

**Seeking success: Program improvement plans as a strategy to increase pass rates on
the national licensure exam**

by

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ABSTRACT

Nursing is a practice profession that has long been regarded with esteem and trust by the public. The education of nurses is a process that has evolved over the last 150 years from apprenticeship-based training to an academic program grounded in the arts and sciences. Nurses must successfully learn a rigorous academic curriculum, demonstrate application of knowledge and skills in the clinical setting, and pass a national licensure exam to practice their profession. Boards of nursing are legislated the responsibility of protecting the public by assuring that nurses who practice in their state are safe, competent, and ethical practitioners. This responsibility is implemented through legislated nurse practice acts and administrative rules that define and regulate nursing practice and nursing education.

The purpose of this qualitative research study was to identify and articulate best practices that support an increase in National Council Licensure Exam-Registered Nurse (NCLEX-RN®) passing percentages of graduates from nursing programs in Iowa. Program improvement documents submitted by nursing education programs demonstrating pass rates below the acceptable benchmark set by the Iowa Board of Nursing were analyzed for organization, structure, and content. Review of the nursing literature, including evidence-based practices and scholarly works, helped to inform the research. Exploration of regulatory practices and related outcomes provided another lens and source of data from which to view practices within Iowa. Complexity theory guided and informed this evaluation research study and was applied by incorporating Daniel L. Stufflebeam's (2003) Context, Input, Process, and Product (CIPP) model as a framework for content analysis of documents.

This study has provided greater understanding of how nursing programs responded to the Iowa Board of Nursing policy mandate. The knowledge generated supports policy recommendations for improving the percentage of graduates passing the licensure examination within six months of graduation from an approved nursing program. Recommendations for policy, education, and future research are presented.

CHAPTER 1

THE PROBLEM AND ITS UNDERLYING FRAMEWORK

The National Council of State Boards of Nursing (NCSBN, 2014) has documented the steps that must be completed for a nursing program graduate to enter the profession as a Registered Nurse. The candidate must graduate from a recognized nursing program, meet the specific requirements of the state board of nursing where they are applying for licensure, and pass the national licensure exam administered by the NCSBN. Recognized nursing programs are those that are approved by state boards of nursing per the standards established by legislative acts in that state. After applying for a license, the state board of nursing then approves candidates to sit for the licensure exam. Approval typically requires verification of successful completion of an approved program and a criminal background check, and might include drug testing. The candidate then makes arrangements with the NCSBN to schedule and complete the examination. Results are returned to the state board of nursing and students who pass the exam are issued a license to practice as a Registered Nurse. The passing standard for the exam is set by the NCSBN and accepted by all the state boards of nursing for the purpose of successfully passing the exam.

The typical college graduate receives a diploma and goes straight to a human resources office looking for that first job. However, after receiving that diploma, graduates of nursing programs are still facing the most challenging exam, the National Council Licensure Exam for Registered Nurses (NCLEX-RN®), which must be passed before they can work in their chosen profession. Success on the licensure exam is critical

to the individual student, the program he/she attended, and the community where the individual intends to live and work. Nurses must have a license to practice as a Registered Nurse (RN), and without a license their prospects for employment are limited to low paying support positions, such as nursing assistant or healthcare technician, that do not allow them to use the title, knowledge, and skills of their college education. Boards of nursing, accreditation agencies, funding sources, and college or university administrations hold nursing education programs accountable for quality indicators, including graduate licensure pass rates and employment rates. Local communities rely on successful graduates to support ongoing nursing workforce demands, including delivery of quality health care to the community in which they live.

Impact on Nursing Workforce

A persistent shortage of registered nurses is well documented in the literature and expected to continue into the foreseeable future (AACN, 2014). A number of factors contribute to the shortage of nurses. A disproportionate number of “baby boomer” nurses in the workforce today are retiring and there are fewer nurses in the next generation to replace them (Huston, 2014). Shortages in the workforce can lead to longer work hours, reduced staffing, and decreased satisfaction, causing nurses to leave the profession and compounding the problem (AACN, 2014). The Health Resources and Services Administration (HRSA) reported in 2013 that although the nursing workforce is indeed growing, the demand for nurses is also growing and expanding. The Patient Protection and Affordable Care Act in 2010, combined with an aging population and increased prevalence of chronic diseases, have significantly increased the demand for healthcare services (AACN, 2014). HRSA (2013) also reported that in 2000 about one-third of the

nursing workforce was older than 50, and the largest segment of the nursing workforce were in the 41 to 50 years old bracket. Even with an influx of newly licensed nurses, the country is dealing with a long-term shortage of RNs, a situation that impacts everyone concerned about accessible, high quality, healthcare.

A logical response to the workforce shortage would be an increase in enrollment, graduation, and licensure of new RNs. However, nursing education programs cannot meet the increased demand for nurses caused by the workforce shortage. A concurrent shortage of nursing faculty has caused programs to turn students away. The American Association of Colleges of Nursing (AACN) reported that nursing schools in the United States turned away 68,938 qualified applicants from baccalaureate and graduate nursing programs in 2014 (AACN, 2015). Nearly two-thirds of the responding programs identified faculty shortages as the reason. Additional factors that limited enrollments included lack of clinical sites and preceptors, lack of classroom space, and budget constraints. The National League for Nursing (2011) reported that in 2009-2010, associate degree nursing programs turned away even more qualified applicants (46%) than baccalaureate programs (37%). Faculty shortages were the most common explanation, but lack of clinical sites and other resources were also noted.

Limited capacity in nursing education programs amplifies the need to produce graduates who are prepared to pass the licensure exam. Regulators, educators, and consumers evaluate nursing education programs, in part, by the success of their graduates on the licensure exam. Education program aggregate pass rates are public information and can be easily located and compared by stakeholders or interested parties via reports on state board websites or by going to the National Council of State Boards of Nursing

(NCSBN) web site. Boards of nursing and accreditation organizations may impose restrictions ranging from a simple notice to improve to more serious consequences such as limiting enrollments or putting a program on probation or conditional approval status. Programs that have consistently poor outcomes, as partially demonstrated in the percentage of graduates that fail the exam on the first attempt, are receiving increasing scrutiny as regulators respond to stakeholder pressures for accountability in higher education. Consumers who are knowledgeable of the requirements for licensure are going to search for an education program where students have demonstrated success on the licensure exam.

Impact on the Graduate

Failure of the licensure exam also has a damaging impact on the new graduate. There are direct and indirect costs related to the expense of applying for a nursing license and applying to take the exam. Graduates must submit an application for licensure to the state where they plan to live and work. Applications for a nursing license typically include having to pay a license fee; a background check with finger printing adds a second, and perhaps third, fee to the cost of the license. In addition, there is a fee for the licensure exam itself. This combination of fees is likely to be over \$300 and can be nearly double that in some states. If the candidate fails the exam, there is a new fee for retaking the exam and some states will charge a second license application fee. Graduates who fail the exam on their first attempt, and repeat the exam, fail at even higher rates. Fewer than fifty percent of repeat testers pass the exam. Failing the exam also keeps the graduate from being employed as a nurse, an indirect cost that can be significant over time. While there is no limit to the number of times the graduate can

attempt the exam, passing is less likely with each attempt. Although more difficult to measure, the emotional impact on graduate confidence and self-esteem, embarrassment when friends and family learn they failed the exam, and anxiety about preparing to retest are all additional influencing factors to consider.

Responding to the national nursing shortage and preparing a workforce that will deliver safe and effective care in a demanding health care delivery environment requires that nursing graduates be prepared to pass the licensure exam (Rogers, 2010). The pressure to increase capacity and bolster the nursing workforce is intense and growing. Increasing the first time success rate of graduates taking the licensure exam is critical, for when they fail the licensure exam they cannot enter the workforce and the shortage of nurses only gets worse. “A graduate’s failure to pass the licensure exam has implications far beyond those for the individual student” (Shultz, 2010, p.205). Education programs must implement proven strategies to increase the success of graduates on the licensure exam. Regulators and other stakeholders must also contribute to the process by holding programs accountable for quality outcomes, including acceptable pass rates on licensure exams.

Statement of the Problem

The Iowa Board of Nursing (IBON) contracts with the National Council of State Boards of Nursing (NCSBN) to use the National Council Licensure Exam for Registered Nurses (NCLEX-RN®) as part of the licensure process. The NCLEX-RN® exam is a computerized adaptive test that measures the candidate’s ability to provide safe and effective care within the practice domain of the Registered Nurse. Exam results are either a pass or a fail and are reported in the aggregate based on the percentage of

candidates who passed the exam, and are commonly referred to as the “pass rate” or “pass percentage.” The passing percentage is based on all applicants taking the examination for the first time within six months of graduation from an approved program. Aggregate results for first time testers are reported as a national pass rate, a state pass rate, and program pass rate. These reports are available to the public through multiple online locations or print reports.

In January 2000, the Iowa Board of Nursing (IBON) amended the rules in the Iowa Administrative Code, Nursing Board [655] Chapter 2 Nursing Education Programs, to set the minimal acceptable NCLEX-RN® pass rate at the 95th percentile of the national passing percentage (IBON, 2009). The rules change requires that nursing programs whose NCLEX-RN® passing percentage for first time testers is lower than the 95th percentile of the national passing percentage for two consecutive calendar years notify the Iowa Board of Nursing. This notification process is accomplished by completing and returning a report sent to programs by the IBON each spring. Then, within 6 months of that notification, the program is required to submit an institutional plan for assessment and improvement of NCLEX-RN® results, including outcomes and time lines. The institutional plan is to address administration, faculty, students, curriculum, resources, policies, and the nursing advisory committee. However, there is no template or additional guidelines for developing and submitting the institutional plan. Programs are required to submit annual reports to the IBON as long as the NCLEX-RN® passing percentage remains below 95% of the national passing percentage. Once submitted to the board, there is no documented process for responding to the reports and there are no additional statements in the administrative rules regarding progress, or the lack thereof,

following the submission of one or more institutional plans for assessment and improvement of NCLEX® passing percentage.

The first reports were submitted to the IBON in 2004, when six programs met the criteria of two consecutive years with passing percentages below 95% of the national passing percentage. In 2005, there were five programs that submitted institutional plans (IBON, 2006). A review of the Iowa Board of Nursing Annual Reports from 2007 through 2014 document that a total of 60 institutional plans have been submitted from 2005 to 2014, with a range of 3 to 7 per year and an average of 6 per year.

The Iowa Board of Nursing established a task force in 2005 to address the declining pass rate on the National Council Licensure Exam for Registered Nurses (NCLEX-RN®) for graduates educated in the state (IBON, 2005). In 2004 the passing percentage for the state was 82.65% compared to the national passing percentage of 86.62% and a resultant 95th percentile benchmark of 81.89%. The task force was charged with examining the variables impacting the NCLEX-RN® scores and designing a strategic plan of action and evaluation. The stated intent was to facilitate program ability to increase the passing percentage of graduates taking the licensure exam.

Members of the task force were all current heads of nursing programs in Iowa, including two members who also served on the Iowa Board of Nursing. A professor in the College of Education at the University of Northern Iowa was hired as a consultant for the task force. The consultant's expertise was in the area of educational measurement, research, and program evaluation. The task force members reviewed and discussed a variety of reports and documents, specific to Iowa and representative of national trends and reports. The members determined that the best approach for examining variables

impacting the passing percentage was to conduct a survey of faculty teaching in Iowa nursing education programs and a survey of each program (IBON, 2006).

The task force developed two separate surveys, one for each nursing program's faculty and one for each overall nursing program. The surveys examined factors that impact the passing percentages for the programs. The data were compiled and the task force published a report in December 2006. The report included a list of recommendations subdivided into five stakeholder groups: Iowa Board of Nursing, Nursing Education Programs, Nursing Faculty, Students and NCLEX® Candidates, and Employers. The two recommendations for the Iowa Board of Nursing were to hold programs accountable for their NCLEX-RN® pass rates as outlined in the administrative rules and use annual reports and the approval process for ongoing evaluation of factors influencing NCLEX-RN® results. There were ten recommendations for nursing education programs, ranging from faculty development to evaluation and revision of admission policies, suggested implementation of standardized testing, and remediation strategies, among others. The report included recommendations that encouraged nursing faculty to become familiar with and use appropriate assessment strategies, active learning teaching strategies, and professional development. Strategies for students and graduates and even employers were also presented. The report was widely distributed and remains available upon request from the Iowa Board of Nursing.

