	17.0	20.0	91.0

Academic rank. Figure 8 provides pass rate data based on study participants' reported academic rank. As indicated, pass rates increase as rank increases. Instructors produce the lowest pass rate of 77.8 %, but professors pass had the highest pass rate of 90.7%. Given that academic rank promotion requires an increase in years of full-time experience, this trend is consistent with previous data that suggest that pass rates increase as years of full-time employment increase.
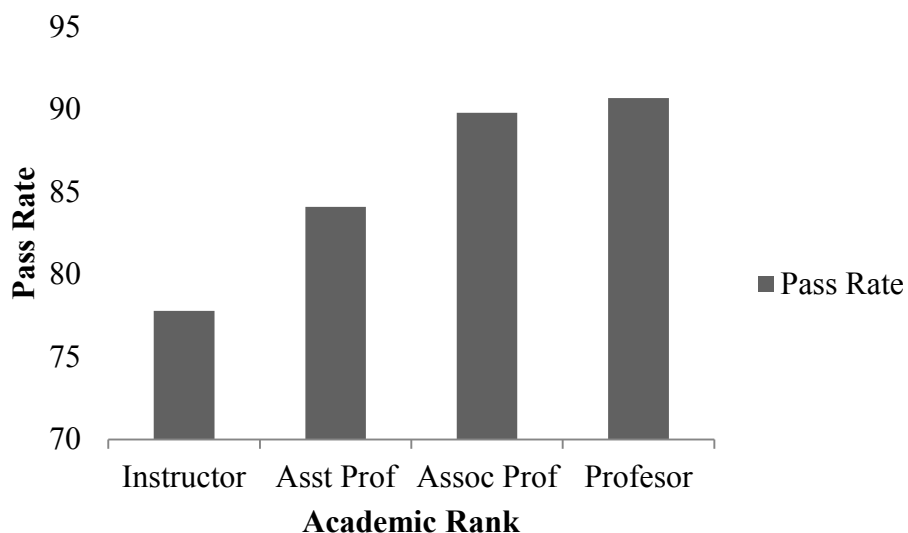
Figure 8. First-time pass rates based on study participants' academic rank.

Additional pass rate analyses based on academic rank were conducted for Option A and Option B study participants. As indicated in Table 13, Option A study participants with a rank of instructor had a lower mean pass rate (77.1%) as well as fewer years of full-time employment compared to Option B study participants. Specifically, both the mean and median years of full-time experience for Option A study participants were three years lower than the mean and median years of full-time experience for Option B study participants. The pass rates were very similar for Option A and Option B study participants at the ranks of assistant professor and higher. These data are consistent with previous data that indicate that pass rates increase as mean and median years of full-time employment increase.

Table 13

First-Time Pass Rates Based on Academic Rank and Educational Preparation

		Years of Full-Time Employment		
Academic Rank	*n*	*M*	*Mdn*	Pass Rate
Option A				
Instructor	587	7.9	5.0	77.1
Assistant Prof	395	8.7	6.0	84.1
Associate Prof	245	15.7	15.0	89.8
Professor	208	19.3	20.0	90.9
Option B				
Instructor	308	10.9	8.0	79.2
Assistant Prof	282	10.7	8.0	84.0
Associate Prof	176	15.1	13.5	89.8
Professor	115	17.6	18.0	90.4

Note. For all study participants, the overall pass rate is rate is 83.9%; the years of full-time employment mean is 11.6, and the median is 9.0. A total of 377 study participants did not provide information about their academic rank.

First-Time Performance in the Six CNE Examination Content Areas

The CNE examination test blueprint consists of six major and three minor content areas as outlined in Appendix G. Each content area has a specific number of questions on the examination which contribute toward the study participants' final score. Study participants are not required to obtain a specific score in each of the content areas. The following section presents the mean scores and standard deviations obtained in each of the content areas. These scores are analyzed relative to study participants' educational preparation (Option A or Option B), years of full-time faculty employment, and the demographic characteristic of highest degree earned.

Mean, median, and standard deviation data for each of the six content areas for Option A and Option B study participants are presented in Table 14. When comparing Option A and Option B, the mean (24.66) and median (25.00) scores as well as the

standard deviation (2.8) for the content area *facilitate learning* are identical. The mean,

median, and standard deviations for the remaining five content areas are slightly higher

for the Option B study participants. This is an expected finding, given that this group of

study participants produced a slightly higher pass rate compared to Option B.

Table 14

First-Time Performance in the Six CNE Examination Content Areas Based on Educational Preparation

Content Area	Total Possible Score	Option A (*n* = 1,645)			Option B (*n* = 1,028)		
		M	Mdn	SD	M	Mdn	SD
1. Facilitate Learning	32	24.7	25.0	2.8	24.7	25.0	2.8
2. Facilitate Learner Development and Socialization	14	11.6	12.0	1.6	11.7	12.0	1.6
3. Use Assessment and Evaluation Strategies	20	15.4	16.0	2.3	15.7	16.0	2.2
4. Participate in Curriculum Design and Evaluation of Program Outcomes	25	19.9	20.0	2.4	20.1	20.0	2.4
5. Pursue Continuous Quality Improvement in the Academic Nurse Educator Role	16	11.9	12.0	1.9	11.9	12.0	1.9
6. Engage in Scholarship, Service, and Leadership a. Function as a Change Agent and Leader b. Engage in Scholarship of Teaching c. Function Effectively within the Institutional Environment and the Academic Community	23	18.2	18.0	2.4	18.4	19.0	2.4

Reliability Testing

In order to determine if the CNE examination is internally consistent, it was necessary to estimate whether each of the aggregated content area sub scores reliably measure what is intended to be measured (Polit & Beck, 2008) that is, study participants' knowledge of the full scope of the faculty role. The coefficient alpha (Crohnbach's alpha), which has a normal range of .00 to +1.00 (Polit & Beck, 2008), was used to determine the internal consistency of the CNE examination. It was α = .758. This score, which is considered acceptable (Oermann & Gaberson, 2009) indicates that study participants who typically scored high in one content area also tended to score high in the other content areas. Similarly, study participants who scored low in one content area, tended to score low in other content areas.

Table 15 presents the Item-Total Statistics obtained from the reliability analysis of the six content area sub scores. Results of this analysis reveal the presence of internal consistency. The corrected item-total correlations, which indicate how well one item's score is internally consistent with the remaining items, all reveal an acceptable statistical value of greater than .300 (Griffen, 2011). Values in the column labeled *Cronbach's alpha if item deleted*, reveal that each content area contributes to the overall consistency and removal of any one of the content areas would not result in an increased Cronbach's alpha level (Griffen, 2011).

Table 15

Item-Total Statistics

Scores and Sub scores	Scale Mean if Item Deleted	Scale Variance if Item Deleted	Corrected Item-Total Correlation	Squared Multiple Correlation	Cronbach's Alpha if Item Deleted
Content Area 1	179.4	244.4	.63	1.0	.71
Content Area 2	192.4	280.7	.47	1.0	.75
Content Area 3	188.6	258.4	.61	1.0	.72
Content Area 4	184.0	252.8	.65	1.0	.72
Content Area 5	192.1	276.1	.45	1.0	.75
Content Area 6	185.7	258.1	.57	1.0	.73

Hypothesis Testing

In order to determine whether the assumptions of normality are met, the continuous independent variable, years of full-time faculty employment, and the continuous dependent variables of final score, and the sub scores for each of the six content areas were analyzed using the Shapiro Wilk test and Q-Q plots. With regard to years of full-time employment the Shapiro-Wilk statistic was .88 ($p = .00$), which requires the rejection of the null hypothesis of a normal distribution. As a result, it should be concluded that years of full-time employment data is non-normally distributed. Additionally, years of full-time employment was evaluated via histogram which demonstrates that the distribution curve is skewed to the right. This curve indicates that a disproportionate number of study participants have fewer years of full time experience (Figure 9).
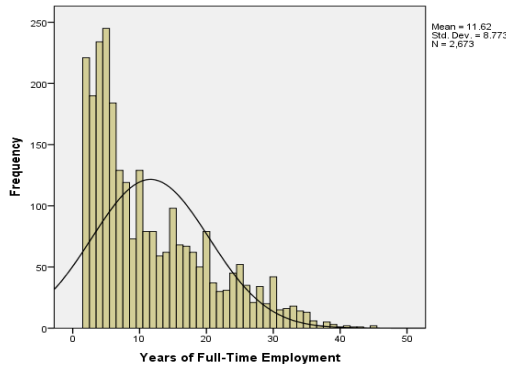
Figure 9. Years of full-time employment histogram for all study participants.

Q-Q plots, which provide a graphical comparison of the distribution of years of full-time employment to the normal properties, also serve to help check the distributional assumption for a data set (Filliben, 2006). As indicated in Figure 10, examination of the Q-Q plot of years of full-time employment starts to the right, arches across the line, and then crosses back to finish to the right of the line again. This pattern also indicates that the sample is skewed to the right (Murdoch University, 2009).
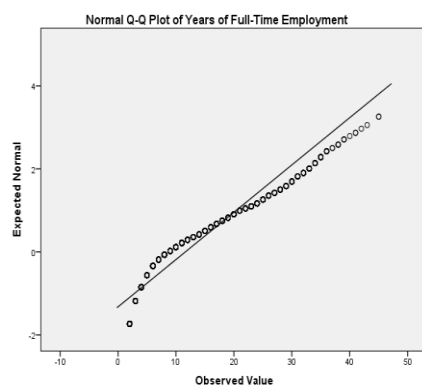
Figure 10. Normal Q-Q plot for years of full-time employment.

When analyzing the dependent variables for normalcy, the Shapiro Wilk statistic for the content area sub scores and final score reveals that $p = .00$ (Table 16). As a result, it is concluded that these data are non-normally distributed. When evaluating the content

area sub score and final score data using a histogram, the distribution curves are the

opposite of what was noted in the years of full-time employment. Specifically, the

distribution curves are skewed to the left indicating that there are a greater number of

scores with a higher value (*Figures 11-16*).