In the 15 years since the administrative rules change, and the 9 years since the publication of the task force report, there has not been significant or sustained improvement in the passing percentages for graduates from Iowa nursing education

programs. The aggregate passing percentage for the state has remained consistently below the national passing percentage as documented in APPENDIX A.

Purpose of the Study

The purpose of this evaluation research study is to evaluate the content, organization, quality, and effectiveness of strategies identified by programs submitting plans for improvement to the Iowa Board of Nursing, to identify and articulate best practices that can support an increase in the passing percentages, and to recognize barriers to improving passing percentages. Review of the nursing literature, including evidence-based practices and scholarly works, helped inform the research. Exploration of regulatory practices and related outcomes provides another lens from which to view the practices within the state. I believe that this study will provide greater understanding of how nursing programs have responded to the policy mandate, and that the knowledge generated might lead to policy recommendations for improvement in the percentage of graduates passing the licensure examination within six months of graduation from an approved nursing program. I recognize that making a significant change in educational outcomes is not a rapid process, and that improvements will occur over a period of years.

Research Questions

The following research questions were addressed in this study:

1. How have nursing education programs organized and presented required institutional plans for assessment and improvement of National Council Licensure Exam-Registered Nurse (NCLEX-RN®) passing percentage to the Iowa Board of Nursing (IBON)?
2. How do the program assessment and improvement plans, submitted by Iowa pre-licensure programs to the state board of nursing, compare to the evidence-base of best practices in the nursing literature?

3. What practices do state agencies that regulate nursing licensure use to establish minimum acceptable National Council Licensure Exam-Registered Nurse (NCLEX-RN®) passing percentage rates of first-time test takers?
4. What recommendations arise out of the content analysis of program responses, nursing literature, and best practices for Iowa programs and the state board of nursing?

Theoretical Framework

Complexity theory was used to guide and inform this evaluation research study; implemented by incorporating Daniel L. Stufflebeam's (2003) Context, Input, Process, and Product (CIPP) model as a framework for content analysis of documents.

Complexity theory is a logical fit for research involving dynamic and evolving programs that are rarely in equilibrium. Nursing programs exist within complex education systems and intersect with equally complex, yet different, health care systems. Nearly every nursing educator or college administrator will acknowledge that nursing programs do not fit smoothly into the traditional structure and process of most undergraduate degree majors. Nursing programs are accountable to expectations and standards of the licensing boards, professional standards in the industry, and expectations of health care providers who will be the employers of successful graduates, as well as the traditional academic policies and procedures of the academic setting. Many nursing students enter the nursing major as non-traditional students. They may have multiple experiences and responsibilities that can either enhance or challenge their likelihood of academic and professional success. These concurrent, evolving, and sometimes competing forces are a perfect example of complexity, explaining why Patton (2015) reported that complexity theory is established as an appropriate framework for research in the social sciences. Further, according to Patton (2015), "The openness, flexibility, and adaptability of

qualitative methods make complexity theory an especially useful framework for qualitative inquiries into complex dynamic situations and phenomena” (p. 145). The application of qualitative methods allows the researcher to search for emerging patterns in process or outcomes and to include an awareness of potentially unanticipated consequences.

The CIPP evaluation model fits well with complexity theory and provides a framework that supports examination of multiple program elements and the relationships among them. As reported by Frye and Hemmer (2012), Stufflebeam developed the model to focus on program improvement, which is distinct and different from models that focus on outcomes or other single focused goals. The first three elements of the CIPP model are context, inputs, and process. These elements are often referred to as the formative components of program development. The final element, product, is appropriate for assessing outcomes or summative evaluation. Researching a complex program by framing inquiry around the elements of the CIPP model allows the researcher to investigate multiple aspects and components of a program, taking into consideration the concept of complexity.

Significance of the Study

The significance of this study was the addition of evidence-based strategies to the scholarly research and literature for programs and regulators seeking to develop or improve program outcomes. Improved program outcomes include increased numbers of graduate nurses passing the national licensure exam the first time. An increase in the percentage of first time exam takers passing the exam will have an impact on multiple stakeholders. First, and importantly, graduates will be prepared to enter the nursing

workforce sooner and with greater confidence. Graduates and the economy will not be impacted by the cost and lost wages attributed to failure to pass the licensure exam. Increasing the number of successful candidates on the licensure exam will have a positive impact on the nursing workforce, therefore benefiting local communities. Nursing education programs will achieve improved aggregate passing percentages on the national licensure exam, demonstrating quality and attractiveness to potential students while satisfying the Iowa Board of Nursing standards. Other programs and boards of nursing will be able to learn from the efforts in Iowa to enhance outcomes in their programs or states.

Assumptions

It is an assumption with this study that documents submitted to the Iowa Board of Nursing were presented in good faith, and efforts were indeed made by the programs to implement the plans as presented. It is also assumed that information and pass rates reported on the Iowa Board of Nursing website and the National Council of State Boards of Nursing website is accurate, that documents provided by the Iowa Board of Nursing to the researcher are provided fully and without being altered, and that the boards of nursing surveyed provided accurate information.

Limitations

A limitation is that the research focused on a program evaluation that is unique to the state where the study was conducted. An additional limitation is that the study only addresses the NCLEX-RN® as a benchmark of success and does not explore other possible measures or contingency factors.

Delimitations

Delimiting this study is the fact that the document analysis is limited to one modest size Midwestern state. Only state board of nursing rules and standards are being examined for applicability to improving licensure examination passing percentages. National accreditation is not being examined as it might relate to or support program improvement. The primary reason for this distinction is the difference in the mission and structure of the two types of agencies. Accreditation organizations are different than state boards of nursing in their stated purpose and mission. In addition, only improvement plans submitted to the Iowa Board of Nursing are being analyzed, although programs may create improvement plans as part of the quality improvement and strategic planning process.

Definition of Terms

For the purpose of this study, the following operational definitions are used:

Accreditation, regional: voluntary accreditation provided by one of six private and voluntary accreditation agencies, each serving a geographical area in the United States. Peer reviewers conduct a comprehensive review of the functioning and effectiveness of the entire college or university based on established quality standards.

Accreditation, national: any accreditation agency that accredits programs, colleges, or universities within an entire country.

Accreditation, programmatic: accreditation that focuses on the functioning and effectiveness of a particular program or unit within the larger educational institution.

Accreditation or Approval, regulatory: approval, recognition or accreditation that is required by a federal, state, or provincial government agency.

Accreditation, voluntary: a form of accreditation not required by law or regulation.

Associate degree program: a program that requires at least 2 years of academic courses and awards an associate degree (ADN) that allows students to apply for licensure

as a registered nurse. Graduates take the same national licensure exam for registered nurse as baccalaureate degree graduates.

Baccalaureate degree program, generic: a program that requires at least 4 years of academic courses and awards a baccalaureate degree in nursing (BS or BSN) that allows students to apply for licensure as a registered nurse. Graduates take the same national licensure exam for registered nurse as associate degree graduates.

Curriculum: as defined in Iowa Administrative Code, Nursing Board [655] Chapter 2 Nursing Education Programs, “means content, lab/simulation, observation and clinical experiences developed, implemented and evaluated by faculty to facilitate achievement of program outcomes and to meet the learning needs of the students.” (p. 1)

Evaluation research: “a systematic appraisal using the methods of social research for the purpose of generating knowledge and understanding that can be used for decision making” (Gillis & Jackson, 2002, p. 269).

Nursing Faculty: teaching staff in a nursing education program; this definition includes anyone who provides didactic or clinical instruction (clinical instructor) in nursing.

National Average NCLEX-RN® Pass Rate: the national average NCLEX-RN® pass rate is the average pass rate (expressed as a percentage) for all first time registered nurse candidates sitting for the NCLEX-RN® in a given year.

NCLEX-RN®: the National Council Licensure Examination, the examination currently used for initial licensure as a registered nurse.

Nursing directors: A “head of program” or the dean, chairperson, or coordinator of the nursing education program(s) who is responsible for the administration and leadership of the program(s).

Nurse educator: a faculty member, department head, or head of program that is employed at an institution of higher education.

Nursing program: any method of instruction or delivery that leads to a pre-licensure nursing diploma or a degree.

Registered Nurse (RN): Defined in the Iowa Code as an individual who has completed at least two academic years that leads to an associate’s degree, diploma, or baccalaureate degree and is eligible to apply for registered nurse licensure.

State Board of Nursing: the regulatory agency for licensing, certification, disciplinary, and educational functions for nursing practice in each state.

Organization of the Study

Chapter 1 of the study has presented the introduction, the statement of the problem, the purpose of the study, the questions to be answered, the theoretical framework, the significance of the study, and the definitions of terms.

Chapter 2 is a review of relevant literature. It addresses the nursing workforce shortage, the nursing education system including standards and regulation, passing percentages on the NCLEX-RN®; and strategies to improve program outcomes, program evaluation, and complexity theory.

Chapter 3 presents the methodology used in the study, including the research design, epistemology, theoretical perspective, population and sample, and instrumentation and data collection, together with information on validity and reliability.

Chapter 4 presents the results of the study. Chapter 5 discusses and analyzes the results, culminating in conclusions and recommendations.

CHAPTER TWO

REVIEW OF THE LITERATURE

A literature review was conducted to identify factors that impact nursing education and specifically the first time pass rate of graduates. In this chapter I start by examining aspects of the nursing profession that influence nursing education, beginning with the nursing workforce shortage. I describe the nursing education system along with the various standards that influence the planning and delivery of nursing education. I then present the roles and influence of regulatory bodies that drive the education system along with the licensure process that determines if a graduate will be allowed to practice their chosen profession after graduating from an approved nursing program.

I then explore the phenomenon of declining first time pass rates on the licensure exam in greater detail, including an overview of the many strategies programs have tested and tried in efforts to increase and sustain program outcomes as measured by the first time passing percentage on the licensure exam by program graduates. I present and apply the process of program evaluation to the concepts of program improvement and success of graduates on the licensure exam. I present the CIPP evaluation model as a framework for evaluation research. Finally, I provide an overview of complexity theory as a theoretical framework for this qualitative study of program responses to decreased first time passing percentages on the National Council Licensure Exam for Registered Nurses.

The Nursing Shortage

Nursing shortages are not new phenomena to the profession. Historically, shortages were related to major events, such as the increased need for nurses during times

of war. The current nursing shortage began in about the year 2000 and is unique in the duration and the combined influencing factors of a changing healthcare system, shifts in career choices, and a seeming unawareness of the looming shortage of registered nurses (Huston, 2014). The American Association of Colleges of Nursing (AACN, 2014), describing the current nursing workforce shortage, noted that Dr. Peter Buerhaus reported in the July/August 2009 issue of *Health Affairs*, that by 2015 the U.S. nursing shortage was projected to be twice as large as any nursing shortage experienced since the mid-1960s. The AACN (2014) also noted that the Bureau of Labor Statistics' *Employment Projections 2012-2022* released in December 2013, listed Registered Nursing (RN) among the top job growth occupations, projecting job openings for nurses to increase by 19% and reach 1.05 million job openings by 2022.

Reasons for the projected shortage are varied. The large population of baby boomers is influencing the need for additional nurses as their needs for health care services increase. Passage of the Patient Protection and Affordable Care Act (ACA) has led to increased access to healthcare and expanded the overall need for healthcare services (AACN, 2014). As the population ages, the impact of chronic disease and disability puts additional burdens on the healthcare system and increases the need for an educated workforce, especially Registered Nurses and Advanced Practice Registered Nurses (AACN, 2014). In addition, the "boomers" are retiring and the generation following is much smaller in number. Nurses are, on average, older than the overall workforce. The National Council of State Boards of Nursing (NCSBN) reported that in 2013, 55% of the RN workforce was age 50 or older. The average age of the RN population in the *2008 National Sample Survey of Registered Nurses* was 47, a slight

increase from the 2004 survey (AACN, 2014). Huston (2014) identified additional causes of the current nursing shortage, including low wages for RNs and the trend of women choosing fields other than nursing for a career, as well as factors that limit nursing programs from accepting more students. The AACN (2015) and Huston (2014) both reported the primary reasons schools identify for not admitting more nursing students are lack of qualified faculty, insufficient clinical placement sites, and lack of financial resources.