Table 16

Shapiro-Wilk Test of Normality for Sub scores

Variable	Statistic	*df*	Sig.
Content Area 1	.97	2,673	.00
Content Area 2	.93	2,673	.00
Content Area 3	.95	2,673	.00
Content Area 4	.96	2,673	.00
Content Area 5	.97	2,673	.00
Content Area 6	.96	2,673	.00
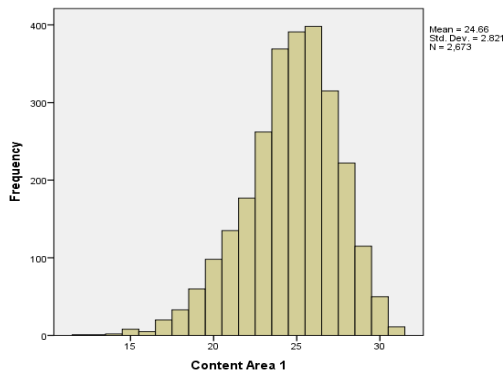
Figure 11. Content area one (facilitate learning) histogram.
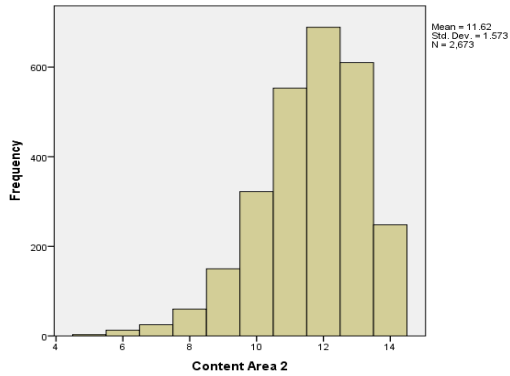
Figure 12. Content area two (facilitate learner development and socialization) histogram.
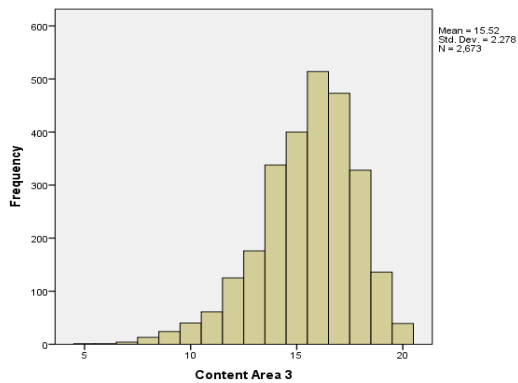
Figure 13. Content area three (use assessment and evaluation strategies) histogram.
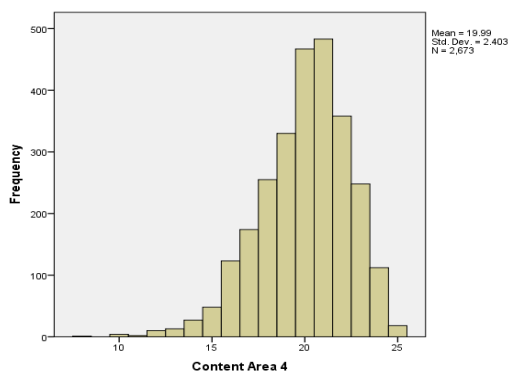
Figure 14. Content area four (participate in curriculum design and evaluation of program outcomes) histogram.
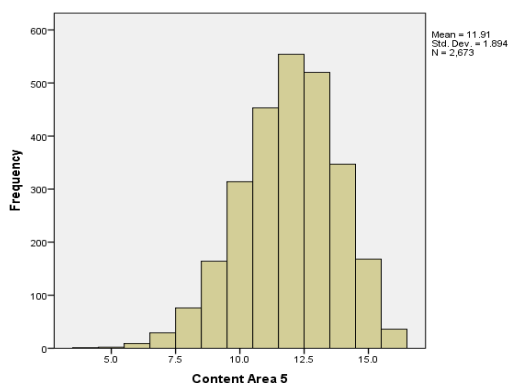
Figure 15. Content area five (pursue continuous quality improvement in the academic nurse educator role) histogram.
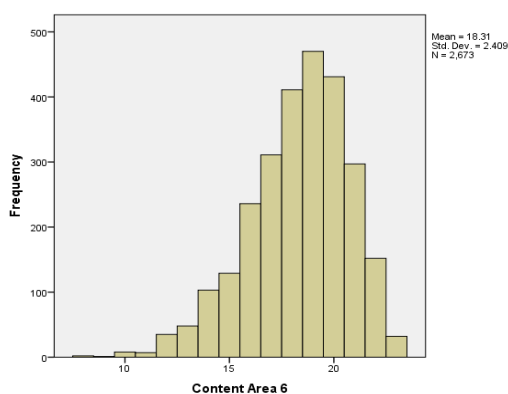
Figure 16. Content area six (engage in scholarship, service, and leadership) histogram.

Examination of the Q-Q plot of the content area sub scores and final scores also reveals a pattern that is opposite from the one noted for years of full-time employment. Specifically, each of the six content area sub score plots as well as the final score Q-Q plot starts to the left, arches toward the line, and then moves back to finish to the left of the line. This pattern further demonstrates that the data are skewed to the left (Murdoch University, 2009).
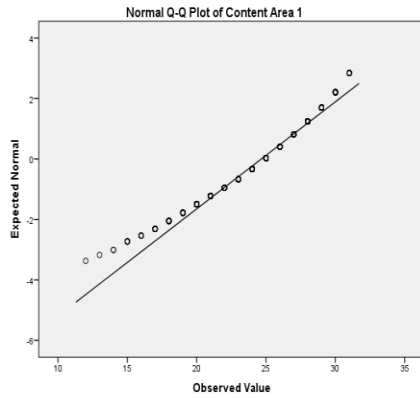
Figure 17. Content area one (facilitate learning) Q-Q plot.
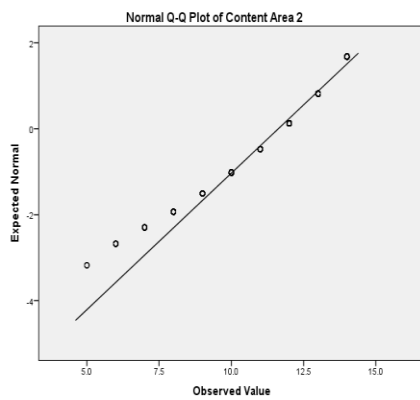
Figure 18. Content area two (facilitate learner development and socialization) Q-Q plot.
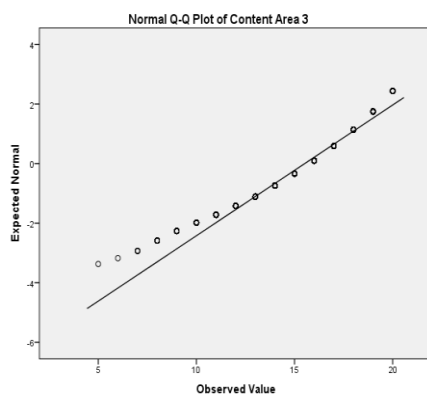
Figure 19. Content area three (use of assessment and evaluation strategies) Q-Q plot.
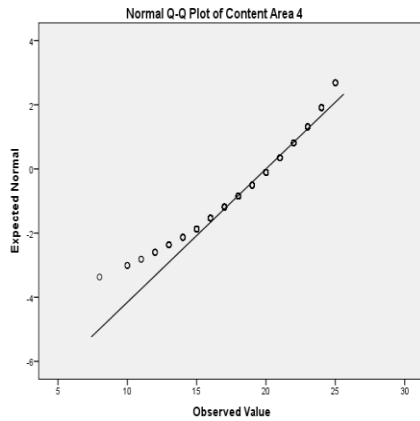
Figure 20. Content area four (participate in curriculum design and evaluation of program outcomes) Q-Q plot.
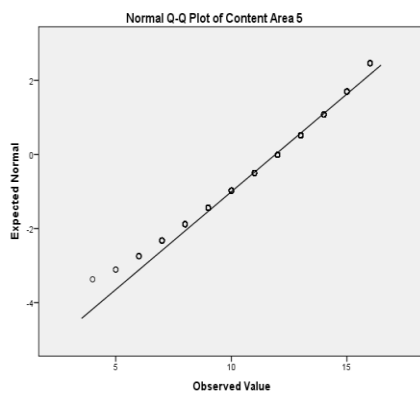
Figure 21. Content area five (pursue continuous quality improvement in the academic nurse educator role) Q-Q Plot.
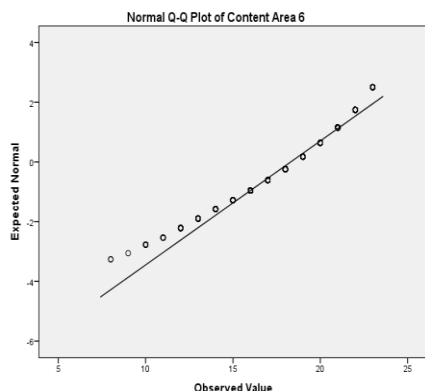
Figure 22. Content area six (engage in scholarship, service, and leadership) Q-Q Plot.

Despite the fact that both the Shapiro-Wilks test and the Q-Q plots indicate that years of full-time employment and content area sub scores are not normally distributed, parametric statistics were used to answer the four research questions. The reason for using parametric statistics is because this study contains a large sample size (n= 2,673) and is obtained from a non-normally distributed population. The use of parametric statistics in this study is supported by the central limit theory, which infers an approximate normal distribution when large sample sizes are used (Daniel, 2005). Because this study's sample is large, the distribution of the sample means is believed to follow a normal distribution even though the actual variables are not normally distributed in the population (Polit & Beck, 2008).

Statistical Results of Research Questions

Four research questions served as the guide for this study. The following section provides the statistical results required to test each hypothesis. In addition, conclusions about whether or not each of the four hypotheses were accepted or rejected are provided.

Research question one. Is there a statistically significant relationship between educational preparation, as defined by the CNE eligibility criteria (Option A and Option B), and first-time performance (pass/fail) on the CNE examination?

$H1_0$: There is no statistically significant relationship between educational preparation and first-time performance on the CNE examination.

$H1_a$: There is a statistically significant relationship between educational preparation and first-time performance on the CNE examination.

To test this null hypothesis, a Chi-square test of independence with $\alpha = .05$ as criterion for significance was performed to examine the relationship between educational preparation and first time performance on the CNE examination. The results of the Chi-square test of independence revealed $\chi2 = .69$, $df = 1$, $p = .41$. As a result, it is necessary to fail to reject the null hypothesis, and one should infer that there is no relationship between educational preparation as defined by eligibility criteria for Option A and Option B and first-time performance on the CNE examination.

In order to further test the relationship between educational preparation and first-time performance on the CNE examination, binary logistic regression was performed (Table 17). A review of the results revealed that $p > .05$, making it necessary to fail to reject the null hypothesis. As a result, it is appropriate to infer that there is no statistically significant relationship between educational preparation and first-time performance on the CNE examination.

Table 17

Binary Logistic Regression

	B	S.E	Wald	*df*	*p*	Exp(B)
Eligibility Option	.09	.107	.69	1	.41	1.09
Constant	1.47	.155	89.58	1	.00	4.35

Research question two. Is there a statistically significant relationship between educational preparation, as defined by the CNE eligibility criteria (Option A and Option B), and first-time performance in each of the six major CNE examination content areas?

H1$_0$: There is no statistically significant relationship between educational preparation and first-time performance in the content area, *facilitate learning*.

H1$_a$: There is a statistically significant relationship between educational preparation and first-time performance in the content area, *facilitate learning*.

H2$_0$: There is no statistically significant relationship between educational preparation and first-time performance in the content area, *facilitate learner development and socialization*.

H2$_a$: There is a statistically significant relationship between educational preparation and first-time performance in the content area, *facilitate learner development and socialization*.

H3$_0$: There is no statistically significant relationship between educational preparation and first-time performance in the content area, *use assessment and evaluation strategies*.

H3$_a$: There is a statistically significant relationship between educational preparation and first-time performance in the content area, *use assessment and evaluation strategies*.

H4$_0$: There is no statistically significant relationship between educational preparation and first-time performance in the content area, *participate in curriculum design and evaluation of program outcomes*.

H4$_a$: There is a statistically significant relationship between educational preparation and first-time performance in the content area, *participate in curriculum design and evaluation of program outcomes*.

H5$_0$: There is no statistically significant relationship between educational preparation and first-time performance in the content area, *pursue continuous quality improvement in the academic nurse educator role*.

H5$_a$: There is a statistically significant relationship between educational preparation and first-time performance in the content area, *pursue continuous quality improvement in the academic nurse educator role.*

H6$_0$: There is no statistically significant relationship between educational preparation and first-time performance in the content area, *engage in scholarship, service, and leadership*.

H6$_a$: There is a statistically significant relationship between educational preparation and first-time performance in the content area, *engage in scholarship, service, and leadership.*

To test the null hypotheses for research question two, a point-biserial correlation and *t*-test for independent samples were conducted. The point-biserial correlation statistic (Pearson Correlation) was performed to examine the relationship between educational preparation and first-time performance in each of the six major CNE examination content areas. Weak, positive correlations were observed between educational preparation and

three of the content areas at α = .05 (Table 18). A positive correlation means that as the value of one variable increases, the value of a second variable increases (Trochim & Donnelly, 2007). In the case of this study, an increase in one variable signifies an increase from eligibility Option A to Option B which means weak correlations are associated with Option B study participants. As indicated in Table 18, educational preparation demonstrated a weak, positive correlation with content area three (use assessment and evaluation strategies) ($r = .043$, $p = .03$), content area four (participate in curriculum design and evaluation of program outcomes ($r = .040$, $p = .04$) and content area six (engage in scholarship, service, and leadership ($r = .045$, $p = .02$). Based on these results, it is necessary to reject the null hypothesis, and it is appropriate to infer that there is a statistically significant relationship between educational preparation and performance in content areas three, four, and six. The analyses also revealed that there is no statistically significant relationship between educational preparation and first-time performance in content area one (facilitate learning) ($r = .00$, $p = .99$), content area two (facilitate learner development and socialization) ($r = .014$, $p = .47$), and content area five (pursue continuous quality improvement in the academic nurse educator role) ($r = .013$, $p = .51$). As a result, it is appropriate to fail to reject the null hypothesis and conclude that there is no statistically significant relationship between educational preparation and performance in the content areas one, two, and five.