Nurses leave the workforce for a variety of reasons. The work of nursing is demanding and often requires shift work with changing schedules. Mandates to work 12 hour shifts, overtime, and reassignment to less familiar duty areas lead to dissatisfaction among nurses, especially those with young families (Flinkman, Leino-Kilpi, & Salanterä, 2010). The increasing workloads brought on by greater patient acuity and staffing shortages lead to burnout of nurses and only intensify the impact of the nursing shortage. Nurses also report leaving their career in response to changes in healthcare, including rapid technological advancements and intensified workloads (Huston, 2014). Nurses are increasingly leaving the workforce due to physical injuries that leave them with chronic pain and disability (Huston, 2014). These challenges are compounded by the impact of stress and even lateral violence experienced by nurses in the work setting. The practice of nursing is considered high stress, causing nurses to leave due to emotional distress and related physiological discomfort (Huston, 2014).

Responding to the Shortage: Challenges Faced by Education Programs

The most typical response to a workforce shortage would be to increase the number of individuals prepared to enter the workforce by promoting public awareness

and expanding education programs to meet projected needs. The nursing workforce dilemma is compounded by shortages of qualified faculty, lack of adequate clinical practice sites, budget constraints, and competing career opportunities. The AACN (2015) reported that U.S. nursing schools turned away 68,938 qualified applicants in 2014. Faculty shortages were identified as a reason by nearly two-thirds of the responding schools.

An additional concern with efforts to increase capacity is the need to manage quality and to graduate nurses who are prepared to pass the licensure exam and enter the nursing workforce as competent, entry level, practitioners. A landmark report, *Educating Nurses: A Call for Radical Transformation* (Benner, Sutphen, Leonard, & Day) was published in 2010. This report, results of a large qualitative study funded by the Carnegie Foundation, emphasized the need to better prepare nurses to practice in a rapidly changing healthcare environment with an emphasis on quality and safety. Student engagement in learning, stronger connections between the classroom, lab, and clinical practice areas, and increased application of clinical reasoning and decision making were all part of the call for a “radical transformation” in nursing education.

Nursing education becomes even more complicated by the challenges programs face when delivering content and learning experiences to meet the expectations of the current healthcare workforce. Lack of clinical placement settings is a major concern (NLN, 2013). In response to a shortage of clinical sites where students apply the knowledge and skills of the profession, programs have increased the use of high technology simulation labs. Simulation labs are expensive to build, usually requiring the solicitation of grants or large financial gifts, and they require additional skills and training

for faculty. Nursing programs are challenged to find qualified faculty for both classroom and clinical instruction (AACN, 2015). Highly skilled and knowledgeable nurses practicing in hospitals and clinics are reluctant or unable to take the significant pay decrease of academia. There is also a shortage of nurses educated at the masters and doctoral level, education that is necessary to teach in higher education settings (AACN, 2015).

Nursing Education

The education of nurses evolved over decades, beginning with the first school of nursing in London, England, established in 1869 by Florence Nightingale (Finkelman & Kenner, 2016). Nursing education started with an apprenticeship approach in a hospital setting. Nightingale quickly recognized the need to focus on a more structured program of study, combining classes with the work experience on the nursing wards. As nursing programs developed and grew in the United States, the diploma program became the most popular approach. Diploma programs were based in hospitals and combined classroom education with clinical hours in the hospital and were typically three-year programs. Diploma schools still exist in some parts of the United States, although most are now partnered with colleges or universities where students complete the classes in the sciences and support courses (Finkelman & Kenner, 2016).

As the education of nurses moved into more mainstream academic settings, two paths for educating nurses emerged and grew. The introduction of two-year, associate degree programs in nursing was the result of a nursing shortage after World War II. Introduced by a nurse educator, Mildred Montag, the curriculum included coursework in the arts and sciences as well as a nursing curriculum with a combination of didactic, lab

practice, and clinical experiences (Finkelman & Kenner, 2016). Meanwhile, nursing programs were developed in traditional colleges and universities, largely the result of the 1923 *Goldmark Report* that recommended improvements in nursing education, including placing the education of nurses within the context of higher education in colleges and universities. The recommendations were slow to gain momentum, but in the 1960s baccalaureate programs grew rapidly (Finkelman & Kenner, 2016). Despite the different settings and varied program lengths, the graduates of these three education options take the same national licensing exam leading to licensure as a Registered Nurse. The education of nurses, especially the academic setting and length of the program, remain a confusing, and at times divisive, issue within the profession.

Nursing Education Standards

Nursing education standards are developed and disseminated through several recognized sources. The most widely used standards come from three nursing education organizations that advocate for the education of the nursing workforce (Finkelman & Kenner, 2016). Each organization conducts research and provides published standards and guidelines. State boards of nursing also promulgate standards or rules, although the level of detail varies greatly among the various state regulating bodies. Nurse educators must also monitor and respond to standards and practice changes in the profession, incorporating the most recent, research based, practice guidelines into the education process. Finally, institutions of higher learning must meet standards for accreditation or approval at the college or university level. Standards are important resources to guide the planning, organizing, evaluation, and quality improvement processes in higher education.

The National League for Nursing (NLN) was first known as the Society of Superintendents of Training Schools for Nurses, formed in 1893 (NLN, 2015). As the first nursing organization in the United States, the NLN has evolved over the years in response to the needs of stakeholders. The current NLN “promotes excellence in nursing education to build a strong and diverse nursing workforce to advance the health of our nation and the global community” (NLN, 2015, About, Mission and Goals). The NLN carries through this mission by supporting professional development for nurse educators, supporting and disseminating nursing education research and scholarly works, and advocacy for the nursing profession and nursing education. The NLN represents all nursing programs, including entry level and advanced practice options, and has developed standards, extensive resources, and publications to fulfill the stated mission.

The American Association of Colleges of Nursing (AACN) represents university programs that offer the baccalaureate or higher degrees, both entry into practice and advanced practice. The AACN conducts and supports educational research, establishes quality standards for nursing education, advocates for nursing education and practice, and provides faculty development (Finkelman & Kenner, 2016). The AACN was established in 1969 and published the first national guidelines to define the expected outcomes for the baccalaureate degree in nursing (Bednash & Rosseter, 2010).

The Organization for Associate Degree Nursing (OADN) advocates for associate degree nursing (ADN) education and practice. The organization was founded in 1952 when Mildred Montag proposed the ADN as an option for educating nurses in just two years, a response to a nursing shortage experienced during World War II (Finkelman & Kenner, 2016). The organization’s major goals are to promote and advance ADN

education and practice, support collaboration and academic progression, and to advocate for associate degree nursing practice and education (OADN, 2015).

Regulation of Nursing Education and Practice

State governments regulate nursing education and practice as a matter of public protection (Spector, 2010). The general public is at risk for harm, even death, if health professionals are unprepared or incompetent. The advanced knowledge and skills required to safely provide health care would not typically be understood or recognized by the general public, therefore certification or licensure of health providers is imperative. Regulation of nursing education and practice typically begins with the state board of nursing (BON), in collaboration with the National Council of State Boards of Nursing (NCSBN). Every state has a nurse practice act that creates a board of nursing regulation. Boards of nursing approve nursing programs offered within their state. This approval process requires nursing programs to meet an established set of standards (Spector, 2010). The NCSBN model practice act states, “The BON shall, by rule, set standards for the establishment and outcomes of prelicensure nursing education programs, including clinical learning experiences, and approve such programs that meet the requirements of this Act and BON rule” (NCSBN, 2012, p. 8, Section 1a.).

The most restrictive type of regulation to practice a profession is licensure (Spector, 2010). Licensure is reserved for those activities that are complex and require specialized knowledge, skill, and decision-making. To become licensed, the candidate must demonstrate minimal competency to practice. Once licensed, processes are in place to assure continued competence through the monitoring of practice, disciplinary actions for infractions, and evidence of continuing education or professional development.

Licensure in nursing is a collaborative, two-pronged system between the state boards of nursing and the NCSBN. It starts with the approval of nursing programs. To be eligible to sit for the licensure exam, the candidate must have graduated from a BON approved nursing program. “By making students eligible to take the NCLEX, nursing faculty verify that nursing students are clinically competent to safely practice nursing” (NCSBN, 2015a, p. 2). The second prong of the licensure process requires the candidate to pass the national licensure exam. When a candidate has met both prongs, a license to practice nursing is issued.

While the BON approval process is legally mandated through the legislative and rules making processes, accreditation is primarily a voluntary process. There are currently two organizations that offer accreditation to nursing programs. The Accreditation Commission for Education in Nursing (ACEN), formerly known as the National League for Nursing Accreditation Commission (NLNAC), offers initial and continuing accreditation for all levels of nursing education, from practical nursing to clinical doctorate. The Commission on Collegiate Nursing Education (CCNE), an autonomous arm of the AACN, accredits baccalaureate and graduate nursing programs. A major difference between accreditation and approval of nursing programs is in the purpose. The approval process was established to protect the public and is a responsibility of government, while the accreditation process was established to focus on meeting quality and integrity standards and demonstrating continuous quality improvement (Finkelman & Kenner, 2014) and is offered through professional nursing accreditation agencies. If a program is no longer deemed to meet the standards of the BON approval process, the BON can mandate restrictions or even close programs, while

the accreditation agency can only withdraw accreditation status. While both approval and accreditation require a self-study process and site visit component, the financial burden of BON approval is minimal to the nursing program, but the direct and indirect costs for accreditation from the national nursing accrediting agencies is a significantly greater burden to programs (Spector, 2010).

Although accreditation is voluntary in most states, there is increasing attention given to program accreditation status. Students may find that attending a program that is not accredited results in barriers to employment or when seeking to transfer credits for continuing their education (Finkelman & Kenner, 2014). There is increasing complexity in RN roles, skills, and clinical decision-making. When combined with increased demands in healthcare delivery settings and more acutely ill patients, higher standards are needed to protect the patient and to validate quality. In an August 2012 position paper, the NCSBN's Nursing Education Committee made a recommendation that BONs "work toward requiring national nursing accreditation of all prelicensure programs" (NCSBN, 2012). This major shift in the program approval process would require revision of the BON regulatory process and administrative rules.

Passing Percentages on the NCLEX-RN®

The NCSBN developed and administers the national licensure exams for nursing. The length of the exam, and the number of questions answered, and the specific test items are individualized to the test taker's knowledge and ability (NCSBN, 2015b). However, all exams follow the test plan developed and published by the NCSBN. Detailed test plans are available to students and faculty, at no cost, on the NCSBN website. The test plan is adjusted every three years to reflect changes in practice and to assure the public

and licensing boards that the exam assesses the competencies graduates must possess to practice nursing safely and effectively (Lavin & Rosario-Sim, 2013).

Developed using Rasch's one parameter logistic model, the criterion-referenced examination has been administered via computer adaptive testing procedures since April 1994 (NCSBN, 2015b). The passing standard for the exam is evaluated every three years, so that "passing or failing depends solely upon the candidate's level of performance in relation to the established point that represents safe entry-level competence" (NCSBN, 2015b, p.15). The NCSBN considers a variety of information sources when revising the passing standard, including historical information about candidate performance on the exam, feedback from stakeholders, and a standard-setting exercise by a panel of judges. Since April 2004, the passing standard has increased every three years, with the most recent increase in April 2013 (NCSBN, 2015b). Increases in the passing standard typically result in a decreased passing percentage the year immediately following the increase. Increased passing standards in 2004, 2007, 2010, and 2013 resulted in a decreased passing percentage the following fiscal year. The drop in passing percentage at the national level for the years immediately following an increase in the passing percentage ranged from a decrease of 0.48 percent in 2005 to a decrease of 4.47 percent in 2014 (Iowa Board of Nursing Annual Reports). These fluctuations can make it difficult for programs to assess responses to programmatic changes, whether a curriculum revision or strategies to improve test-taking abilities.

The licensure exam consists of test items written at the application and analysis level of difficulty and includes multiple-choice items and alternative format items (Lavin & Rosario-Sim, 2013). The alternative format questions may include fill-in-the-blank,

ordered response, multiple response, chart and exhibit and hot spot items, requiring the tester to identify an anatomical location on the screen. In addition, testers might be asked to listen to audio prompts such as heart sounds, or a narrative component such as listening to a client or other health team member. Registered Nursing candidates complete a minimum of 75 questions and a maximum of 265 questions and are allowed up to six hours to complete the exam (Lavin & Rosario-Sim, 2013).