Table 18

Point-biserial Correlations between Educational Preparation and CNE Examination Content Areas

	p	*r*	95% CI
Content Area 1	.99	.000	-
Content Area 2	.47	.014	-

(Table 18 continued)

	p	*r*	95% CI
Content Area 3	.03	.043*	[.005, .081]
Content Area 4	.04	.040*	[.002, .078]
Content Area 5	.50	.013	-
Content Area 6	.02	.045*	[.007, .083]

*Correlation is significant at the .05 level (2-tailed)

The *t*-test for independent samples was also conducted to assess the significance of the difference between the means of the content area sub scores and the independent groups, Option A and Option B. When using the *t*-test, it was first necessary to determine if equal variances could be assumed. The homogeneity of variances assumption was tested using the Levene's test for equality of variances. As indicated in Table 19, equal variances were assumed because the *p*-value for each of the six content areas was greater than $\alpha = .05$. As a result, it is appropriate to infer that the variances for each of the dependent variables (content area sub scores) are equal and in all probability the sample is obtained from the same population (Filliben, 2006).

The results of the independent *t*-tests were significant in content area three (use assessment and evaluation strategies), ($M = 15.6$, SD $= 2.2$), $t(2,671) = -2.20$, $p = .03$, content area four (participate in curriculum design and evaluation of program outcomes), ($M = 20.1$, SD $= 2.4$), $t(2,671) = -2.06$, $p = .04$, and content area six (engage in scholarship, service, and leadership) ($M = 18.4$, SD $= 2.39$), $t(2,671) = -2.34$, $p = .02$. When interpreting independent *t*-tests, the *t*-value will be positive if the first mean is higher than the second (Trochim, 2006b). Because the *t*-value is negative in each of the content areas that are significant ($p < .05$), it should be interpreted that Option B study participants had a higher mean score compared to Option A study participants. As

indicated in Table 19, there was no statistically significant difference in the mean scores

for content area one (facilitate learning), content area two (facilitate learner development

and socialization), and content area five *(*pursue continuous quality improvement in the

academic nurse educator role).

Table 19

t-test for Independent Samples (Option A and Option B)

Content Area		t-test for Equality of Means						
		F	*p*	*t*	*df*	*p*	95% CI	
1	Equal variances assumed	.09	.77	.00	2671	.99	-.22	.22
2	Equal variances assumed	.53	.47	-.72	2671	.47	-.17	.08
3	Equal variances assumed	3.61	.06	-2.20	2671	.03	-.38	-.02
4	Equal variances assumed	.01	.92	-2.06	2671	.04	-.38	-.01
5	Equal variances assumed	.90	.343	-.67	2671	.50	-.20	.01
6	Equal variances assumed	.79	.38	-2.34	2671	.02	-.41	-.04

Note: The mean scores and standard deviations for each of the content areas are presented in Table 13.

Research question three. Is there a statistically significant relationship between

years of full-time faculty employment and first-time performance (pass/fail) on the CNE

examination?

$H1_0$: There is no statistically significant relationship between years of full-time

faculty employment and first-time performance on the CNE examination.

H1$_a$: There is a statistically significant relationship between years of full-time faculty employment and first-time performance on the CNE examination.

To test the null hypotheses for research question three, point-biserial correlation and binary logistic regression were conducted. The point-biserial correlation revealed a weak, positive correlation between years of full-time employment and first-time performance on the CNE examination as evidenced by $r = .13$ at $\alpha = .01$ (2-tailed). As a result, it is necessary to reject the null hypothesis, and it is appropriate to infer that there is a statistically significant relationship between years of full-time faculty employment and first-time performance on the CNE examination.

Binary logistic regression was conducted to determine the relationship between years of full-time experience and the likelihood of first-time success on the CNE examination. Results of the analysis revealed that each year increase in full-time employment resulted in a 1.05 times greater likelihood of passing the CNE examination ($OR = 1.05$; 95% CI 1.03, 1.06; $p = .00$). Given these results, it is necessary to reject the null hypothesis, and it is appropriate to infer that there is a relationship between years of full-time faculty employment and first-time performance on the CNE examination.

Table 20

Binary Logistic Regression: Years of Full-Time Faculty Employment and First-Time Success on the CNE Examination

		B	S.E.	Wald	df	Sig.	Exp(B)	95% CI for Exp(B)	
Step 1[a]	Years of Full-Time Employment	.044	.007	40.52	1	.00	1.05	1.03	1.06
	Constant	1.13	.084	178.64	1	.00	3.08		

[a]Variable entered in step 1: Years of full-time faculty employment

Research question four. Is there a statistically significant relationship between years of full-time faculty employment and performance in each of the six CNE examination content areas?

$H1_0$: There is no statistically significant relationship between years of full-time faculty employment and first-time performance in the content area *facilitate learning*

$H1_a$: There is a statistically significant relationship between years of full-time faculty employment and first-time performance in the content area, *facilitate learning*.

$H2_0$: There is no statistically significant relationship between years of full-time faculty employment and first-time performance in the content area, *facilitate learner development and socialization*.

$H2_a$: There is a statistically significant relationship between years of full-time faculty employment and first-time performance in the content area, *facilitate learner development and socialization*.

$H3_0$: There is no statistically significant relationship between years of full-time faculty employment and first-time performance in the content area, *use assessment and evaluation strategies*.

$H3_a$: There is a statistically significant relationship between years of full-time faculty employment and first-time performance in the content area, *use assessment and evaluation strategies*.

$H4_0$: There is no statistically significant relationship between years of full-time faculty employment and first-time performance in the content area, *participate in curriculum design and evaluation of program outcomes*.

$H4_a$: There is a statistically significant relationship between years of full-time faculty employment and first-time performance in the content area, *participate in curriculum design and evaluation of program outcomes*.

$H5_0$: There is no statistically significant relationship between years of full-time faculty employment and first-time performance in the content area, *pursue continuous quality improvement in the academic nurse educator role*.

$H5_a$: There is a statistically significant relationship between years of full-time faculty employment and first-time performance in the content area, *pursue continuous quality improvement in the academic nurse educator role.*

$H6_0$: There is no statistically significant relationship between years of full-time faculty employment and first-time performance in the content area, *engage in scholarship, service, and leadership*.

$H6_a$: There is a statistically significant relationship between years of full-time faculty employment and first-time performance in the content area, *engage in scholarship, service, and leadership.*

To test the null hypothesis for research question four, Pearson Correlation analysis was conducted to examine the relationship between years of full-time employment and first-time performance in each of the six major CNE examination content areas. Weak, positive correlations were observed between years of full-time employment and five of the six content areas at a significance level of $\alpha = .01$. As

indicated in Table 21, years of full-time faculty employment was positively correlated

with first-time performance in content area one (facilitate learning) ($r = .089, p = .00$),

content area two (facilitate learner development and socialization) ($r = .081, p = .00$),

content area three (use of assessment and evaluation strategies) ($r = .145, p = .00$),

content area four (participate in curriculum design and evaluation of program outcomes)

($r = .181, p = .00$), and content area six (engage in scholarship, service, and leadership) (r

$= .167, p = .00$). These results indicate that it is necessary to reject the null hypothesis,

and it is appropriate to infer that there is a statistically significant relationship between

years of full-time employment and first-time performance in these three content areas.

The results of the Pearson Correlation analysis also revealed that there is no

statistically significant relationship between years of full-time employment and first-time

performance in content area five ($r = .02, p = .23$). As a result, it is necessary to fail to

reject the null hypothesis. The statistical results are presented in Table 21.

Table 21

*Correlation Matrix for Years of Full-Time Experience and First-Time Performance in the
CNE Examination Content Areas*

	p	r	95% CI
Content Area 1	.00	.089**	[.051, .127]
Content Area 2	.00	.081**	[.043, .119]
Content Area 3	.00	.145**	[.108, .183]
Content Area 4	.00	.181**	[.144, .218]
Content Area 5	.23	.023	-
Content Area 6	.00	.167**	[.130, .205]

**Correlation is significant at the .01 level (2-tailed)

To further test the null hypothesis for this research question, simple linear

regression was conducted to analyze the relationship between years of full-time

employment and first-time performance in each of the CNE examination content areas.

The model was significant for content area one $F(2,673) = 21.37$, $p = .00$, content area

two $F(2,673) = 17.53$, $p = .00$, content area three $F(2,673) = 57.53$, $p = .00$, content area

four $F(2,673) = 90.62$, $p = .00$, and content area six $F(2,673) = 76.98$, $p = .00$. The model

was not significant for content area five $F(2,673) = 1.44$, $p = .23$.

With regard to content area one (facilitate learning), the simple linear regression

revealed that .8% of the variability in study participants' performance was related to

years of full-time employment. Based on the results of the analysis, the regression

equation was 24.33 + .03*(Years of Full-Time Employment). This suggests that, on

average, each additional year of full-time faculty employment was associated with an

additional .03 point earned by a study participant in content area one. The intercept value

of 24.33 represents the mean score of content area one at zero years of experience.

When analyzing content area two (facilitate learner development and

socialization), simple linear regression revealed that .6% of the variability in study

participants' performance was related to years of full-time employment. Based on the

results of the analysis, the regression equation was 11.46 + .01*(Years of Full-Time

Employment). This suggests that, on average, each additional year of full-time

employment was associated with an additional .01 point earned by a study participant in

content area two. The intercept value of 11.46 represents the mean score of content area

two at zero years of experience.

The use of simple linear regression for content area three (use assessment and

evaluation strategies) revealed an R^2 of .02, meaning that 2.1% of the variability in this

content area is associated with years of full-time employment. The simple linear

regression equation was 15.08 + .04*(Years of Full-Time Faculty Employment). This

suggests that, on average, each additional year of full-time employment was associated with an additional .04 point earned by a study participant in content area three. The intercept value of 15.08 represents the mean score of content area three at zero years of experience.

When analyzing content area four (curriculum design and evaluation of program outcomes), the R^2 was .032 indicating that 3.2% of the variability in study participants' performance was related to years of full-time employment. Based on the results of the analysis, the regression equation was 19.42 + .05*(Years of Full-Time Employment). This suggests that, on average, each additional year of full-time employment was associated with an additional .05 point earned by a study participant in content area four. The intercept value of 19.42 represents the mean score of content area four at zero years of experience.

Analysis of simple linear regression results for content area six (engage in scholarship, service, and leadership) revealed that 2.8% of the variability in this content area is associated with years of full-time employment. The simple linear regression equation was 17.77 + .05*(Years of Full-Time Faculty Employment). This suggests that, on average, each additional year of full-time employment was associated with an additional .05 point earned by a study participant in content area six. The intercept value of 15.08 represents the mean score of content area six at zero years of experience.

The results of the simple linear regression indicate that it is necessary to reject the null hypothesis of content area one (facilitate learning), content area two (facilitate learner development and socialization), content area three (use of assessment and evaluation strategies), content area four (participate in curriculum design and evaluation

of program outcomes), and content area six (engage in scholarship, service, and leadership). As a result, it is appropriate to infer that a statistically significant relationship exists between years of full-time experience and first-time performance in each of these content areas. In addition, the results of the simple linear regression reveal that it is necessary to fail to reject the null hypothesis for content area five and to infer that there is no statistically significant relationship between years of full-time faculty employment and first-time performance in the content area, pursue continuous quality improvement in the academic nurse educator role. Table 22 presents the results of the simple linear regression.

Table 22

Simple Linear Regression for Content Areas Demonstrating Significant Correlations

Content Area	M	Coefficient Intercept	Coefficient X Variable	p	R^2
Content Area 1	24.66	24.33	.03	.00	.008
Content Area 2	11.62	11.46	.01	.00	.006
Content Area 3	15.52	15.08	.04	.00	.021
Content Area 4	19.99	19.42	.05	.00	.032
Content Area 6	18.31	17.77	.05	.00	.028

Chapter Summary

This study analyzed the performance of 2,673 academic nurse educators who took the CNE examination between September 28, 2005 and September 30, 2011. The pass rate for all study participants was 83.1%, with Option A study participants producing an 82.6% pass rate and Option B study participants producing an 83.9% pass rate. Results of Chi-square test of independence revealed that educational preparation, as identified by the CNE examination eligibility criteria, Option A and Option B, was not statistically significant for first-time performance on the CNE examination.

Upon examining the relationship between educational preparation and first-time performance in each of the six examination content areas, weak, positive correlations were observed in content area three (use assessment and evaluation strategies), content area four (participate in curriculum design and evaluation of program outcomes), and content area six (pursue continuous quality improvement in the academic nurse educator role). Additionally, results of the *t*-test of independent samples revealed that Option B study participants had a statistically significant higher mean score in content areas three, four, and six. There was not a statistically significant relationship noted between educational preparation and first-time performance in content area one (facilitate learning), content area two (facilitate learner development and socialization), or content area five (pursue continuous quality improvement in the academic nurse educator role).

Analysis of the relationship between study participants' years of full-time faculty employment and first-time performance on the CNE examination revealed a weak, positive relationship. In addition, binary logistic regression results were statistically significant. A one year increase in full-time employment resulted in a 1.05 times greater likelihood of passing the CNE examination (OR = 1.05; 95% CI 1.03, 1.06; *p* = .00).

Examination of the relationship between years of full-time employment and first-time performance in each of the content areas revealed weak, positive correlations in five of the six content areas at a significance level of $\alpha = .01$. Specifically, years of full-time employment was positively correlated with first-time performance in content area one (facilitate learning), content area two (facilitate learner development and socialization), content area three (use of assessment and evaluation strategies), content area four (participate in curriculum design and evaluation of program outcomes), and content area

six (engage in scholarship, service, and leadership). A statistically significant relationship was not observed between years of full-time employment and first-time performance in content area five.

Last, simple linear regression revealed significant findings between years of full-time employment and content areas one, two, three, four, and six. A significant finding was not noted for content area five. The greatest variability (3.2%) associated with years of full-time employment and performance was noted in content area four (curriculum design and evaluation of program outcomes). The regression equation for this content area revealed that on average, each additional year of full-time employment was associated with an additional .05 earned by a study participant.

Content area six (engage in scholarship, service, and leadership) had the second largest variability (2.8%). The simple linear regression revealed that on average, each additional year of full-time employment was associated with study participants earning an additional .05 in content area six. An analysis of content area three (use assessment and evaluation strategies) revealed 2.1% variability and an additional .04 point earned for each year of full-time employment. Examination of content area one (facilitate learning) revealed that only .8% of the variability in study participants' performance was related to years of full-time employment. Each additional year of full-time faculty employment was associated with an additional .03 earned by a study participant in content area one. Similarly, there was only .6% variability associated with years of full-time employment and performance in content area two (facilitate learner development and socialization). On average, each year of full-time employment resulted in .01 earned by a study participant in this content area.

The following and final chapter will provide a discussion and summary of the results of this study and whether or not they support the philosophical and theoretical framework that was presented in Chapter One. A discussion about the meaning of the results of this study; comparisons between this study's results and findings reported by other researchers; and the implications for nursing education, nursing practice, nursing research, and public policy will be presented. Last, limitations encountered in this study will be identified and considerations for improving this study will be shared.

Chapter Five

Discussion and Summary

This final chapter presents a discussion of the major findings of this study and their relationship to the theoretical framework, Abbott's (1988) system of professions theory. In addition, this study's findings are compared to those reported by other researchers and the implications of this research as it relates to nursing practice, nursing education, public policy, and nursing education. Finally, limitations encountered during this study are examined and recommendations for nursing education are offered.

This quantitative, retrospective, multivariate, non-experimental study was conducted to determine if CNE candidates' formal educational preparation or years of full-time faculty employment were related to their first-time performance (pass/fail) on the CNE examination as well as their performance in each of the examination's six major content areas. The philosophical underpinning of this study was post positivism, which supports research designed to identify and assess factors which may influence outcomes (Creswell, 2008). Abbott's (1988) system of professions theory was used to frame this research which investigated study participants' demonstrated knowledge about the full scope of the faculty role. The fundamental concepts of Abbott's (1988) theory are that an occupation must create a *jurisdiction of expertise*, identify the tasks that encompass its work, and make the case that only these professionals are qualified to perform this exclusive scope of work. In addition, it is believed that the use of a well-developed theory of the professions helps validate the necessary assumption that study participants' first-

time examination performance reflects their knowledge (Kane, 1997) of the full scope of the faculty role.

The following four theoretical relationships were tested in this study:

1. Is there a statistically significant relationship between educational preparation, as defined by the CNE eligibility criteria (Option A and Option B), and first-time performance (pass/fail) on the CNE examination?

2. Is there a statistically significant relationship between educational preparation, as defined by the CNE eligibility criteria (Option A and Option B), and first-time performance in each of the six major CNE examination content areas?

3. Is there a statistically significant relationship between years of full-time faculty employment and first-time performance (pass/fail) on the CNE examination?

4. Is there a statistically significant relationship between years of full-time faculty employment and performance in each of the six CNE examination content areas?

Summary of the Findings

The following section provides a discussion about the findings of this research study. Specifically, study participants' demographic characteristics, first-time pass rates, and performance in each of the CNE examination content areas are analyzed. The demographic characteristics described are educational preparation, highest degree earned, years of full-time employment, employment setting by program type, and academic rank. This is followed by an analysis of the results obtained by answering the four research questions.

Educational Preparation

   Demographic data. The first demographic variable examined was educational

preparation as defined by the CNE examination eligibility criteria, Option A and Option

B. Option A is designed for CNE candidates who have a minimum of two years of full-

time employment within the past five years and have formal educational preparation for

the academic nurse educator role. Formal educational preparation is obtained by earning

a master's or doctoral degree in nursing education *or* a master's or doctoral degree in

nursing plus nine or more credit hours of graduate-level education courses (NLN, 2012).

As indicated, meeting this eligibility requirement may be done in a variety of ways. Upon

analyzing the data, it became apparent that the various ways of meeting the eligibility for

Option A limited the conclusions that could be drawn about the relationship between

formal preparation for the academic nurse educator role and CNE examination

performance. Conversely, Option B is designed for CNE candidates who do not possess

formal preparation for the academic role. These requirements include a minimum of four

years of full-time experience within the past five years and a master's or doctoral degree

in nursing with a major emphasis in a role other than nursing education (NLN, 2012).

   In this study of 2,673 academic nurse educators, a greater percentage of the study

population (61.5%) was identified as Option A. Given that the CNE examination is the

only professional credential designed to recognize academic nurse educators' knowledge,

skill, and expertise (NLN, 2012), it is reasonable that the majority of study participants

possessed formal preparation for the academic nurse educator role. What is unknown is

whether this group is reflective of the academic nurse educator population due to the lack

of national data indicating this level of specificity about faculty members' master's or

doctoral educational preparation. It is suspected that the majority of full-time nursing faculty do not possess formal preparation for the role given that the majority of master's in nursing programs do not focus on nursing education (Ruland & Leuner, 2010). Additionally, the trend in doctoral education reveals the greatest interest and growth is in DNP programs as opposed to research-focused PhD doctoral programs (AACN, 2012b).

First-time pass rate. The overall, first-time pass rate produced by all study participants was 83.1%. This pass rate suggests that the study participants, who were required to meet prescribed educational and experiential qualifications, possessed specialized knowledge about the academic nurse educator role. This finding is consistent with Abbott's (1988) system of the professions theory, which contends that professionals must create a jurisdiction of expertise. Furthermore, the consistency in the first-time pass rates produced by Option A (82.6%) and Option B (83.9%) study participants suggests that the certification examination questions were reflective of the academic nurse educator professional practice. This is also consistent with Abbott's (1988) system of the professions theory, which articulates that professions must identify the tasks that encompass its work.

The finding that the first-time pass rate for Option A study participants was slightly lower (82.6%) than that for Option B study participants (83.9%) is inconsistent with previous studies which identified that the lack of formal preparation for the faculty role was a challenge to the successful transition into the role (Anderson, 2006; Dempsey, 2007; McDonald, 2004; Schoening, 2009; Schriner, 2004; Siler & Kleiner, 2001). A plausible explanation for this finding was the discovery that years of full-time employment were found to be positively related to CNE examination performance,

coupled with the fact that Option A study participants had the lowest number of mean and median years of full-time employment. It is worth noting that despite having a slightly lower overall first-time pass rate, Option A study participants only had lower pass rates at 2-5 and 16-20 years of full-time employment. This finding suggests that formal preparation for the academic nurse educator role may have an impact on CNE examination performance; however, additional research would need to be conducted to verify if this is true.

       First-time performance in the six CNE examination content areas. A review of first-time performance in each of the six CNE examination content areas revealed that the mean scores for Option A and Option B study participants were identical for content area one (facilitate learning). This is an unanticipated finding given that this content area requires knowledge about the use of teaching strategies (NLN, 2005e), which is a competency that is not typically attained as a result of attending a master's or doctoral program with a major emphasis in a role other than nursing education. Option B study participants had a higher mean score in the remaining five content areas of which there was a statistically significant relationship found in content area three (use assessment and evaluation strategies), content area four (participate in curriculum design and evaluation of program outcomes) and content area six (engage in scholarship, service, and leadership). Again, these findings are inconsistent with the educational preparation of Option B study participants, which typically does not include coursework in these three content areas. Because Option B study participants had more years of full time experience, it is plausible that they performed better in these content areas, because expertise and competency in these areas develops over time.

Highest Degree Earned

      Demographic data. A review of study participants' highest degree earned revealed that the largest percentage (66.3%) reported having a master's degree in nursing, while 26.8% reported having a doctoral degree in nursing or another field. These data are consistent with national faculty census data, inclusive of all program types, which reflect that the highest degree earned by 67% of nursing faculty was a master's degree in nursing while 25% possessed a doctoral degree (NLN, 2009b). As a result, it is believed that the highest degree earned as reported by study participants is reflective of the highest degree earned by the academic nurse educator population.

      When comparing Option A study participants to Option B study participants, it was noted that a greater percentage of Option B study participants possessed a master's degree in nursing. Conversely, a greater percentage of Option A study participants possessed a doctorate. These findings may suggest a trend by those with formal preparation for the academic nurse educator role. Specifically, their career path may be more focused on promotion and tenure requirements as evidenced by their pursuit of doctoral education and the fact that more Option A study participants have earned the CNE credential.

      What is unknown about study participants' educational preparation is their actual preparation at the master's and doctoral level. Master's programs in nursing are varied and may focus on areas such as clinical practice, administration, education, or informatics. In addition, within master's in nursing education programs there is variation in credit hour requirements, course work, and practicum experiences (Ruland & Leuner, 2010). Concomitantly, the actual educational preparation obtained by study participants

with a doctorate is unknown. Specifically, it is unknown whether study participants held an earned DNP, EdD, or PhD. Given the limited number of doctoral programs with a focus in nursing education, it is suspected that study participants possessed a doctoral degree in nursing or another field as opposed to a doctoral degree in nursing education. A result of this lack of specific demographic information is that it limits the conclusions that can be drawn about these research findings as they pertain to highest degree earned.

First-time pass rate. Analysis of the first-time pass rate data revealed that study participants with a doctoral degree produced a statistically significant, higher pass rate (88.1%) compared to those with a master's degree in nursing (81.9%). Consistent with having advanced educational preparation, study participants with a doctoral degree also had more years of full-time employment ($M = 15.6$) compared to study participants with a master's degree in nursing ($M = 10.2$). Option A and Option B study participants with a doctoral degree had a similar mean number of years of full-time employment and Option A study participants had a slightly higher pass rate (88.4%) compared to Option B study participants (87.5%).

These pass rate data suggest that an earned doctorate had more of an impact on first-time CNE examination performance than did formal preparation for the academic nurse educator role as defined by the CNE eligibility criteria. The higher first-time pass rates produced by doctoral-prepared study participants are consistent with Abbott's (1988) theory that professions establish a jurisdiction of expertise. With regard to this research study, advanced education resulted in an increased ability to demonstrate knowledge about the full scope of the faculty role as indicated by first-time performance on the CNE examination. The higher first-time pass rates by doctoral-prepared study

participants also supports recommendations advocating for academic nurse educators to possess an earned doctorate (AACN, 2008; Bartels, 2007; Broome, 2009). In addition, higher first-time pass rates by study participants with an earned doctorate are consistent with findings by Higbie (2010) and Ramsburg (2010) who noted that faculty with doctoral degrees had a significantly higher perceived level of attainment of the Core Competencies of Nurse Educators© compared to those with a master's degree.

Years of Full-Time Employment

Demographic data. A review of the demographic data related to years of full-time employment revealed that overall, Option A study participants possessed fewer years of full-time experience. This finding is reasonable considering the CNE examination eligibility requirements. In addition, it suspected that because Option A study participants have chosen to obtain formal preparation for the academic nurse educator role, some may be more likely to take the CNE examination earlier in their career. Obtaining the CNE credential may be a professional goal in preparation for a career trajectory in academe, which may include opportunities for rank, promotion, and tenure.