In addition to the NCSBN actions that impact the passing percentage, educators observe a wide variety of influences that may trigger fluctuations in first time pass percentages. Introducing curriculum changes, new faculty, rotating or introducing new clinical practice sites, changes in practice protocols, and other factors influence student outcomes in any given year. Small programs can have widely variable statistics based on the impact of two or three students passing or failing the exam. Yet state boards of nursing and accreditors have established first time passing percentage standards, sometimes regardless of other concurrent quality indicators (Giddens, 2009; Taylor, Loftin, & Reyes, 2014). Boards of Nursing monitor results and may set NCLEX-RN® benchmarks and standards that must be met to retain approval, applying sanctions when those benchmarks are not met. Persistent failure to meet the set standards on NCLEX-RN® passing percentages can lead to a nursing education program being denied accreditation or being sanctioned by the BON (Giddens, 2009). Sanctions can be a warning, probation, limits placed on enrollment, or even closure of the program. Shultz (2010) succinctly stated, “A graduate’s failure to pass the licensure exam has implications far beyond those for the individual student” (p. 205). Student success or

failure is perceived as a reflection of the nursing program, so there is a stigma associated with the inability of program graduates to pass the licensure exam (Davenport, 2007).

Giddens (2009) made the case that pressure to meet the benchmarks for NCLEX-RN® pass rates discourages programs from implementing innovations in curriculum design or teaching and learning strategies, fearing a decrease in the licensure pass rate, and that dependence on NCLEX-RN® pass rates for measuring quality encourages programs to rely on evaluation methods that mimic the NCLEX-RN® style of questions, rather than using other forms of assessment to garner alternative assessment data. Another concern with the focus on NCLEX-RN® outcome is the tendency of programs to implement policies aimed at increasing first time NCLEX-RN® pass rates, including admission and progression policies that may be unfair or potentially be considered unethical practices, by forcing out students with even a modest risk of NCLEX-RN® failure.

Impact of NCLEX-RN® Failure

Roa and colleagues (2010) described the impact of NCLEX-RN® failure in terms of the ultimate financial costs to three major stakeholders. Graduates of nursing programs suffer multiple financial losses, including the expenses of applying for licensure and testing fees, lost wages, repayment of student education loans, and perhaps additional education costs. The non-fiscal toll on graduates is also significant, including loss of self-esteem, embarrassment, grief, and other psychosocial effects. Healthcare organizations may have hired new graduates and invested significant time and resources toward their orientation and integration into the system. Turnover costs are significant, and an ongoing nursing shortage may increase the challenges of meeting safe staffing

levels. The nursing program is also impacted when program graduates fail to meet established passing percentage benchmarks. Status with stakeholders, including students and local employers of graduates, may be diminished. Program faculty also experience disappointment and anxiety when graduates are not successful, and are compelled to identify strategies to improve these outcomes (Langford & Young, 2013).

Program Strategies to Increase Passing Percentages on the NCLEX-RN®

There is no magic bullet or checklist to help a struggling program improve the passing percentage on the NCLEX-RN®. There is no definitive formula to increase student success, and there will usually be a variety of strategies implemented (Lavin & Rosario-Sim, 2013). McDowell (2008) reported in a literature review that strategies could be categorized as academic and nonacademic. Academic strategies include changing admission, progression, or graduation requirements; increasing grading and performance standards, and implementing standardized testing benchmarks. Nonacademic strategies include peer support groups, mentoring, and anxiety management. Identifying the right strategy for a particular program requires careful assessment of all program components and selection of the strategy or strategies that offer the most promising solutions.

Identifying predictors of academic success that can be applied to the admissions process is a strategy that benefits programs and applicants. Programs can admit students who have a greater propensity to succeed, or can use admissions testing and criteria to set remediation strategies early to increase retention and success. Several standardized admissions tests, specific to nursing education, are available for programs. The costs associated with admissions testing need to be considered, but are certainly less significant

than those associated with failing the licensure exam after graduation. Hinderer, DiBartolo, and Walsh (2014) explored the relationship between a standardized admission examination, the Health Education Systems, Inc. (HESI) Admission Assessment (A2), preadmission GPA, science GPA, timely progression through a program, and NCLEX-RN® success. There was a correlation with NCLEX-RN® success, but the low number of students in the study and low number of study participants failing the licensure exam, is a weakness in the study. Other studies have found various combinations of admissions testing, GPA, and previous academic success to be predictive of success in nursing programs (Schmidt & MacWilliams, 2011; Wolkowitz & Kelley, 2010). Numerous studies have identified success in science courses, math proficiency, and reading comprehension as predictive for student success (Higgins, 2005; McCarthy, Harris, & Tracz, 2014; Schmidt & MacWilliams, 2011; Simon, McGinniss, & Krauss, 2013). Schmidt and MacWilliams (2011) also made note in their systematic review of the literature that most studies examining variables related to NCLEX- RN® successes were correlational, and often limited to single schools or relatively small study populations. They noted the difficulty associated with developing predictive models for such a complex set of interacting variables. Studies by Uyehara, Magnussen, Itano, and Zang (2007) and Schmidt and MacWilliams (2011) concluded that using a combination of admission criteria was more effective than a single criterion, and the selected criteria would likely vary among programs, based on their typical student populations. Shaffer and McCabe (2013) conducted a study investigating the relationships among admission criteria and NCLEX-RN® outcomes, with a sample size of 335 associate degree students. They found preadmission GPA, science course grades, and lifespan development course

grades to correlate positively with NCLEX first attempt pass rates. However, the number of times preadmission science courses were repeated correlated negatively with NCLEX first attempt pass rates.

Program Support, Remediation, and Progression Practices

Grossbach and Kuncel (2011) conducted a meta-analysis to examine variables for predicting performance on the NCLEX- RN®. They reported that admissions test scores and grades earned in the nursing program were the two best predictors of NCLEX- RN® performance. They make the case that monitoring grades for students at risk of failure and providing early intervention should increase the first time NCLEX- RN® passing percentage.

Romeo (2013) examined three specific variables, GPA, SAT with math and verbal scores, and critical thinking in an ex post facto study design that included 182 student records. The most significant predictors of NCEX- RN® success were nursing GPA and standardized assessment scores, providing faculty with opportunity to intervene with remediation strategies to improve retention and success. Trofino (2013) also emphasized the need to identify students at risk and provide comprehensive support and remediation. Student progression and grades should be monitored and strategies to enhance organizational skills, time management, and study skills should be combined with early intervention.

Other studies report strategies to engage learners and enhance knowledge retention for the purpose of increasing student success and program outcomes. Jeffreys (2014) has written extensively about nursing student retention and remediation. She promotes a more fully integrated approach that benefits all nursing students, not just

those identified at risk. Her model includes 19 components, including learner centered, creative, and integrated activities that are multi-dimensional. She further promotes caring and trust building while implementing scientifically-based strategies. Lockie, Van Lanen, and McGannon (2012) examined a number of demographic and academic variables of baccalaureate nursing graduates' performance on the NCLEX- RN®. Their results supported the work of others when identifying chemistry grades as predictive of success. However, they also assessed for student learning style and found a statistically significant difference in pass rates for students identified as having an accommodator learning style, based on Kolb's Learning Style Inventory. These students also had lower course grades. Assessment of learning style and providing strategies to strengthen learning were suggested as an intervention for increasing retention and NCLEX- RN® pass rates.

Curriculum and Instruction

Strategies for increasing student success through the curriculum and as they prepare to take the licensure exam are varied and allow programs to decide what would be most beneficial based on assessment of current strengths and weaknesses. Curriculum is the responsibility of the nursing faculty. It is important to conduct regular reviews of curriculum to be certain it addresses the current NCLEX- RN® test plan, as well as standards adopted from professional organizations and that it is reflective of current practice (Carrick, 2011; Lavin & Rosario-Sim, 2013). Standardized exams and program feedback on the graduate performance on the NCLEX- RN® exam can be incorporated throughout the program to assess student achievement and provide feedback for curriculum evaluation.

The use of active learning strategies, including simulation and case studies, is well established in the literature and allows the development of critical thinking and clinical judgment. Nurses and nursing educators are urged to base their actions on research and empirical knowledge. The NLN (2005) position statement, *Transforming Nursing Education*, urged nursing programs to adapt new curriculum designs that incorporate the science of nursing education and provides a solid foundation of nursing knowledge, skills and attributes. The position statement also advocated for nurse educators to seek a new level of competence in using pedagogically sound teaching strategies, and to create learning environments that promote collaboration and an environment where students feel safe during the learning process. Additionally, the NLN position paper challenges programs to design curriculum that engages students as active participants in the learning process and is flexible to meet the changing dynamics of the health care system.

The Quality and Safety Education for Nursing (QSEN) initiative defined evidence-based practice as an integration of current research into clinical expertise, and differentiated clinical opinion from research and application of scientific evidence (Cronenwett et al., 2007). Best practices can be demonstrated and practiced, then explored against the knowledge base in the nursing skills lab, simulation lab, and in the clinical setting. Evidence-based practices are explained in the pre-briefing, demonstrated in the clinical scenario, and reiterated during the debriefing. Participants are encouraged to participate fully and openly to maximize knowledge comprehension.

Simulation alone does not facilitate learning but provides an opportunity for learning (Zigmont, Kappus, & Sudikoff, 2011). The first step is establishing a risk-free, psychologically safe environment where students can safely learn from mistakes. A

clinical setting is replicated; including supplies, equipment, and milieu. The Society of Simulation in Healthcare (SSIH), the International Nursing Association for Clinical Simulation and Learning (INACSL), and the National League for Nursing (NLN) promote pragmatic and sound application of theory in simulation activities. In 2010, SSIH developed standards that allow schools to seek accreditation for their simulation program and fosters the publication of simulation research through the *Journal of the Society for Simulation in Healthcare*. SSIH developed a simulation educator certification exam and accreditation standards for health care simulation programs to promote excellence in areas of assessment, research, teaching/education, and system integration. The goal of SSIH's accreditation endeavor is to improve the quality of patient care and enhance the overall education of health care professionals (Zigmont, Kappus, & Sudikoff, 2011).

Decker et al. (2010) emphasized that students have difficulty demonstrating newfound theories and concepts; book knowledge without actual practical experience created only a surface learning. Their research identified a need for essential constructs of patient safety, communication, situation awareness, therapeutic interventions, resource allocation, assessment, and critical thinking to be incorporated in the simulation learning process. In their study, students were given concept maps and diagrams on specific disease processes in the pre-briefing phase. This strategy ensured that a basic level of knowledge was reviewed and comprehension was attained. A cause and effect diagram allowed students to explore alternative therapeutic methods for the planned clinical scenario. In essence, students were allowed to develop a plan of care for the simulated clinical event.

Test taking can create anxiety that inhibits demonstration of learning, especially when alternative format test items are presented. It is important that nursing faculty understand and apply NCLEX- RN® style questions throughout the education program. Testing and evaluation of test items need to be integral and robust processes in the nursing curriculum, creating opportunities for students to adjust to the NCLEX- RN® format and to develop learner confidence (Carrick, 2011; Lavin & Rosario-Sim, 2013). Testing should include both formative and summative assessments, and faculty need to be adept at writing and evaluating the test questions. Programs should use test blueprinting, item analysis, and test policies to enhance the rigor and increase the validity of the testing process. Teacher-made tests and standardized tests both have an important function in the total plan for assessment and evaluation of learning (Carr, 2011; Heroff, 2009; Schroeder, 2013).

In addition to strategies that strengthen curriculum, enhance the teaching and learning process, and testing to assess learning, programs can implement a wide variety of supportive measures to enhance student success in the education program and on the licensure exam. Strategies presented in the literature include early identification of the at-risk student using admission testing, surveys, or early intervention indicators and then engaging the student in resource utilization and support (Bonis, Taft, & Wendler, 2007; Carrick, 2011; Davenport, 2007). Students often benefit from test anxiety counseling, support groups, time management and study skills, peer tutoring or tutoring services online or in an academic support center (Bonis, Taft, & Wendler, 2007; Carrick, 2011; Davenport, 2007).

Program Evaluation and Complexity Theory

Program evaluation is an integral component of managing a nursing program. Nursing is a practice discipline requiring a carefully constructed and continuously improved curriculum, responsive to changes in nursing practice (Matthiesen & Wilhelm, 2006). Graduates must complete an approved program of study and successfully pass a national licensure examination before they are allowed to practice nursing, therefore it is a responsibility of nursing programs to ensure graduates are prepared for the licensure exam and to enter the nursing workforce. Effective program evaluation addresses the evolving standards and expectations of local and national regulatory agencies and the standards of professional organizations (Lewallen, 2015). The plan will identify program strengths, needs, drivers for change, and opportunities for improvement. Program evaluation also includes a combination of formative and summative evaluation components, with input from key stakeholders and regulators integrated into the plan (Matthiesen & Wilhelm, 2006).

Successful program evaluation is based upon a well-designed and implemented plan. Keating (2011) noted that the plan “may be organized around an evaluation model or theory or by criteria set by accrediting bodies” (p. 294). The key is to have an organized plan that is implemented and used to drive change and quality improvement. Frye and Hemmer (2012) offered a number of points in their guide to program evaluation models. One emphasis was on the impact of change, acknowledging that change is both inevitable and unpredictable. They further emphasized the complexity of educational programs and noted that even small changes can have a significant impact on a program. Frye and Hemmer (2012) also recommended choosing a program evaluation model that

“embraces the complexity of the educational process” (p. 288), noting that the CIPP model (Stufflebeam, 2003), with a non-linear approach to evaluation, works well with the concept of complexity.

The Stufflebeam CIPP model provides a framework for effective and comprehensive program evaluation organized by the four components of the model: context, inputs, process, and product. Stufflebeam (2003, 2007) succinctly equated the four components to four evaluative questions: what needs to be done, how it should be done, is it being done, did it succeed. Stufflebeam provided a comprehensive model checklist for evaluators, encouraging potential users to build a program evaluation plan that included both proactive assessment for program improvement and retroactive evaluation to assess program quality. Stufflebeam (2007) also stated a need to share lessons learned, and emphasized that “evaluation’s most important purpose is not to prove, but to improve” (p. 2), making the CIPP model ideal for programs seeking to create a plan of systematic evaluation for continuous program improvement.

Accountability indicators need to be integrated into program evaluation plans and be reflective of all aspects of program design, implementation, and evaluation. Singh (2004) identified the versatility of the CIPP model when applying it to a nursing program, noting that the four accountability components are “flexible and innovative” (p. 1). Suhayda and Miller (2006) described the use of the CIPP model when developing the program evaluation process for Rush University College of Nursing. The CIPP model has been effectively used for summative and formative evaluation, and allows programs to individualize the plan to their specific needs and goals. Although the Stufflebeam CIPP evaluation model was developed to support systematic decision making as a

proactive process in program development and implementation, Stufflebeam (1971) made a compelling case for using the model as a retroactive evaluation framework to support accountability and decision-making. Using the CIPP model for retroactive evaluation leads the evaluator to consider all aspects of the program, not just program outcomes, supporting a greater understanding of the multiple factors influencing program outcomes.

Singh (2004) identified key factors in successfully implementing program evaluation based on the CIPP evaluation model. The first key is creation of an evaluation matrix, or template, which is used for a continuous program evaluation process. Evaluation activities are ideally conducted by a combination of internal and external evaluators, providing a balance of assessment and feedback expertise. Singh also emphasized the importance of a program evaluation committee to design and implement the plan, share results, and make recommendations for program improvement. Program evaluation plans should also incorporate a combination of formative and summative assessment feedback and reporting on the process and outcomes to key stakeholders.

Complexity Theory

Nursing programs are confronted with a multitude of challenges when trying to balance the expectations and requirements of higher education, nursing education, nursing practice, professional associations, boards of nursing, and an increasingly complex health care environment. The practice of nursing has changed over time, with even more rapid changes in response to increasing technology, an aging population with chronic health conditions, and an exponentially increasing body of knowledge (Huston, 2014). Healthcare is complex, and with increased emphasis on patient safety, there has been a resultant increase in the competency requirements of entry-level nurses (Carrick,

2011). Nursing care is now delivered in a multitude of settings, and patients have diverse needs and expectations. Nursing practice standards, medications and treatments, and electronic health records have driven some nurses to leave the profession, saying they can no longer keep up with the rapid pace of change (Finkelman & Kenner, 2016).

In addition to meeting the expectations of boards of nursing and accreditation organizations, nursing education must incorporate the standards of other regulatory agencies such as the Occupational Safety and Health Administration (OSHA) and other health care agency accreditation or certification standards. Laws that protect patient privacy and require hospitals to meet patient satisfaction outcomes often conflict with the needs of nursing education when providing realistic learning experiences. Nursing programs must be in compliance with the regional or national accreditation guidelines of the parent institution as well (Finkelman & Kenner, 2016).

These concurrent, evolving, and sometimes competing forces are a perfect example of complexity, explaining why Patton (2015) reported that complexity theory is established as an appropriate framework for research in the social sciences. Further, according to Patton (2015), “the openness, flexibility, and adaptability of qualitative methods make complexity theory an especially useful framework for qualitative inquiries into complex dynamic situations and phenomena” (p.145). The application of qualitative methods allows the researcher to search for emerging patterns in process or outcomes and to include an awareness of potentially unanticipated consequences.

Frye and Hemmer (2012) posited that complexity theory is well suited to the education of health-care professionals, noting that these systems are best characterized as complex systems “made up of diverse components with interactions among those

components” (p. 291). The overall system cannot be explained by examining each component separately as individual components. It is this complicated and nonlinear matrix of weaving in and out of multiple processes that makes the approach of complexity theory meaningful. It allows the researcher to look into the ambiguity and messiness of the broad process and draw on systems theory in a way that includes relationships among many parts and accepts that not all phenomena can be fully explained by a more linear model that relies on a state of relative equilibrium.

Complexity theory helps the reviewer to consider environmental influences and relationships that impact all the participants of a program. This more holistic and inclusive approach discourages educators and evaluators from taking an overly simplistic or narrow view of program components, but rather to explore them from a broader and more encompassing perspective. The bottom line, when one appreciates complexity theory and the freedom it provides to explore all angles and sources of influence, it is clear there is no one right answer. The process continues and evolves over time, rather than leading to a finite endpoint (Doll & Truitt, 2010; Frye & Hemmer, 2012).

The CIPP evaluation model fits well with complexity theory and provides a framework that supports examination of multiple program elements and the relationships among them. As reported by Frye and Hemmer (2012), Stufflebeam developed the model to focus on program improvement, which is distinct and different from models that focus on outcomes or other single focused goals. The first three elements of the CIPP model are context, inputs, and process. These elements are often referred to as the formative components of program development. The final element, product, is appropriate for assessing outcomes or summative evaluation. Researching a complex

program by framing inquiry around the elements of the CIPP model allows the researcher to investigate multiple aspects and components of a program, taking into consideration the concept of complexity.

CHAPTER THREE

METHODOLOGY OF THE STUDY

The purpose of this study was to explore the content, organization, quality, and effectiveness of strategies identified by programs submitting mandatory plans for improvement to the Iowa Board of Nursing. The study also explored the actions of regulatory agencies that govern nurse education in the United States, specific to a nursing program's passing percentage of graduates taking the National Council Licensure Exam-Registered Nurse (NCLEX-RN®). The study was intended to identify and articulate best practices that support an increase in the nursing program passing percentage of graduates taking the National Council Licensure Exam-Registered Nurse (NCLEX-RN®) and to recognize barriers to improving the passing percentages. This chapter includes the research questions and a description of the research methodology. The methodology was qualitative and includes two components: document analysis of nursing program improvement plans submitted to the Iowa Board of Nursing (IBON) and an open-ended survey of state boards of nursing.

Research Questions

1. How have nursing education programs organized and presented required institutional plans for assessment and improvement of National Council Licensure Exam-Registered Nurse (NCLEX-RN®) passing percentage to the Iowa Board of Nursing (IBON)?
2. How do the program assessment and improvement plans, submitted by Iowa pre-licensure programs to the state board of nursing, compare to the evidence-base of best practices in the nursing literature?

3. What practices do state agencies that regulate nursing licensure use to establish minimum acceptable National Council Licensure Exam-Registered Nurse (NCLEX-RN®) passing percentage rates of first-time test takers?
4. What recommendations arise out of the content analysis of program responses, nursing literature, and best practices for Iowa programs and the state board of nursing?

Research Design

This qualitative study explored practices intended to increase the number of nursing program graduates who successfully pass the National Council Licensure Exam-Registered Nurse (NCLEX-RN®). The study specifically investigated the responses of nursing programs in Iowa that have been required to submit a plan for improving the percentage of their graduates passing the licensure exam on the first attempt, within six months of graduation. The study also investigated strategies that have been implemented by nursing regulatory boards that are members of the National Council of State Boards of Nursing (NCSBN) for the purpose of increasing the first attempt passing percentage of recognized nursing programs within their jurisdiction. Effectiveness of these strategies was explored based on passing rates of first time testers as reported by the National Council of State Boards of Nursing.

Qualitative research is a broad approach to studying a process or social research problem. Creswell (2014) identified qualitative research as the best approach when the problem “needs to be explored and understood” (p. 20) and stated further that qualitative research is “especially useful when the researcher does not know the important variables to examine” (p. 20). A qualitative approach to research allows the researcher to seek a greater understanding of the problem and to obtain new insights through inductive

knowledge acquisition. The outcomes of a qualitative study can provide the agenda and supportive evidence to support change or reform (Creswell, 2014).

Merriam (2009) described four characteristics of qualitative research. The first focus is on process, where the researcher is looking for meaning and understanding in the data or phenomenon. She continues by describing the researcher as the primary instrument of data collection and analysis. The concept of the researcher as deeply involved and instrumental in the evolution of the study is one of the great appeals in qualitative research, simply described by Patton (2015) when he stated “qualitative research is personal” (p. 3). The researcher is exploring new territory and gathering data that continue to change and evolve as the researcher moves forward. This inductive process leads to a product that is richly descriptive and adds new knowledge or greater understanding to the topic researched (Merriam, 2009). This process of undertaking a research journey to uncover a greater understanding of the phenomenon, and contribute to the body of knowledge, is the driving force behind the choice of a qualitative study.

Epistemology

Creswell (2014) spoke to philosophical worldviews in describing the need to consider one’s philosophical assumptions when planning; noting that the research plan “involves the intersection of philosophy, research designs, and specific methods” (p. 5). Merriam and Tisdell (2016) defined epistemology as the “nature of knowledge” (p. 8) and supported the need to frame research with an understanding of the philosophical beliefs the researcher is bringing to the process with the design of the research. They continued by noting that there is a wide range of terminology and approaches described by various writers. The underlying and important theme that emerges is the need to

consider how the researcher's beliefs and experiences frame their approach to the research and the process they follow.

Interpretivism and constructivism are terms that are often used when describing qualitative research, and are also used interchangeably (Merriam, 2015). When Maxwell (2013) described epistemological constructivism he emphasized that understanding evolves from the individual's perception of typically complex realities. The individual constructs meaning through a combination of previous experience and new experience or realities. The researcher cannot claim absolute truth, because reality is socially constructed and influenced by the subjective meaning or understandings of individuals.

Theoretical Perspective

This evaluation research study is exploring a response to a complex problem that is influenced by an array of regulatory and interpersonal processes and involves very basic human responses to challenging situations. Complexity theory provided a framework for constructing meaningful understanding of the phenomena and interpreting the research data. Patton (2015) wrote that the "openness, flexibility, and adaptability of qualitative methods make complexity theory an especially useful framework" (p. 145) for conducting and understanding qualitative research in real-world settings. A linear, prescribed process of scientific reasoning does not help the researcher understand what is evolving within a complex and dynamic system. An education system and a health care system are both complex and continuously evolving social structures. When one attempts to understand a process or the response of an education system that is teaching a future professional who will work in a health care system; and when both systems are highly regulated by differing regulatory agencies, complexity is certainly the result.