When reviewing the distribution of years of full-time employment, it was noted that the two largest subgroups were Option A study participants who possessed either two or three years of full-time employment. Combined, these two subgroups comprised one-fourth of Option A study participants and 15.4% percent of the entire study population. This distribution is important to recognize given the weak, positive correlation between years of full-time employment and performance on the CNE examination. The skewed

distribution of full-time employment data limits the ability to isolate the impact of educational preparation on first-time performance on the CNE examination.

First-time pass rate. A review of first-time pass rate data revealed that all study participants (both Option A and Option B) with five or fewer years of full-time employment passed at a lower rate (76.5% and 78% respectively) than the overall first-time pass rate of 83.1%. These findings suggest that regardless of educational preparation, study participants with five or fewer years of full-time experience demonstrated what could be considered a novice understanding of the full scope of the faculty role. In addition, although study participants with 6-10 years of full-time employment passed at a higher rate than those with five or fewer years of full-time experience, their pass rates were either at, or slightly lower than, the overall first-time pass rate. These findings suggest that it takes a considerable number of years of full-time employment to acquire knowledge about the full scope of the faculty role. This may be an important consideration for those who employ nursing faculty as well as those who fill or who are considering a nursing faculty role.

A review of the pass rates for Option A study participants revealed that the first-time pass rates did not increase in a linear fashion, rather they tended to trend upward, with slight declines noted at 16-20 years, 26-30 years, and more than 31 years of full-time employment. The highest first-time pass rate within Option A, as well as for all study participants, was earned by those with 21-25 years of full-time employment (93.9%). Given this overall trend, it does not appear that those in the later phase of their career demonstrate a substantial decline in their knowledge about the full scope of the faculty role.

First-time pass rate data also revealed that within Option B study participants, pass rates generally increased as years of full-time experience increased. The only exception was a decline in the pass rate for those with 26-30 years of experience (86.2%) compared to those with 21-25 years of experience (90.1%). Again, the first-time pass rate data indicated that study participants were able to demonstrate their knowledge about Core Competencies of Nurse Educators© throughout their career and did not demonstrate a decline in their knowledge during the latter stage of their career. This is an important finding given previous recommendations to use retired nurse educators to mentor faculty (Bellack, 2004; NLN, 2006b).

First-time performance in the six CNE examination content areas. Given the weak, positive correlation between years of full-time employment and first-time performance on the CNE examination, it is reasonable to find that content area mean scores tended to increase as years of full-time experience increased. Again, these findings support the idea that study participants do possess what Abbott (1988) describes as a jurisdiction of expertise. This was evidenced by the finding that generally, the longer study participants engaged in the full scope of the faculty role, the higher their mean scores were in each of the CNE examination content areas. In addition, these findings suggest that full-time experience has an impact on the acquisition of "specialized knowledge, skills, and abilities and excellence in practice" (NLN, 2012b, p. 2), which is one of the stated goals of CNE certification.

Employment Setting by Program Type

Demographic data. When examining the demographic characteristics of the study participants, it was found that the largest percentage reported teaching in an

associate degree program (38.9%), followed by those who reported teaching in a baccalaureate program (36.6%). These findings are reasonable when considering that annually, more associate degree program graduates take the NCLEX-RN compared to baccalaureate graduates (NCSBN, 2006, 2007, 2008, 2009, 2010, 2011, 2012b). In 2011, of the first-time, US-educated candidates who took the NCLEX-RN, 57.2% graduated from an associate degree program, and 40.3% graduated from a baccalaureate program (NCSBN, 2011). Study participants' demographic data suggest that there is significant interest in the CNE credential by those teaching in these two types of programs. The remaining programs had substantially fewer study participants, which is consistent with the fact there are considerably fewer practical/vocational, diploma, master's, and doctoral programs. In addition, when comparing Option A and Option B study participants, it was noted that similar percentages taught in each of the program types. This finding is reasonable given that formal preparation for the nurse educator role is not a requirement for assuming the role of a full-time faculty member.

First-time pass rate. A review of the first-time pass rate data by program type revealed that pass rate performance typically increased with the progressively higher degrees offered by the various programs. The exception to this trend was noted in the first-time pass rate performance of study participants employed in master's programs, which demonstrated the highest first-time pass rates. This particular finding is not unreasonable given that those who teach in master's programs may possibly teach in a graduate nursing education track. It should also be noted that there were considerably fewer study participants who reported teaching in a doctoral program ($n = 20$) compared to those who reported teaching in a master's in nursing program ($n = 177$). The first-time

pass rate findings noted in this current study are consistent with research conducted by

Ramsburg (2010) and Higbie (2010) who independently found that academic nurse

educators working in graduate programs reported higher levels of skill acquisition in each

of the core competency domains.

Study participants who reported teaching in a baccalaureate program produced a

higher first-time pass rate (86.2%) compared to the overall first-time pass rate of 83.1%.

They also produced a higher first-time pass rate compared to study participants teaching

in practical/vocational, diploma, and associate degree nursing programs. This finding is

reasonable given that baccalaureate programs are commonly located in university

settings, which typically have expectations of scholarship and research. As a result, study

participants teaching in baccalaureate programs have increased opportunities to engage in

each of the Core Competencies of Nurse Educators©.

The first-time pass rates of study participants teaching in a diploma (81.2%) and

associate degree program (82.5%) were lower than the overall first-time pass rate

(83.1%). This finding could be related to the fact that these program types typically focus

on excellence in teaching as opposed to the tripartite nursing faculty role, which includes

teaching, scholarship, and service. As a result, study participants teaching in diploma and

associate degree programs may have had less experience in competency six (engage in

scholarship, service, and leadership), which comprises 18% of the CNE examination test

blueprint.

It is important to note that although associate degree program nursing faculty

demonstrated a lower CNE examination pass rate compared to baccalaureate program

faculty, graduates of associate degree programs have also had a lower NCLEX-RN pass

rate compared to graduates of baccalaureate programs since 2006 (NCSBN, 2006, 2007, 2008, 2009, 2010, 2011, 2012b). The importance of this finding is highlighted by the fact that graduates of associate degree programs comprise the largest number of candidates who take the NCLEX-RN examination annually (NCSBN, 2006, 2007, 2008, 2009, 2010, 2011, 2012b). Because it is unknown whether there is a relationship between the demonstrated knowledge of associate degree nurse educators and the demonstrated knowledge of associate degree graduates, additional understanding about the knowledge of associate degree program faculty is needed.

The lowest first-time pass rate observed (69%) was produced by study participants who reported teaching in practice/vocational nursing programs. This pass rate was also considerably less than the overall first-time pass rate (83.1%). Again, one explanation for this pass rate could be related to the expectations of practical/vocational nursing programs, which typically focus on teaching and not scholarship, service, and leadership. This finding suggests the need for future research designed to analyze practical/vocational study participants' first-time performance in the competencies typically expected of those teaching in this program type. It is interesting to note that the practical/vocational nursing program first-time pass rate finding observed in this study is inconsistent with a previous research study by Higbie (2010). Specifically, Higbie (2010) observed that faculty teaching in practical/vocational nursing programs rated themselves higher in their perceived acquisition of the core competencies compared to nursing faculty teaching in baccalaureate and associate degree programs. Higbie's (2010) finding signifies the importance of this current research study, which allows for a comparison of

perceived competence to actual performance on a certification examination designed to measure knowledge about the Core Competencies of Nurse Educators©.

Academic Rank

A review of study participants' reported academic rank revealed that the rank of instructor (38.1%) was reported by the largest number of study participants, followed by participants who reported holding the rank of assistant professor (29.5%). These findings are reasonable considering that the distribution of full-time employment revealed that the largest percentage of study participants had fewer than ten years of full-time experience. The fact that study participants with a rank of instructor comprised the largest subgroup supports the idea that the CNE credential may be used as a mechanism for advancing one's career in academe. As a result, those with fewer years of full-time faculty experience may be more interested in this voluntary credential, compared to more experienced academic nurse educators, who are more likely to have already advanced in their career and rank.

First-time pass rate. Analysis of the first-time pass rate data revealed that pass rates increased as rank increased. The lowest first-time pass rate was noted for instructors (77.8%), which was less than the overall first-time pass rate of 83.1%. The highest first-time pass rates were noted for those who attained the rank of professor (90.7%). These findings are reasonable given the performance expectations that must be demonstrated for promotion. In addition, promotion in rank requires increased full-time experience, which is positively related to first-time performance on the CNE examination.

Hypothesis Testing

Research Question One: Is there a statistically significant relationship between educational preparation, as defined by the CNE eligibility criteria (Option A and Option B), and first-time performance (pass/fail) on the CNE examination?

Research question one findings. The first research question investigated whether there was a statistically significant relationship between educational preparation, as defined by the CNE eligibility criteria, and first-time performance (pass/fail) on the CNE examination. Results of the Chi-square test of independence revealed that educational preparation was not statistically significant for first-time performance on the CNE examination. This finding was initially unanticipated, given the longstanding recommendations for formal preparation for the nursing faculty (Benner et al., 2010; Fitzpatrick & Heller, 1980; NLN, 2002; Nutting, 1907; Robb, 1900; SREB CCEN, 2002; Zungolo, 2004).

Upon further consideration of the data and, as previously stated, a suspected reason for this finding is related to the distribution of years of full-time employment data for Option A study participants. Specifically, these participants possessed fewer mean and median years of full-time experience of which full-time employment was positively correlated to CNE examination performance. Another reason for this study finding may be due to the variation in the number of ways in which study participants could meet Option A eligibility criteria. Upon review of the criteria, the only requirement that actually separates Option A from Option B is nine or more credit hours of graduate-level education courses (NLN, 2012a). Given this requirement, it is difficult to delineate the exact difference in educational preparation between those identified as Option A or

Option B. This presents a limitation with regard to interpretation which is discussed in the limitations section of this chapter.

Research Question Two: Is there a statistically significant relationship between educational preparation, as defined by the CNE eligibility criteria (Option A and Option B), and first-time performance in each of the six major CNE examination content areas?

Research question two findings. The second research question was designed to determine if a relationship existed between educational preparation and first-time performance in each of the six major CNE examination content areas. Weak, positive correlations between educational preparation and three of the six examination content areas, specifically, content area three (use assessment and evaluation strategies), content area four (participate in curriculum design and evaluation of program outcomes), and content area six (engage in scholarship, service, and leadership) were noted. Independent *t*-tests revealed that Option B study participants had a statistically higher mean score in these same three content areas.

It was unexpected to find that study participants who did not possess formal preparation for the nurse educator role (Option B) had a statistically significant higher mean score in these three content areas considering that these competencies are typically not taught in master's or doctoral programs in nursing with a major emphasis in a role other than nursing education. As previously mentioned, an explanation for this finding is the fact that Option B study participants had a greater number of years of full-time faculty employment, which is positively correlated to CNE examination performance. These findings suggest that full-time experience in the faculty role is an important factor

in the development of the specialized knowledge required for academic nurse educator practice.

A statistically significant relationship was not noted between educational preparation and first-time performance in content area one (facilitate learning), content area two (facilitate learner development and socialization), and content area five (pursue continuous quality improvement in the academic nurse educator role). It is unknown why there was not a statistically significant relationship between educational preparation and these content areas particularly when considering that content area one and two both require specialized knowledge with regard to teaching students in the classroom, laboratory, and clinical settings. Again, the decreased years of full-time experience possessed by study participants with formal preparation for the nurse educator role likely impacted the results obtained in this study. The lack of a statistically significant relationship between educational preparation and content area five is not surprising. The reason for this is because this content area does not require specialized education, rather its focus is on knowledge required for the ongoing commitment necessary "to develop and maintain competence in the role" (NLN, 2005e, p. 21).

Despite the fact that these findings are inconsistent with the review of the literature which recommends formal preparation for the academic nurse educator role, these findings support the concept that study participants possessed a jurisdiction of expertise, as described by Abbott (1988), as evidenced by the mean scores obtained in each of the content areas. Furthermore, even though the educational preparation of Option B study participants focused on a role other than nursing education, these participants were required to possess a minimum of four years of full-time faculty

experience within the past five years. It is speculated that this full-time experience served to immerse these professionals into the nursing faculty role and subsequently provided them with a variety of opportunities to acquire the knowledge required to demonstrate knowledge about the full scope of the faculty role.

Research Question Three: Is there a statistically significant relationship between years of full-time faculty employment and first-time performance (pass/fail) on the CNE examination?