Patton (2015) described complexity concepts that have an implication for qualitative research. The nonlinearity of the phenomenon being studied is important as the researcher needs to be aware of the critical events or influences that can impact a process or outcome at any point in time. Key events that change a course or influence a response are important to consider. The researcher is also observing for the emergence of patterns or changes in processes or outcomes. Unanticipated consequences may emerge from the study when the researcher is unencumbered by a linear and constrained approach to the phenomenon being studied. The researcher looks at the data from different angles and looks not for simple cause and effect, but for understanding of the complex processes being studied.

Methodology

Evaluation research is often conducted to support decision making with a focus on a specific program or policy (Gillis & Jackson, 2002). The difference between evaluation and evaluation research is that “the latter is a systematic appraisal using the methods of social research for the purpose of generating knowledge and understanding that can be used for decision making” (Gillis & Jackson, p. 269). The main purpose of evaluation research is not to evaluate a program, but rather to gain knowledge and understanding about the process. This knowledge and the new understandings that emerge might inform decision making about the effectiveness and value of a program, but are more likely to promote a greater understanding of the program’s impact and consequences, both intended and unintended. This difference in purpose is critical, because the researcher using a qualitative approach to understanding a program or policy cannot be constrained

by an expectation of decision-making. Rather, the researcher broadly studies the process and outcomes and lets the results inform the community of interest.

This was a qualitative study using document analysis methodology. Merriam (2009) noted that in her experience, the most common qualitative research conducted in the applied fields that include education and health professions, is a basic interpretive study. The researcher is seeking to understand or construct the meaning of the process and connections to outcomes. The data collection strategies were document review and open-ended responses from a survey. I conducted a content analysis of the program improvement reports submitted by Iowa nursing programs to the Iowa Board of Nursing between 2004 and 2014. I also conducted a survey of state boards of nursing to gather information on practices implemented by state boards in response to low licensure pass rates of nursing program graduates.

Document analysis is a methodology that presents some unique perspective to the study. The program report documents being examined for this study were created for the purpose of meeting the requirements of the Iowa Board of Nursing mandate, not for the research study conducted. Unlike interviews or observation strategies, document analysis does not intrude on the participants' setting or require any adjustments to the process being observed. Documents that have been archived provide a ready-made source of evidence and can be made easily available. In addition, document review can be conducted at a time and place convenient to the researcher, set aside, and then re-examined, yet the document itself is static,

The second component of the study, a survey conducted online through a dedicated list-serve and using an open-ended question, is a form of qualitative

interviewing. Participants had the advantage of answering the survey questions at a convenient time and were not required to answer questions.

Population and Sample

The first component of the study was a document analysis of the 57 program improvement reports that have been submitted to the Iowa Board of Nursing. Analyzing all 57 documents provided the researcher the greatest amount of information and allowed emerging patterns to be explored. Research questions 1, 2 and 4 were explored in this first component.

The population and sample for the second component of the study were state boards of nursing and answered research question 3 and contributed to answering research question 4. The open-ended survey was sent to all (member) state boards of nursing (51, including the District of Columbia) that regulate nursing education programs leading to licensure as a Registered Nurse in the United States. Contact information was available through the National Council of State Boards of Nursing (NCSBN); however, the request to participate in the research study was disseminated via a list-serve request sent to the member boards by a representative of the Iowa Board of Nursing. The researcher also collaborated with the Iowa Board of Nursing staff to reach out to NCSBN colleagues and encourage them to respond to the survey. Despite encouragement from professional colleagues, not all member states responded. In addition, not all responses were useful due to incomplete, confusing, or conflicting data. Including all state boards in the survey positioned the study to have a large enough response to be representative.

Instrumentation and Data Collection

An instrument to guide data analysis was developed by the researcher for each component of the study. Document analysis of nursing program improvement plans submitted to the Iowa Board of Nursing (IBON) was the methodology to address research questions 1, 2 and contributed to answering question 4. These documents are public documents and are readily available to the researcher through the Iowa Board of Nursing staff contact. The researcher used a multiple step approach to the exploration of these documents beginning with an initial review and formation of a “big picture” impression of the documents, then creating a guiding document to frame the detailed analysis of coding and identify themes. This approach guided the researcher as to what issues were important to examine and helped frame the third component of the study.

The researcher also incorporated a program evaluation model to provide a loose framework when analyzing the documents and coding the content. Frye and Hemmer (2012), when writing about program evaluation models, reported that past evaluation studies were “strongly influenced by reductionist theory” (p. 288), resulting in an isolation of components in an effort to connect a component with outcomes. However, educational systems are very complex and can be better understood when examined from a complexity theory perspective that allows for a multifaceted understanding of the many variables that influence program outcomes. The Context, Input, Process, Product (CIPP) model created by Daniel Stufflebeam provides an organizing framework that incorporates the multiple aspects or phases of a comprehensive program evaluation and can serve as a guide when examining planned responses intended to facilitate program improvement.

The second component was an open-ended survey (APPENDIX B) of state boards of nursing to address research question 3 and contribute to answering research question 4. The open-ended survey instrument allowed respondents to enter narrative answers, provide links to legislative documents or administrative rules, or attach documents provided to the public. The questions were developed and peer reviewed to assure clarity, accuracy in asking for the intended information, and applicability to the study.

Validity and Reliability

Validity and reliability have specific meaning to qualitative researchers that are different from expectations of a quantitative study (Creswell, 2014). Validity is demonstrated through the accuracy of the findings that emerge in the study. It was important that the results of the study are trustworthy and credible. Inviting peer review of the study design, document analysis, and findings validated the results of this study. In addition, validity was further enhanced through peer debriefing, described by Creswell as “a person (a peer debriefer) who reviews and asks questions about the qualitative study so that the account will resonate with people other than the researcher” (p. 202).

Reliability is used to demonstrate that the research approaches are consistent (Creswell, 2014). Reliability was sought by carefully documenting the process, preserving all artifacts and notes, and enlisting assistance from another researcher to cross-check the codes for intercoder agreement (Creswell, 2014).

Ethical Considerations

This study did not involve human subjects. All documents received from state boards of nursing are of public record and available to the public. Likewise, the information requested from the state boards of nursing component of the study is

information available to and used by the public. State boards of nursing had full discretion in what information they shared and how it was shared. I did not refer to any nursing education program by name in the course of this study.

CHAPTER 4

REPORT OF FINDINGS

The purpose of this qualitative research study was to evaluate the content, organization, quality, and effectiveness of strategies identified by nursing programs required to submit plans for improvement to the Iowa Board of Nursing (IBON); and to identify best practices that support an increase in the passing percentages or barriers that prevent improvement of passing percentages. A second purpose was to explore regulatory practices specific to NCLEX-RN® passing percentages. The regulatory practices and the review of nursing literature contributed to an understanding of the program improvement plans submitted and the subsequent success or lack of success by the programs submitting plans.

The research questions addressed in this study were:

1. How have nursing education programs organized and presented required institutional plans for assessment and improvement of National Council Licensure Exam-Registered Nurse (NCLEX-RN®) passing percentage to the Iowa Board of Nursing (IBON)?
2. How do the program assessment and improvement plans, submitted by Iowa pre-licensure programs to the state board of nursing, compare to the evidence-base of best practices in the nursing literature?
3. What practices do state agencies that regulate nursing licensure use to establish minimum acceptable National Council Licensure Exam-Registered Nurse (NCLEX-RN®) passing percentage rates of first-time test takers?
4. What recommendations arise out of the content analysis of program responses, nursing literature, and best practices for Iowa programs and the state board of nursing?

Data Collection

Data for the first phase of the study were obtained from the Iowa Board of Nursing (IBON). The IBON provided me with copies of all the program improvement reports submitted during the 10-year period 2005 to 2014, organized by the year the reports were submitted to the IBON. I scanned and electronically stored the documents as provided, then assigned a code (P1 to P20) to each program that had submitted one or more reports (see Table 1).

Table 1

<i>Program institutional plans for improvement of NCLEX®</i>			
	Type of Program	Program Size	Urban or Rural Location
P1	Baccalaureate	Small	Urban
P2	Baccalaureate	Small	Rural
P3	Baccalaureate	Small	Urban
P4	Associate	Large	Urban
P5	Baccalaureate	Medium	Urban
P6	Associate	Medium	Urban
P7	Associate	Large	Rural
P8	Associate	Medium	Rural
P9	Baccalaureate	Small	Rural
P10	Associate	Large	Urban
P11	Associate	Large	Urban
P12	Associate	Large	Urban
P13	Baccalaureate	Small	Rural
P14	Associate	Large	Urban
P15	Baccalaureate	Small	Rural
P16	Baccalaureate	Medium	Urban
P17	Associate	Small	Rural
P18	Baccalaureate	Medium	Urban
P19	Baccalaureate	Small	Rural
P20	Associate	Medium	Urban

Data for the second phase of the study were collected through a brief survey sent to members of the National Council of State Boards of Nursing. I prepared the questions

and the survey was sent using an internal list serve from the Iowa Board of Nursing to the other state boards of nursing (BON) professional staff. I also searched the websites of select BONs and examined posted rules, legislative code, or practice acts.

Description of the Population and Sample

A total of 60 reports were submitted to the Iowa Board of Nursing over the 10-year period from 2005 to 2014. Two of these reports were for Practical Nursing programs and were removed from the study. Two additional reports were removed from the study due to low graduate numbers (7 graduates or fewer) during the reporting period, leaving a total of 56 reports. The distribution by year is displayed in Table 2.

Table 2

<i>Number of program institutional plans for improvement of NCLEX®</i>										
	FY 2005	FY 2006	FY 2007	FY 2008	FY 2009	FY 2010	FY 2011	FY 2012	FY 2013	FY 2014
Number of program reports	4	7	5	4	7	7	5	7	4	6
Total number of reports = 56										

In 2014 there were 32 approved nursing programs in Iowa graduating candidates for the NCLEX-RN® licensure exam: 18 associate degree granting programs and 14 baccalaureate degree granting programs. Of the 32 approved programs, 20 (63%) had been required to submit at least one program improvement report over the 10 years since the requirement was implemented. There was an even split of 10 associate degree programs and 10 baccalaureate degree programs (see Table 3). Ten of these programs submitted only one report, or two reports in consecutive years. Four programs submitted five to eight reports each, for a combined number of 24 reports or 42% of the total

number of reports submitted. The remaining six programs submitted three or four reports each to bring the total number of reports to 56 for the 20 programs that submitted reports.

Table 3

<i>Descriptors of program institutional plans for improvement of NCLEX®</i>				
Type of Program AD=Associate degree BS=Baccalaureate degree		Programs submitting 1-2 reports	Programs submitting 3-4 reports	Programs submitting 5-8 reports
AD Programs that submitted at least one report	10	7	1	2
BS programs that submitted at least one report	10	3	5	2
Number of reports by group		12	21	23
Total number of reports = 56				

A survey was sent to the 55 nursing members of the National Council of State Boards of Nursing through the Iowa Board of Nursing member list serve. The membership includes the 50 states, the District of Columbia, and the four territories that grant licenses to U.S.-educated candidates taking the NCLEX-RN® exam. Responses were received from 35 member boards representing 33 states, the District of Columbia, and Guam, a 64% response rate. The researcher conducted an internet search of the remaining 17 states, to determine if they had legislation or rules that benchmark a standard for the minimum acceptable National Council Licensure Exam-Registered Nurse (NCLEX-RN®) passing percentage rates of first-time NCLEX-RN® test takers.

Research Question One

The first research question examined the organization and presentation of the program improvement reports submitted by nursing programs to the Iowa Board of

Nursing in response to low passing percentage rates of first-time NCLEX-RN® test takers. Programs with a passing percentage rate lower than the 95th percentile of the national passing percentage for two consecutive calendar years were required to submit a report. The institutional plan for assessment and improvement of NCLEX results was to include outcomes and timelines. The plan was to address administration, faculty, students, curriculum, resources, policies, and the nursing advisory committee. In addition, the program was to submit annual progress reports to the board as long as the NCLEX passing percentage remained below the 95th percentile standard.

Program Improvement Reports Presentation and Organization

Reports were presented using a variety of organizational formats. Some reports had little or no narrative, others offered some narrative description, but many reports lacked rich description and background information that would add context and understanding to the program response. Reports ranged from a single page to over 50 pages, although most were in the 5-15 page range. There were reports presented as a table or simple list, making it nearly meaningless to a reviewer. Some documents were presented without narrative, with poor organization and with very superficial content. Reports were most often organized according to the seven categories required in the IBON rule (administration, faculty, students, curriculum, resources, policies, and nursing advisory committee), although there were reports that failed to address one or more of the criteria. When the seven categories were used, there was overlap or differences in how programs categorized a strategy. For instance, increasing admission GPA might be identified as a strategy in the category of students or policy or both. While the level of detail varied widely, many plans lacked supporting evidence for one or more

interventions, did not include measureable outcomes, and lacked accountability components. Some strategies presented in the improvement reports were so general, they were nearly meaningless. There was little evidence of prioritization or of identifying and securing resources needed for strategies proposed. It was noted that while many of the improvement plans incorporated the strategies suggested in the 2006 report of the IBON NCLEX Task Force, few plans actually referred to the report.

Programs required to present only one or two improvement plans during the ten-year reporting period tended to use a greater variety of strategies overall, yet were more detailed in their individual plans. They tended to have identified the trend of decreasing pass rates on the licensure exam early, and had strategies in place for improvement. Programs that were required to submit reports over several years were more likely to present multiple strategies at once, not prioritized, and broadly stated, or to present strategies that were vague and poorly delineated.

Summary

Program leaders presented written reports to the Iowa Board of Nursing in response to low passing percentage rates of first-time NCLEX-RN® test takers for two consecutive calendar years. They had a great deal of latitude in choosing the format and organization. The reports were to address seven components: administration, faculty, students, curriculum, resources, policies, and the nursing advisory committee. There were no requirements specific to length, format, or organization. There was no stated expectation of supporting rationale for plan components, timeframes, or accountability for implementation of the plan. There was no reference to, or request for, a systematic plan for program evaluation or plan for continuous quality improvement.

Research Question Two

The second research question examined the content of the program improvement plans. A framework and guiding questions were developed by the researcher based on Daniel L. Stufflebeam's (2003) Context, Input, Process, and Product (CIPP) model, guided by an appreciation for complexity theory. The CIPP model allowed me to code responses under each of the four components. The first three components of context, input, and process were primarily concerned with formative evidence and decisions. The fourth component, product, focused on outcomes. Decisions on where content might best fit was influenced by an understanding of the complexity and interconnectedness of any given action, and by the fact a specific component of a plan might be justifiably coded under one or more components.

Themes and Analysis from Program Improvement Reports

Five major themes emerged from the data analysis of program improvement plans. Each major theme was identified as the organizing concept of two or more subthemes. The major themes were:

1. Use of data for program evaluation and decisions, ranging from admissions decisions to curriculum revisions
2. Seeking help from others
3. Making changes to admission, progression, and/or graduation policies
4. Faculty as a program resource, sufficient in numbers, credentials, and experience
5. Faculty development

These themes are presented in the context of the program improvement plans as submitted to the Iowa Board of Nursing. The study's research questions also guide the organization and discussion of these themes.

Use of Data for Program Evaluation and Decisions

Data used for program evaluation and decisions included external reports or documents accessed from the NCSBN, results and reports provided by companies providing the standardized testing services, and internal tracking of data. Few programs reported using the body of scholarly work in nursing education to understand the phenomena they were addressing or to support the decisions made. Data were used to make decisions regarding curriculum, admission, and progression requirements; and to track outcomes after interventions were implemented.

Assessing Current Practices against Professional Standards and Historical Data

A frequently identified resource for assessing the nursing program curriculum was the National Council of State Boards of Nursing (NCSBN) test plan for the NCLEX-RN®. The test plan is readily available on the NCSBN website, and includes a detailed version intended for nurse educators, providing a concise summary of the content and scope of the examination. Another frequently cited source was the NCLEX-RN® program reports, available for a fee on a subscription basis. The reports help administrators and faculty understand how their graduates performed on NCLEX-RN® by providing detailed statistics about the performance of a program's graduates on the exam. Reports do not provide information about individual students, but do provide detailed information about the performance of the group that tested during the reporting period compared to the NCSBN test plan. Reports are available twice a year. The third

frequently identified source of standards was feedback of aggregate student performance in standardized tests. Some examples of program responses to support this theme include:

- Only one program mentioned consideration of mission and philosophy in their improvement plan, noting that the university supports a learning environment in which students can achieve their educational aspirations, even with the obstacles. The policy of allowing late withdrawals from courses that students are failing provides such a learning environment. However, this policy, when applied to nursing students, allows such students to withdraw from nursing courses in weeks 7-10 rather than complete the course that would lead to receiving a failing grade. Students elect to withdraw to avoid program dismissal. Such students are at a significantly higher risk for failing NCLEX-RN®. The policy has been revised, no longer allowing students to withdraw in weeks 7-10 of the academic term. (P11)
- Program P4 reported a process for researching possible curriculum gaps or contributing factors that help explain the decline in NCLEX-RN® success,
 - Detailed test analysis reports from the NCSBN for immediate two years were purchased.
 - A standardized, proprietary end of program assessment test has been used during this time. Those data were gathered for the past two years.
 - Two faculty were given release time of 40 hours each to study these reports for congruency and consistency and to use the data to further

inform decision making. The resulting work was presented to nursing faculty and was instrumental in guiding further decision making.

- Funds were provided to purchase ATI Curriculum Mapping tool. (P12)
- A program noted that they would review and revise the nursing curriculum to reflect current professional nursing standards and competencies with integration of AACN Baccalaureate Essentials, QSEN Competencies, and NCLEX Test Plan format. A form was developed to specify evaluation criteria for each course across the curriculum. (P13)

Curriculum Changes in Response to Program Assessment and Data Tracking

The majority of programs made curriculum changes or adjustments in response to trended data collected within the program or institution, sometimes in concert with external data, but few made major curriculum revisions. Programs made adjustments to existing courses by adding content determined to be missing or not adequately covered, moving content, or expanding components of lab or clinical experiences. Implementation of the curriculum was also enhanced by increasing the use of active learning strategies such as concept mapping, case studies, computer assisted learning, and activities intended to increase critical thinking skills.

Another popular program response was to make adjustments to the clinical component of the curriculum. Changes such as increasing clinical hours, decreasing the number of students supervised by an instructor, or changing other aspects of the clinical experience were commonly cited. Programs also identified efforts to increase communication between clinical faculty and classroom faculty or course leaders.

Nearly every program reported either adding an NCLEX-RN® review course, increasing the availability of a current course, changing the timing or content of the review course, or making a previously optional course a required course. Many programs reported that getting students to voluntarily participate in a structured review was difficult, at best. Programs also noted that students who most needed the focused review tended to not participate, partly due to lack of finances to pay for the course. It was also regularly noted that students tended to not perceive a need to review; and students at greatest risk, based on assessment testing and program GPA, most often failed to participate in these reviews. Examples of program responses to support this theme include:

- Program P3 used the detailed outcome reports of a comprehensive predictor exam (standardized exam) to analyze trends of low score content areas in refining curricular content. Recent curricular changes based on analysis of trends included:
 - Added course content to psychomotor skills lab
 - Revised first semester clinical to 7:1 student to faculty ratio (from 1:1 preceptorship) due to students' low scores in basic care, comfort, quality, and safety. Rationale: Nursing faculty will consistently guide and reinforce beginning students' learning basic nursing care, health assessment, psychomotor skills, safety, etc.
 - Created a new course NUR 360 Pharmacological Principles
- Program P20 set a goal to increase classroom to clinical correlation by promoting clinical correlation with theory through critical thinking.

Evaluation of the ongoing effort stated that critical thinking activities were embedded in each course, piloting of verbal pathophysiology papers and concept mapping as an alternative to care plans was in progress.

Using Data to Identify Students at High Risk for Failure and to Support Decisions

Nursing programs reported using a variety of data sources to identify high-risk students. Baccalaureate programs were more likely to use ACT scores than associate degree programs. The use of nursing admissions tests, specifically proprietary and standardized admissions tests, and earned grades in science prerequisite courses or cumulative GPA, were commonly used across all programs. Programs frequently documented consideration of non-academic factors that contribute to exam failure, but were not as clear in providing an intervention to address these non-academic factors. A typical strategy was to document both academic and non-academic influencing factors; however, it was observed that implementing strategies for the non-academic factors was more challenging. The following excerpts represent this theme in program improvement reports:

- P2 tracked multiple indicators about students who were unsuccessful on the NCLEX-RN® exam, including entry GPA, cumulative GPA, ACT, life issues, work or sports participation, test anxiety, standardized test results, and participation in mentoring. Data were used to refine interpretations of standardized test scores and to make decisions regarding which indicators were most predictive and to focus resources on addressing those higher risk components.

- Program P5 applied the following benchmark and strategy to support student success: admission assessment math and reading tests are incorporated into the first foundation course, to identify those students who are at risk. A remediation process was developed and implemented through the college academic success department. After monitoring the process, it was decided to incorporate pre-admission testing of math and reading in the matrix of admission criteria.

Using Data to Assess Interventions and Document Program Outcomes

Programs also used data to track programmatic or student outcomes after interventions were implemented. Student scores on teacher-made exams, standardized tests, course grades, or program GPA were used to recommend or require participation in remediation or tutoring. Using data to support or explain decision making was frequently noted, identifying data collection and decision making as part of the systematic plan of evaluation was reported by a few programs, and some data points were included in program improvement reports. Robust use of data points for decision making was not evident. Examples included the following:

- Student data and analysis determined students having a comprehensive predictor score below 73 were at high risk to fail the NCLEX-RN® exam. A remediation requirement was updated.
- Remediation is required for all students scoring 75% or less on a classroom unit exam/assessment. Remediation attendance has increased and preliminary tracking of results is promising. (P12)

- Curricular changes were implemented and feedback from faculty and students so far has been positive. Two primary changes were splitting out the Pharmacology content into a separate course and adding a 4-credit medical-surgical course to the junior year. Data from the ATI standardized exams show that group means increased for the class exposed to the changes, compared to the previous class. (P19)

Seeking Help from Others

The majority of programs sought help from others. Some programs brought in expertise by hiring consultants or bringing nationally recognized experts to their campus to conduct educational programs or guide the implementation of curricular changes. Programs also reported seeking assistance from, or collaborating with, other college or university departments, especially student success professionals. Reaching out to peer institutions for idea sharing, or to determine benchmarking of strategies, was also frequently identified. Nursing program advisory committees were also identified as a common source for support, feedback, and suggestions for program improvement. This theme was documented in program improvement plans by the following:

- An institutional grant was obtained to support efforts to increase critical thinking through implementation of concept mapping throughout the curriculum. A national expert was brought to campus to work with faculty in a workshop. (P4)
- The nursing program director will work with Center for Learning and Academic Success to increase resources for tutoring. (P6)

- Program P17 decided to review admissions criteria by considering other community college nursing program policies for retention, progression, and admission and then proceeded to change admission requirements.
- Program P13 worked with their Career Counseling and Student Support Services to develop and implement an at-risk screening tool.

Changes to Admission, Progression, and Graduation Policies

Programs implemented changes to the admission criteria as a strategy to facilitate student success in the program and decrease attrition. Progression policy changes were also a common approach to increasing the likelihood that a graduate would be successful on the licensing exam. Strategies used to manage student progression included higher grading scales for course grades, incorporating standardized test scores into course grades, limiting the number of attempts to pass a course or the number of courses that could be repeated, and increasing the minimum cumulative GPA. In some cases, a benchmark score was required on a standardized test to receive a passing grade. Changes to graduation requirements were less frequent, and changes were often in tandem with progression policies, especially those related to standardized tests. Examples to demonstrate this theme are:

- Program P9 has a proposal in place to increase admission and progression GPA from 2.5 to 2.75, supported by institutional data.
- Program P18 implemented a graduation requirement in 2010 that required students to achieve a score of 850 on the HESI predictor exam as a graduation requirement.