Research question three findings. The third research question was designed to determine if there was a relationship between years of full-time faculty employment and first-time performance on the CNE examination regardless of educational preparation. The results revealed a weak, positive relationship. In addition, binary logistic regression revealed that each year increase in full-time employment resulted in a 1.045 times greater likelihood of passing the CNE examination.

When considering these results, it is important to recognize that although the relationship was statistically significant, it was weak $(r = .13$ at $\alpha = .01)$. One factor contributing to the weakness of this relationship is likely due to the wide distribution of full-time employment data which ranged between two and 45 years of full-time experience. In addition, a greater number of study participants had fewer years of full-time experience which skewed the distribution of the data. This finding is likely to impact the strength of this relationship given that the first-time pass rates of study participants typically increased as years of full-time experience increased.

The independent variable of years of full-time experience also contains a number of other variables, such as educational preparation, highest degree earned, employment

setting by program type, and academic rank. Each of these variables has an unknown impact on the relationship between years of full-time experience and first-time performance on the CNE examination. Because this research study set out to evaluate variables that comprised the eligibility requirements, it was considered necessary to analyze the impact of eligibility Option A and Option B along with years of full-time employment. Given the results of this study, and the likely influence of other variables on the results, it is necessary for future research to isolate variables to determine their contribution to first-time CNE examination performance.

Research Question Four: Is there a statistically significant relationship between years of full-time faculty employment and performance in each of the six CNE examination content areas?

Research question four findings. The final research question was designed to determine if years of full-time employment were positively correlated with first-time performance in each of the CNE examination content areas. Weak correlations were noted in five of the six content areas. Specifically, these were content area one (facilitate learning), content area two (facilitate learner development and socialization), content area three (use of assessment and evaluation strategies), content area four (participate in curriculum design and evaluation of program outcomes), and content area six (engage in scholarship, service, and leadership). The weak correlations are likely to reflect that study participants' performance was influenced by their education, experience, and the program type in which they practice as an academic nurse educator.

Simple linear regression revealed that years of full-time employment made a negligible contribution to the variability within content area one (.8%) and two (.6%).

When answering research question two, a statistically significant relationship was not noted between educational preparation and these two content areas. Given these findings, it appears that future research investigating how academic nurse educators develop competence and expertise in their ability to facilitate learning and facilitate learner development and socialization is warranted.

Simple linear regression also revealed that years of full-time employment contributed to the largest variability (3.2%) within content area four (curriculum design and evaluation of program outcomes). The second largest variability (2.8%) was found in content area six (engage in scholarship, service, and leadership) and the third largest variability (2.1%) was noted in content area three (use of assessment and evaluation strategies). Despite the fact that the variability for each of these content areas is very modest, these findings suggest that the development of expertise in these three content areas is impacted by full-time experience.

The finding that years of full-time experience contributes to knowledge about identified competencies required of the role is consistent with the concept that professionals possess a jurisdiction of expertise. This finding is consistent with Abbott's (1988) description of how certain professional groups evolve and control expert knowledge. In addition, the demonstrated relationship between years of full-time employment and performance on the CNE examination also supports the belief that academic nursing education is a specialty area of practice that requires expertise in order to fill the role (NLN, 2002).

Integration of the Findings with Previous Literature

In order to compare the results obtained in this study to other research findings, studies investigating the perceived attainment of the core competencies of nurse educators (Gilbert-Palmer, 2005; Higbie, 2010; Kirchoff, 2010; Ramsburg, 2010) were reviewed. Because the CNE examination test blueprint is based on the Core Competencies of Nurse Educators© (Halstead, 2007; Ortelli, 2006) it was considered relevant and important to compare the results of the perceived attainment of the core competencies to actual performance on the CNE examination. A review of these studies revealed mixed results with regard to educational preparation as well as years of full-time experience and perceived attainment of the core competencies.

For example, academic nurse educators prepared with a postmaster's certificate (Ramsburg, 2010) or those who took more than one semester of coursework in curriculum design and program evaluation, testing and measurement, and teaching strategies (Higbie, 2010) consistently rated themselves higher in each of the core competencies than those who did not have some formal preparation for the academic nurse educator role. Although these independent findings by Higbie (2010) and Ramsburg (2010) are not unexpected, they are inconsistent with this study's findings. Specifically, this study revealed that study participants who did not possess formal preparation for the nurse educator role earned statistically significant higher mean scores in the content areas related to the use of assessment and evaluation strategies, participating in curriculum design and evaluation of program outcomes, and engaging in scholarship, service, and leadership.

Conversely, research by Gilbert-Palmer (2005) and Kirchoff (2010) both found that formal preparation for the academic nurse educator role did not significantly impact study participants' perceptions about their achievement of the core competencies of nurse educators. Specifically, Gilbert-Palmer (2005) observed that despite lacking formal preparation for the academic nurse educator role or possessing experience as an academic nurse educator, study participants felt competent in five of the eight core competences as a result of their clinical experience and graduate preparation as an APN. Interestingly, the areas in which APN study participants perceived a lack of proficiency were in the competencies related to participating in curriculum design and evaluation of program outcomes, functioning as a change agent and leader, and functioning within the educational environment. These results are in contrast to the findings obtained in this study, which discovered that study participants who did not possess formal preparation for the nurse educator role (Option B) actually had a higher mean score in content area four (curriculum design and evaluation of program outcomes) and content area six, which includes functioning as a change agent and leader and functioning within the educational environment. As previously stated, it is suspected that Option B study participants' performance in these areas was impacted by their increased years of full-time experience.

Kirchoff's (2010) investigation of nursing faculty with and without formal preparation for the academic nurse educator role revealed the lack of a statistically significant difference in study participants' perceptions of core competency proficiency. Interestingly, a review of Kirchoff's (2010) study participants' mean score ratings revealed that those who possessed a master's degree in nursing with a nursing education focus rated themselves lower in the competencies use of assessment and evaluation

strategies, and participate in curriculum design and evaluation of program outcomes. It could be postulated that one reason for these findings noted by Kirchoff (2010) and supported by this study, which failed to identify a statistically significant relationship between formal preparation for the academic nurse educator role and demonstrated knowledge about the core competencies, may be associated with the curricular variations in graduate programs that focus on nursing education. As discussed in Chapter Two, the absence of clear standards and consistent curricular models, including content and practicum experiences for graduate nursing education programs has been noted and questioned (Oermann & Jamison, 1989; Ruland & Leuner, 2010).

The third and fourth research questions that guided this study investigated whether there was an independent relationship between years of full-time faculty employment and first-time performance on the CNE examination and in each of the six content areas, regardless of educational preparation. The results revealed a weak, positive correlation. In addition, binary logistic regression revealed that each year increase in full-time employment resulted in a 1.05 times greater likelihood of passing the CNE examination. Years of full-time employment produced the highest variability in study participants' performance in content areas four, six, and three, while negligible variability was noted in content areas one and two.

Once again, the findings observed in this research study are inconsistently supported by research investigating academic nurse educators' perceptions of their achievement of the core competencies of nurse educators. Kirchoff (2010) observed that there was not a statistically significant difference between novice and experienced nurse educators' perceptions about their competency performance; however, both novice and

experienced nurse educators reported minimal, statistically insignificant deficiencies related to their use of assessment and evaluation strategies, participation in curriculum design and evaluation of program outcomes, and scholarship. Interestingly, Kirchoff (2010) also found that although not statistically significant, novice nurse educators rated themselves higher in the core competencies related to leadership and scholarship. Conversely, in this research study, study participants with fewer years of experience scored lower in content area six (engage in scholarship, service, and leadership). The findings in Kirchoff's (2010) study may suggest inaccurate perceptions held by novice nurse educators. The noted discrepancy between these studies raises a question about the validity of self-report as a measure of competency and supports the importance of certification examination outcomes research as a progressive effort in advancing what is known about academic nurse educator competence.

Gilbert-Palmer's (2005) investigation of APNs, who were not academic nurse educators, revealed that those who had more APN experience were more likely to serve as preceptors and serving as a preceptor was significantly related to perceived competency in the use of assessment and evaluation strategies, continuous quality improvement in the academic nurse educator role and functioning within the educational environment, and developing the nurse educator role. Gilbert-Palmer's (2005) findings of a higher self-rating in the competencies use of assessment and evaluation strategies and functioning within the educational environment are consistent with the findings in this research study, which revealed a relationship between years of full-time faculty experience and performance in these two content areas.

Ramsburg (2010) found that nursing faculty with more than 20 years of teaching experience reported the highest levels of core competency skill acquisition and those with five years or less reported the lowest levels of skill acquisition for the core competency domains. In addition, Ramsburg (2010) analyzed study participants' performance on eight application questions (vignettes) designed to provide a common situation encountered by academic nurse educators. Each question was designed to address one of the domains of the core competency of nurse educators and the response choices were designed to reflect activities associated with the novice, advanced beginner, competent, proficient, and expert level of skill acquisition. Ramsburg (2010) discovered that years of teaching experience, total skill acquisitions score, and total vignette score were positively related and statistically significant. Furthermore, the relationship between faculty with 17 to 45 years of teaching experience showed the strongest positive relationship. These findings, which suggest that an increase in years of experience is related to a greater perceived performance and actual performance on the vignettes, are consistent with the findings noted in this research study.

Last, Higbie (2010) also observed significantly higher ratings on all competencies reported by nursing faculty with a higher number of years of full-time faculty experience. This finding was supported by multiple regression analysis which revealed that years of full-time teaching experience accounted for 51% of the variance (Higbie, 2010). It is worth noting that Higbie (2010) also found that there were no significant correlations associated with part-time faculty experience or years as experience in nursing practice. Higbie's (2010) findings are consistent with the results obtained in this study which reveal a statistically significant relationship between years of full-time faculty experience

and first-time performance on the CNE examination, and in all of the content areas except content area five. The concept that expertise is achieved over time is consistent with Benner's (1984) novice to expert framework, which has recently been used by a number of researchers who have investigated academic nurse educators' perception of their acquisition of the core competencies of nurse educators (Higbie, 2010; Kirchoff, 2010; Poindexter, 2008; Ramsburg, 2010).

Implications of the Findings

The following section provides a discussion about the implications of this research study that were initially presented in Chapter One. Specifically, a discussion about how first-time pass rate data and the answers to the four hypotheses questions might inform nursing practice, nursing education, nursing research, and public policy are provided. In addition, the implications of these findings are explored in order to establish recommendations for future research.

Implications for Nursing Practice

The results of this study produced findings that have implications for nursing practice. For example, individuals who are considering which type of prelicensure nursing program to attend may be influenced by study participants' first-time CNE examination performance. Specifically, study participants teaching in practical/vocational, diploma, and associate degree programs passed the CNE examination at rates less than the overall first-time pass rate. What is unknown is whether CNE examination pass/fail performance is impacted by an academic institution's mission and faculty expectations, particularly as they relate to scholarship, service, and leadership. Future research investigating the CNE examination performance relative to

study participants' institutional expectations is necessary in order to fully understand the performance of academic nurse educators teaching in these program types.

Another implication for nursing practice is the finding that study participants teaching in baccalaureate nursing programs passed the CNE examination at a higher rate (86.2%) than those teaching in diploma (81.2%) and associate degree programs (82.5%). These data are noteworthy given multiple research findings that seek to link improved patient outcomes with care provided by baccalaureate-prepared nurses (Aiken, Clarke, Cheung, Sloane, & Silber, 2003; Aiken, Clarke, Sloane, Lake, & Cheney, 2008; Estabrooks, Midodzi, Cummings, Ricker, & Giovanetti, 2005; Friese, Lake, Aiken, Silber, & Sochalski, 2008; McHugh et al., 2012). The higher CNE examination pass rates produced by study participants teaching in baccalaureate programs also lends support to recommendations made by the IOM (2010) which calls for a more highly educated nursing workforce and an increase in the number of baccalaureate-prepared nurses.

Because this current study is the first of its kind to evaluate the knowledge of nursing faculty who teach in all program types, it offers evidence to be considered when discussing the future of nursing education. To date, research has focused on analyzing the relationship between the educational preparation of nurses and patient outcomes. This current study offers empirical data about the knowledge of those who teach the students who attend these various nursing programs.

Implications for Nursing Education

The results of this study have several implications for nursing education. To begin, those who design curricula for post-master's certificate programs, and graduate and doctoral programs that focus on nursing education should consider these findings

when examining their curricula, including their curriculum plans as well as the content offered in specific courses. In reviewing these courses, particular attention should be given to content related to assessment and evaluation strategies, curriculum design, program evaluation, scholarship, service, and leadership. Furthermore, graduate programs should consider evaluating practicum experiences offered, in order to determine if graduate students preparing for a career in academe have the requisite opportunity to apply what has been taught.

The finding that study participants who possessed a doctoral degree demonstrated a higher first-time pass rate suggests the importance of doctoral education in the preparation of academic nurse educators. It also supports the IOM's (2010) recommendation to double the number of nurses with doctorates. Those who employ academic nurse educators whose highest degree earned is a master's degree in nursing should consider providing opportunities to assist faculty in advancing their education. In addition, the noted first-time performance of study participants with doctoral degrees should serve to encourage professional organizations to stress the importance of doctoral preparation for those pursing a full-time position as an academic nurse educator.

The results of this study also offer insight regarding our nation's faculty development needs, especially nurse educators who teach in practical/vocational, diploma, and associate degree programs and passed at a rate lower than the overall CNE examination first-time pass rate. Based on this study's findings, attention should be given to the creation of faculty development offerings that focus on assessment and evaluation strategies, curriculum design, and program evaluation. It should be recognized that those with less experience, regardless of educational preparation, may have greater educational

needs in these content areas. In addition, deans and program directors should consider how nursing faculty are mentored in their responsibilities related to scholarship, service, and leadership based on the institution's mission.

When planning orientation and mentoring activities, consideration should be given to the findings that study participants who held the rank of instructor passed the CNE examination at a substantially lower rate (77.8%) than the overall first-time pass rate of 83.1%. In addition, those who held the rank of assistant professor passed the CNE examination at only a slightly higher rate (84.1%) than the overall first-time pass rate. Again, this supports the recommendation that those with less than five years of experience may need a more extensive orientation program and mentoring. In addition, these findings highlight the need for hiring and developing academic nurse educators who possess a range of experience in order to ensure the requisite breadth and depth of talent and capacity.

Implications for Nursing Research

The results of this current research study offer a number of implications for future nursing education research, particularly given that this is the first study to assess CNE examination outcome data. Prior to this study, nursing certification research was limited to nursing practice. The most closely related research relevant to this study focused on the perceived attainment of nurse educator competencies (Gilbert-Palmer, 2005; Higbie 2010; Kirchoff, 2010; Ramsburg, 2010) and the expectations of novice nurse educator competency attainment by deans and directors (Poindexter, 2008).

In September 2012, it was announced that the IOM will convene a standing committee for the ANCC with the purpose of discussing nursing credentialing research

issues. Topics for discussion and potential studies that may be conducted by this IOM committee include emerging priorities for nursing credentialing research, relevant research methodologies, the impact of credentialing on improving healthcare quality, performance, and outcomes, and strategic planning designed to advance credentialing research (IOM, 2012). The creation of this standing committee highlights the growing recognition of the value of nursing certification and its potential impact on improving patient outcomes. Given that academic nurse educators are responsible for the educational preparation of our nation's entry-level, post-licensure, and advanced practice nursing workforce, it would seem appropriate to include the NLN ANECP as a member of this standing committee.

In addition to future research related to CNE examination outcome data, this study provides a basis for a variety of other types of studies. An example includes the impact of CNE credentialing on the academic institution. These studies could set out to determine if a relationship can be determined between CNE credentialing and nursing program outcomes, faculty retention, and/or student retention. Studies investigating the professional performance of those who hold the CNE credential could provide valuable information about nursing faculty. Greater insight about this subgroup of the academic nurse educator population may help inform strategic planning related to reducing the national nursing faculty shortage.

Implications for Public Policy

The results of this study provide two findings that may be of particular interest to those who influence state board of nursing policy. First, the finding that years of full-time employment had a statistically significant relationship with five of the six CNE

examination content areas suggests the need for mandatory continuing education for nursing faculty. At present, State Board of Nursing licensure renewal requirements vary from state to state and they typically do not provide specific continuing education expectations for those filling the academic nurse educator role.

Another finding that has implications for State Boards of Nursing is related to the trends and differences in first-time pass rates based on years of full-time experience, highest degree earned, and employment setting by program type. These findings signify a variation among those who assume a full-time faculty role and suggest the potential need for greater consistency in the knowledge possessed by academic nurse educators. In addition, even though some State Boards of Nursing accept national certification as a way to meet licensure renewal requirements, holding the CNE credential is not always promoted by State Boards of Nursing nor is it a mandatory requirement for nursing faculty. By endorsing the CNE credential as a mechanism to demonstrate continued competence, State Boards of Nursing would be promoting the use of the Core Competencies of Nurse Educators©, which may in turn provide improved educational experience for students in all program types.

Last, the results of this study may also have implications for nursing program accrediting bodies. For example, CCNE (2009) accreditation standards and criteria specify that academic preparation includes "specialty coursework" (p. 11); however, examples of desired or required coursework are not provided. Based on the findings obtained in this study, nursing program accrediting bodies may consider requiring courses related to use of assessment and evaluation strategies, curriculum design, and evaluation of program outcomes.

The first-time pass rate performance of doctoral-prepared study participants may also offer guidance to nursing program accrediting bodies. For example, NLNAC (2008) limits the requirement for a specified percentage of doctoral-prepared faculty to baccalaureate, master's, post-master's certificate, and clinical doctoral programs. Interestingly, there exists no requirement for doctoral preparation for faculty teaching in practical/vocational, diploma, and associate degree programs, all of which have lower first-time CNE examination pass rates. Given the need for well-prepared nursing faculty at all levels of nursing education, nursing program accreditors may wish to consider requiring that all programs have a certain percentage of doctoral-prepared full-time faculty or administrators. Clearly, a challenge associated with such a recommendation is the persistent nationwide shortage of doctoral-prepared faculty (Anderson, 2000; Bartels, 2007; Berlin & Sechrist, 2002; Broom, 2009; Hinshaw, 2001). None the less, the results of this study support the need for the creation and sustainability of doctoral education for nursing faculty and may, it is hoped, inform policy and decision makers regarding this need.

Based on the implications of these findings, the following recommendations are offered.

- Faculty with less than five years of full time experience should receive comprehensive orientation programs and mentoring experiences using experienced and retired faculty.
- Mentoring experiences should include the development of scholarship, service, and leadership competencies.

- Deans and directors should strive to hire and retain faculty with a range of experience in order to ensure the requisite breadth and depth of talent and capacity.

- Faculty teaching in master's programs designed to prepare academic nurse educators and post-master's certificate programs should review these curricula. Particular attention should be paid to course work focusing on the use of assessment and evaluation strategies, curriculum design, program evaluation, scholarship, and service and leadership and practicum experiences.

- A common curriculum for master's and doctoral programs that focus on nursing education should be adopted.

- The Core Competencies of Nurse Educators© should be recognized by all professional organizations that focus on nursing education and used by all academic institutions that prepare academic nurse educators.

- Deans and directors who employ master's prepared academic nurse educators should consider providing opportunities to facilitate faculty in their pursuit of a doctoral degree appropriate for higher education.

- Professional organizations' should stress the importance of doctoral preparation for those pursing a full-time position as an academic nurse educator.

- Associate degree program deans and directors should establish benchmarks for the percentage of doctoral-prepared faculty that comprise their program.

- State Boards of Nursing should consider specifying relevant continuing education expectations as part of licensure renewal requirements for those filling the academic nurse educator role. This should include coursework pertaining to the

use of assessment and evaluation strategies, curriculum design, and evaluation of program outcomes.

- All State Boards of Nursing should consider endorsing the concept of certification as an academic nurse educator as an approved way in which to demonstrate continued nursing competence.

- Faculty development offerings should focus on content related to the use of assessment and evaluation strategies, curriculum design, and program evaluation.

- The NLN ANECP should collect additional data about CNE candidates' educational preparation, specifically, the type of doctoral degree earned, graduate-level education courses taken, and practicum experiences received.

- The NLN ANECP should use this research data, in conjunction with future academic nurse educator practice analysis data to inform decisions about eligibility criteria.

- The NLN ANECP should participate in the IOM Standing Committee on Credentialing Research in Nursing.

- Future research is needed in gain knowledge about:
  - factors impacting CNE candidate examination performance based on the type of master's degree earned (master's degree in nursing with a major emphasis in nursing education or a major emphasis in a role other than nursing education) and the type of doctoral degree earned (EdD, clinical and non-clinical DNP, PhD in nursing education, PhD in nursing, PhD in another field);

- factors impacting CNE candidate performance at various stages of their full-time employment in order to obtain insights about knowledge development throughout the course of one's career;

- factors impacting CNE candidates' performance based on program type in order to determine whether identified differences are the result of varying employer expectations or signify the need for faculty development (particular attention should be paid to associate degree nursing programs given their role in preparing pre-licensure nurses);

- the relationship between first-time performance in the six content areas and other independent variables, such as highest degree earned and program type;

- the impact of CNE credentialing on students' achievement of nursing program outcomes, faculty retention, and student retention;

- the identification of academic nurse educators' opinions on which courses they felt were most useful to prepare them for the role

Limitations

The purpose of this study was to examine whether formal educational preparation as identified in the CNE examination eligibility criteria Option A and Option B and years of full-time faculty employment had a statistically significant relationship with first-time performance on the CNE examination (pass/fail) and in each of the six CNE examination content areas (dependent variables). The reason why these independent variables were selected was because they examined CNE examination eligibility criteria. Given that this

was the first research study designed to analyze CNE outcome data, it seemed warranted to select these, of the many variables available.

Even though it is believed that it was useful to have gained the knowledge obtained from the results of the hypothesis testing, there were problems with using educational preparation, as defined by CNE examination eligibility criteria Option A and Option B, as an independent variable. For example, the criteria for Option A can be met in a variety of ways. Specifically, one can meet this criteria by possessing (a) a master's or doctoral degree in nursing with a major emphasis in nursing education or (b) a master's or doctoral degree in nursing with a major emphasis in a role other than nursing education provided that nine or more credit hours of graduate-level educations have been earned. In reviewing these requirements, it becomes apparent that potentially, the only educational difference between Option A and Option B is a minimum of nine credit hours of graduate-level education courses. Furthermore, these courses may or may not have been part of a post-master's certificate program, and they may only address a select few of the Core Competencies of Nurse Educators©. As a result, the independent variable Option A is limited in its ability to represent formal preparation for the academic nurse educator role, which limits the conclusions that can be drawn about the results obtained for research questions one and two.

Another limitation with the independent variable educational preparation is that the eligibility criteria related to years of full-time experience is not the same. Specifically, only two years of full-time employment within the past five years are required for Option A, whereas four years of full-time employment within the past five years is required for Option B. When evaluating the distribution of full-time employment data, it was noted

that one-fourth of the Option A study participants had either two or three years of full-time employment which represents a sub-group of study participants not found in the Option B study participant group. The distribution of years of full-time employment data for Option A study participants also revealed that this group had a lower mean, median, and mode compared to the Option B study participants. This is noteworthy, given that years of full-time employment had a statistically significant, weak, positive relationship to first-time performance on the CNE examination and a statistically significant relationship with five of the six CNE examination content areas. The conclusion drawn from these discoveries is that eligibility Option A has limitations as a measure of formal preparation for the academic nurse educator role.

Another limitation of this study is related to the independent variable years of full-time employment. Years of full-time experience had a relatively high standard deviation (8.8 years), which results in a lower precision of the data. In addition, years of full-time employment is not normally distributed, and a disproportionate number of study participants have fewer years of full time experience. The non-normal distribution of full-time employment data has an unknown impact on the results obtained when answering research questions three and four. Another limitation of the use of the independent variable years of full-time employment is that it contains Option A and Option B study participants. The result of this correlation between these independent variables is that it makes it difficult to assess the relative importance of years of full-time employment and educational preparation in explaining any variation in the dependent variables.

Other limitations related to this research include the lack of demographic information that may influence CNE examination performance, such as whether the study

participant took a formal preparation course or studied for the CNE examination. In addition, the impact of study participants' employment setting and program type were not taken into consideration. This is potentially important because of the different degrees of emphasis that various academic institutions may place on some of the core competencies, depending on their mission. Last, the impact of study participants' academic rank was not taken into consideration, which is another variable that may impact knowledge and experience, based on the promotion requirements imposed by the academic institution.

In summary, this researcher deemed it was warranted to use the selected independent variables given that they reflect the CNE examination criteria and because this was the first study designed to analyze CNE outcome data. By analyzing these variables, their impact is better understood, and these results prepare the way for future CNE research. Future researchers are encouraged to conduct multiple regression analysis in order to delineate the effect of demographic variables such as educational preparation, highest degree earned, years of full-time experience, academic rank, and employment setting by program type on first-time CNE examination performance and performance in each of the six content areas. This expanded analysis could further contribute to what is known about the knowledge possessed by academic nurse educators who take the CNE examination.

Chapter Summary

This chapter provided an analysis of the findings that resulted from this research, which was the first of its kind to evaluate academic nurse educators' demonstrated knowledge about the full scope of the faculty role. As a result of this study, it is possible to provide empirical evidence demonstrating that full-time experience is positively

related to improved CNE examination performance. Even though this finding is not unexpected, it is an important consideration for this group of professionals because they are not only aging, they are in short supply. Within this chapter, analysis of the data could not relate formal preparation for the faculty role, as defined in eligibly criteria Option A, to examination performance. What was discovered was that doctoral preparation positively impacted CNE examination outcomes which is an important finding given the shortage of nursing faculty prepared with a PhD along with the robust interest in the development of clinical doctoral programs. By exploring these data it was also revealed that among the various nursing program types, CNE examination performance was not alike. Even though it is unknown whether these findings were related to differences in role expectations or for other reasons, what is known is that CNE examination performance was higher for those teaching in baccalaureate, master's, and doctoral programs. Hopefully this finding will result in a spirit of inquiry, and if necessary, a call to action for the deans and directors who lead these programs. Last, analysis of this quantitative data revealed that faculty development offerings for novice nurse educators teaching in all program types should focus on curriculum design, program evaluation, assessment, and evaluation, while mentoring opportunities should include competency development in the areas of service, scholarship, and leadership.

In conclusion, this initial research provided a discovery about academic nurse educators' knowledge about the full scope of the faculty role. By understanding what these professionals currently know about their jurisdiction of expertise, appropriate efforts can be made to facilitate the evolution of this advanced specialty role. Ideally, the empirical evidence provided by this research will be used to advance the educational

preparation and professional development of academic nurse educators and to help shape nursing education research priorities. The outcome of these efforts can then be extended by providing meaningful contributions to advancing the science of nursing education, improving the education of nurses and their delivery of patient care, and informing the discussion about the future of nursing.

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Appendix A

Nova Southeastern University IRB Approval

NOVA SOUTHEASTERN UNIVERSITY
Office of Grants and Contracts
Institutional Review Board

NSU

MEMORANDUM

To: Tracy A. Ortelli
Health Professions Division – College of Nursing

From: Jo Ann Kleier, Institutional Review Board Center Representative, PhD, EdD, ACNP-BC.

Signature

Date: April 28, 2012

Re: *Evaluating the Knowledge of Those Who Teach: An Analysis of Candidates' Performance on the Certified Nurse Educator Examination* (Kleier 2012-04)

I have reviewed the above-referenced research protocol at the center level. Based on the information provided, I have determined that this study is exempt from further IRB review. You may proceed with your study as described to the IRB. As principal investigator, you must adhere to the following requirements:

1) CONSENT: If recruitment procedures include consent forms these must be obtained in such a manner that they are clearly understood by the subjects and the process affords subjects the opportunity to ask questions, obtain detailed answers from those directly involved in the research, and have sufficient time to consider their participation after they have been provided this information. The subjects must be given a copy of the signed consent document, and a copy must be placed in a secure file separate from de-identified participant information. Record of informed consent must be retained for a minimum of three years from the conclusion of the study.

2) ADVERSE EVENTS/REACTIONS: The principal investigator is required to notify the IRB chair and me (954-262-5369 and 561-805-2297, respectively) of any adverse reactions or unanticipated events that may develop as a result of this study. Reactions or events may include, but are not limited to, injury, depression as a result of participation in the study, life-threatening situation, death, or loss of confidentiality/anonymity of subject. Approval may be withdrawn if the problem is serious.

3) AMENDMENTS: Any changes in the study (e.g., procedures, number or types of subjects, consent forms, investigators, etc.) must be approved by the IRB prior to implementation. Please be advised that changes in a study may require further review depending on the nature of the change. Please contact me with any questions regarding amendments or changes to your study.

The NSU IRB is in compliance with the requirements for the protection of human subjects prescribed in Part 46 of Title 45 of the Code of Federal Regulations (45 CFR 46) revised June 18, 1991.

Cc: Protocol File
Office of Grants and Contracts (if study is funded)

3301 College Avenue • Fort Lauderdale, FL 33314-7796 • (954) 262-5369
Fax: (954) 262-3977 • Email: mga@nsu.nova.edu • Web site: www.nova.edu/cwis/ogc

Appendix B

Permission to Use CNE Examination Data

To: Tracy A. Ortelli
From: Dr. Stephen C. Hetherman
           Senior Director, Testing Services

Subject: Use of Certified Nurse Educator (CNE) examination data
Date: September 15, 2009

I, Tracy A. Ortelli, agree that my research conducted using National League for Nursing (NLN) data shall remain confidential during the conduct of the study and may only be shared with members of my dissertation committee. Final analysis and findings will be shared with the NLN upon completion of the dissertation study. I agree to provide the NLN the first right of refusal for an initial manuscript developed for publication related to the dissertation study results. As a professional courtesy, a bound copy of the dissertation will be provided to the NLN.

Signed this 15th day of September 2009

Tracy A. Ortelli

Stephen C. Hetherman, EdD

Appendix C

Copyright Permission

To: Tracy A. Ortelli, PhD(c), RN, CNE

On behalf of *Nursing Education Perspectives* and the National League for Nursing, I am happy to give you permission to reproduce in your doctoral dissertation Table 1, Reliability Estimates, from the article "Defining the Professional Responsibilities of Academic Nurse Educators: The Results of a National Practice Analysis." This article was published in *Nursing Education Perspectives,* Vol 27, No. 5, pages 643-246.

Very truly yours,

Leslie Block

Leslie Block | Managing Editor, Nursing Education Perspectives |
National League for Nursing | www.nln.org | lblock@nln.org | Phone: 212-812-0308 |
Fax: 212-812-0391 | 61 Broadway | New York, NY 10006

Appendix D

Table D1

PhD Programs With a Focus on Nursing Education

Program	Website
Capella University	http://www.capella.edu/schools_programs/education/phd/nursing_education.aspx
Indiana University of Pennsylvania	http://www.iup.edu/rn-alliedhealth/programs/nursingphd/default.aspx
Nova Southeastern University	http://www.nova.edu/nursing/phd/
University of Nevada Las Vegas	http://nursing.unlv.edu/pdf/phd%20pdfs/phd_program&curricula.pdf
University of Northern Colorado	http://www.unco.edu/nhs/nursing/phd/index.html
Villanova University	http://www1.villanova.edu/villanova/nursing/programs/graduate/phd.html
Widener University	http://www.widener.edu/academics/schools/nursing/graduate/doctoral/default.aspx

Appendix E

Table E1

Nurse Educator Competency Comparisons

New Nurse Educator Competencies[a]	Competencies of Novice Nurse Educators[b]	Nurse Educator Competencies[c]	Core Competencies of Nurse Educators©[d]
Teacher role	Teaching role	Teacher role	Facilitate learning
			Facilitate learner development and socialization
			Use assessment and evaluation strategies
			Participate in curriculum design and evaluation of program outcomes
Practice role			
Research role	Research role	Scholar role	Engage in scholarship
Service/Governance role	Service role	Collaborator role	Function within the Educational environment
			Function as a change agent and leader
Role for personal and professional growth			Pursue continuous quality improvement in the nurse educator role

[a]Choudhry, U. (1992). New nurse faculty: Core competencies for role development. *Journal of Nursing Education, 31*(6), 265-272.
[b]Davis, D., Dearman, C., Schwab, C., & Kitchens, E. (1992). Competencies of novice nurse educators. *Journal of Nursing Education, 31*(4), 159-164. [c]Southern Regional Education Board Council on Collegiate Education in Nursing (2002). *Nurse educator competencies*. Retrieved from http://publications.sreb.org/2002/02N04_Nurse_Competencies.pdf [d]National League for Nursing. (2005). *The scope of practice of academic nurse educators*. New York, NY: Author.

Appendix F

Table F1

CNE Examination Eligibility Requirements

Option	Criteria		
	Licensure	**Education**	**Experience**
Option A: Must meet criteria 1, 2, and 3	1. A currently active registered nurse license in the United States or its territories.	2. A master's or doctoral degree in nursing with: a major emphasis in nursing education **or** nine or more credit hours of graduate-level education courses[a]	3. Two years or more of full-time employment[b] in the academic faculty role within the past five years.
Option B: Must meet criteria 1, 2, and 3	1. A currently active registered nurse license in the United States or its territories.	2. A master's or doctoral degree in nursing (with a major emphasis in a role other than nursing education).	3. Four years or more of full-time employment[b] in the academic faculty role within the past five years.

Note. Graduate-level research or statistics courses *do not* count toward this requirement. Adapted from "Certified Nurse Educator (CNE) 2012 Candidate Handbook," by National League for Nursing, 2012. Unpublished.
[a]Examples of acceptable graduate-level education courses include: Curriculum Development and Evaluation; Instructional Design; Principles of Adult Learning; Assessment/Measurement & Evaluation; Principles of Teaching and Learning, Instructional Technology. [b]full-time employment as defined by the institution

Appendix G

Table G1

CNE Examination Test Blueprint

Category	Major Content Areas	Percent of Examination	Number of Test Questions
1	Facilitate Learning	25%	32
2	Facilitate Learner Development and Socialization	11%	14
3	Use Assessment and Evaluation Strategies	15%	20
4	Participate in Curriculum Design and Evaluation of Program Outcomes	19%	25
5	Pursue Continuous Quality Improvement in the Academic Nurse Educator Role	12%	16
6	Engage in Scholarship, Service, and Leadership	18%	23
6A[a]	Function as a Change Agent and Leader	8%	10
6B[a]	Engage in Scholarship of Teaching	5%	6
6C[a]	Function Effectively within the Institutional Environment and the Academic Community	5%	7

Note. Adapted from "Certified Nurse Educator (CNE) 2012-2013 Candidate Handbook October 2012 Revision," by National League for Nursing, 2012b, retrieved from http://www.nln.org/certification/handbook/cne.pdf, p. 5; and "A national job analysis of the academic nurse educator [Unpublished report]," by L. Fabrey and J. Walla, 2005, Lenexa, KS: Applied Measurement Professionals.

[a]Sub score data obtained in content areas 6A, 6B, and 6C are combined and reported as one sub score, identified as content area 6.

Appendix H

Table H1

Definitions Related to CNE Examination Content Areas

Content Area	Definition
Facilitate Learning	"Nurse educators are responsible for creating an environment in classroom, laboratory, and clinical setting that facilitates student learning and the achievement of desired cognitive, affective, and psychomotor outcomes" (p. 15).
Facilitate Learner Development and Socialization	"Nurse educators recognize their responsibility for helping students develop as nurses and integrate the values and behaviors expected of those who fulfill that role" (p. 17).
Use Assessment and Evaluation Strategies	"Nurse educators use a variety of strategies to assess and evaluate student learning in classroom, laboratory and clinical settings, as well as in all domains of learning" (p. 18).
Participate in Curriculum Design and Evaluation of Program Outcomes	"Nurse educators are responsible for formulating program outcomes and designing curricula that reflect contemporary health care trends and prepare graduates to function effectively in the health care environment" (p. 19).
Pursue Continuous Quality Improvement in the Academic Nurse Educator Role	"Nurse educators recognize that their role is multidimensional and that an ongoing commitment to develop and maintain competence in the role is essential" (p. 21).
Function as a Change Agent and Leader	"Nurse educators function as change agents and leaders to create a preferred future for nursing education and nursing practice" (p. 22).
Engage in Scholarship of Teaching	"Nurse educators acknowledge that scholarship is an integral component of the faculty role and that teaching itself is a scholarly activity" (p. 22).
Function within the Educational Environment	"Nurse educators are knowledgeable about the educational environment within which they practice and recognize how political, institutional, social, and economic forces impact their role" (p. 23).

Note. National League for Nursing. (2005). *The scope of practice of academic nurse educators*. New York, NY: Author.