- Program P16 increased the admission GPA from 2.5 to 2.7 and moved the anatomy and physiology courses to the sophomore level to assure that students have the foundation in biology, chemistry, and microbiology necessary to be successful in nursing courses.
- Recognizing that passing the NCLEX-RN® is affected by multiple variables, the program, in addition to focusing on progression policies, is also doing the following: 1) NCLEX-RN® test plan review to ensure all material is covered 2) process analysis using the NCLEX-RN® results and student exit survey data 3) improved identification and referral of students with personal and social issues to support services and 4) course exam analysis and improvement to ensure that the items used are application level, multiple choice items, and alternate style items. (P19)

Faculty as a Program Resource

The importance of a well-qualified and effective faculty team was a common thread of concern. Programs reported challenges including difficulty recruiting qualified faculty, faculty turnover and vacancies, faculty just meeting minimal qualifications, full-time faculty also enrolled in graduate school to acquire the necessary credentials, faculty lacking academic preparation as educators, and faculty engagement in clinical teaching. Communication between full-time and part-time faculty about curriculum and clinical learning outcomes, as well as specific feedback regarding student performance, was also a topic addressed in several improvement plans. Some strategies reported by programs that demonstrate this theme are:

- Full-time faculty loads will include clinical and/or simulation to improve quality control of clinical resulting in improved links between theory and clinical. (P8)
- Program P12 reported that 8 of 14 full-time faculty were hired within the previous 3 years, and 6 of the 14 were pursuing graduate degrees. This data supported their goal of continuing professional development activities to enhance curricular and educational development of the program and unify teaching curriculum between the day and evening programs.
- Program P5 documented the challenge programs may experience in finding qualified faculty, noting that during the 2011-2012 academic term a faculty search was conducted for an additional FTE with an unsuccessful outcome. Spring 2012 one full-time faculty member resigned to pursue other opportunities. A summer 2012 faculty search to address openings resulted in hiring a masters prepared full-time faculty member.
- Program P7 reported that during the 2013-2014 academic year, four faculty completed MSN (Master of Science in Nursing) or FNP (Family Nurse Practitioner) degrees, eight faculty are currently enrolled in MSN or FNP programs, and two are enrolled in DNP (Doctor of Nursing Practice) programs.
- Although administration has endorsed the goal of reducing overload, this is still a struggle. The department is continuing to address this goal as much as possible and hope to make significant reductions in the upcoming academic year. (P1)

Faculty Development

Every program reported at least one strategy for faculty development. A majority of programs recognized the need to provide structured orientation and ongoing mentoring for new faculty, yet reported mixed success in developing and delivering these programs. However, overall support for faculty development was a component of virtually every improvement plan. The most frequently identified focus for faculty development was test item writing. Many programs encouraged faculty to complete an online course offered by the NCSBN, developed to instruct faculty on writing NCLEX-style test items. Another opportunity promoted to develop test-writing skill was seeking appointment by the NCSBN to be an item writer, a process that includes extensive training in item writing. Many programs also encouraged faculty to attend nurse educator workshops or conferences that would develop teaching strategies to support active learning, critical thinking, or classroom assessment. Other programs focused faculty development resources on development and implementation of simulation; including use of technology and developing teaching strategies. Examples from program improvement reports that demonstrate this theme are:

- Simulation experiences are an expectation of any course with a clinical component. Faculty are working diligently to assure these experiences are valuable learning opportunities for students. Four faculty attended a conference and brought back great ideas and have implemented these where feasible. (P1)

- All full-time faculty will be encouraged to attend an NCLEX item writing workshop. This training will aid in revising exam items to better reflect NCLEX-RN® content. (P6)

Outliers

Several outliers were noted in the data analysis. Only two programs specifically referred to the standards of a national accreditor of nursing programs. One program (P4) reported on actions that were implemented in response to an accreditation site visit several years earlier, leading to a curriculum redesign and several other actions resulting in program improvement. A second program (P15) noted that administrative support was granted for seeking accreditation status, and a site visit was scheduled within the next year.

The use of evidence from the scholarly literature of nursing knowledge was notably missing from most of these documents, although there were some exceptions. Program P8 listed scholarly articles as rationale for implementing new admission standards. Program P19 included two references in their program improvement report and Program P7 started including scholarly citations with the third program improvement plan submitted. One program reported interviewing program graduates who failed the NCLEX-RN® the first time, noting that the graduates stated they considered the first attempt as “practice testing” (P14).

Summary

A content analysis of the 56 program improvement reports was completed and organized using the CIPP model of program evaluation. Five major themes emerged from the data analysis of program improvement plans. Themes included the use of data

for various program decisions, sources programs turned to for help, changes made in admission, progression, and graduation policies, faculty as resources, and faculty development. These themes were analyzed and supported with samples from the collected data.

Research Question Three

A survey sent to members of the National Council of State Boards of Nursing asked if the state has legislation or rules that benchmark a standard for the minimum acceptable National Council Licensure Exam-Registered Nurse (NCLEX-RN®) passing percentage rates of first-time NCLEX-RN® test takers.

Themes and Analysis from State Boards of Nursing Survey

Responses were received from 35 member boards representing 33 states in United States, the District of Columbia, and Guam. Thirty-one states and the District of Columbia responded that “yes” they have a minimum acceptable National Council Licensure Exam-Registered Nurse (NCLEX-RN®) passing percentage rates of first-time NCLEX-RN® test takers, two states responded “no,” and the response of the territory of Guam was not included in the study. An Internet search of the 17 states that did not respond to the survey was conducted. Minimum standards for passing percentage rates of first-time NCLEX-RN® test takers were located for an additional 11 states. Standards were not found for the remaining 7 states. A summary of the results follows in Table 4.

Table 4

State Boards of Nursing First-time Pass Percentage Minimum Benchmark

Benchmark percentage	Number of states
80%	*20
75%	10
Criteria benchmarked against the national percentage	10
Other	3
No benchmark reported or found	9

Source: Survey and Internet search of BON websites

The second question asked in the survey to members of the National Council of State Boards of Nursing, was “if yes, please briefly describe the rule or process and any formal response to a programs [sic] low passing percentages, such as requiring reports, limiting admissions or revoking program approvals.” The responses were collected and reviewed, and then further narrowed by looking specifically at the responding states with the highest NCLEX-RN® pass rates over the most recent three-year timeframe. Those states are displayed in Table 5.

Table 5

States with the highest first time passing percentage of candidates taking the NCLEX-RN® exam over a three year reporting period, January 1, 2012 – December 31, 2014.

NCLEX® exam statistics by calendar year	2014	2013	2012
Arizona	94.0	90.0	88.2
Connecticut		87.0	87.9
Idaho		87.9	88.1
Louisiana		93.1	87.0
Missouri	93.4		87.2
Nevada	94.4	89.0	
North Carolina	94.1	88.1	87.0
Oregon	96.2	89.1	89.1
South Carolina	93.4	87.1	
Tennessee	93.5	87.4	

Source: National Council of State Boards of Nursing, Inc. (NCSBN)

Two major themes were identified when examining the responses from the state boards of nursing. First, boards of nursing in high-performing states demonstrated a pattern of early intervention. Second, a pattern of board of nursing involvement when program passing percentages dropped was noted across the survey respondents. In addition, two outliers of interest were noted.

Rapid Response to Declining Passing Percentage Rates in Top Performing States

Focusing on states where the passing percentage was high for at least two of the three most recent years revealed a pattern of early intervention. Benchmarks and initial, as well as subsequent, actions varied across the reporting state BONs. The common element was requiring a response within one year of failing to meet the established benchmark.

- Arizona - 80% is the minimum. If below 80% for 2 consecutive years or below 75% for one year, the program receives a Notice of Deficiency. If not corrected within the time frame (12-18 months) the Board would decide if further discipline were indicated such as limitations on admissions.
- Connecticut - If less than 80%, the program is placed on conditional status for one year.
- Missouri - If a program's official pass rates [*sic*], reported in January of each respective year, falls below the required 80%, Missouri rules require submission of a plan of correction. Board staff makes an on-site visit in response to the plan. Should pass rates stay below 80% for a second year, a second-year plan of correction is required; the program administrator must present the plan to our Board. Board staff follows up on annual basis with a site survey until outcomes improve or approval is withdrawn.
- Nevada - One year below 80% the school comes with own plan to correct. Two years below 80% school placed on conditional and must either have board survey and recommendations or hire consultant.

- Oregon - Programs that do not maintain certain standards must provide a plan of improvement to the Board. A program shall submit a written plan to evaluate and improve graduate performance in the event the program fails to maintain an average of an 85% pass rate or higher over a two-year period or a 70% pass rate or higher over a one year period. In addition, Oregon Administrative Rules states a program may receive a survey visit if they fail to achieve a pass rate of 60% or higher in a one year period or a pass rate of 70% or higher over two consecutive one-year periods, or a two year pass rate of 85% or higher over three consecutive years.
- Tennessee - Any professional nursing school having a 15% or higher failure rate on State Board Test Pool Examination, shall receive a warning from the Board. If changes, correction and/or adjustment relative to faculty, facilities, student admission, curriculum content, and/or methods of teaching are not initiated within a specified time and such action approved by the Board, the school shall not admit a subsequent class.

Increased Board of Nursing Involvement in Response to Falling Passing Percentage

Boards of Nursing employed a variety of strategies to facilitate improvements in NCLEX-RN® passing percentages, including various combinations of self-study or other improvement reports, site visits or appearance of program administrators before the BON, and placing the program, and public, on notice through conditional approval or similar status changes.

- California - A board-approval visit will be conducted if a program exhibits a pass rate below seventy-five percent (75%) for first time candidates for two (2) consecutive academic years.
- Florida - Beginning with graduate passage rates for calendar year 2010, if an approved program graduate passage rates do not equal or exceed the required passage rates for 2 consecutive calendar years, the board shall place the program on probationary status pursuant to chapter 120 and the program director shall appear before the board to present a plan for remediation, which shall include specific benchmarks to identify progress toward a graduate passage rate goal. The program must remain on probationary status until it achieves a graduate passage rate that equals or exceeds the required passage rate for any 1 calendar year.
- Virginia - First year below 80%, a plan of correction. Second year below 80%, a site visit and assistance with a plan of correction. Might get a restriction on admissions. Status change to conditional approval. Third year below 80%, may have program approval withdrawn or might have admissions restriction and if not withdrawn, would be placed on conditional approval.
- Georgia - Programs whose average pass rate (calendar year) is below 80% for first time writers must submit a corrective plan of action. If the pass rate is below 80% for a second year, a site visit is scheduled. If the program has a four year average pass rate below 80% the Board may place it on conditional approval.
- Kansas - If the first time pass rates are less than [*sic*] 75% for two consecutive years the program will receive a written notice of concern from the board. The program has three months after the date of the written notice of concern to submit

a written report analyzing all aspects of the education program, identifying areas contributing to the pass rate and the program's plan of action to improve the pass rate. The program has one year after the date of the written notice to demonstrate evidence of implementing strategies to correct deficiencies to bring the pass rate up to at least 75%. If the program has a pass rate of less than 75% for three consecutive years, the program may receive a site visit for evaluation and recommendation. The program administrator will appear before the board and present an analysis of the measure taken and an analysis of the reasons for the program's pass rate below 75%.

- Arkansas - Programs must have a 75% pass rate or above. First year not met, letter of concern and report submitted analyzing all aspects of the program and a plan for improvement. Second year not met, letter of warning and analysis of the first year report with corrections and additional plans for improvement...program administration must appear before the Board and present the plan. Third year, placed on conditional approval, appear before the Board and Board assigns stipulations, which usually include crosswalk of NCLEX test plan to curriculum, limiting admissions, etc.
- Mississippi - Annually, schools not meeting the pass rate will be placed on Continuing Accreditation With Conditions and required to submit a Performance Improvement Plan.

Outliers

Two interesting outliers were noted in the survey responses from the state boards of nursing. These initiatives are noteworthy in that the first one addresses concerns about

success of applicants who delay testing, and the other takes into consideration the impact of small class sizes.

- Florida - An approved program shall require a graduate from the program who does not take the licensure examination within 6 months after graduation to enroll in and successfully complete a licensure examination preparatory course.
- South Dakota - Our Board really looks at this on a case by case basis, as there is flexibility in rules that are not there in statute. Our rules indicate 75%. We have several small programs, and so they are allowed up to two measuring periods (Jan 1-Dec 31), until they have an n of 21 (21 first time candidates). For small programs of 6-8 cohorts, it can take years for them to bring up their pass rate.

Summary

Data from the survey to members of the National Council of State Boards of Nursing were analyzed and two major themes emerged, as well as two interesting outliers. An analysis of responses from states where the NCLEX-RN® passing percentage of first-time test takers was consistently high over the past three years revealed a pattern of early intervention when program passing percentages started to decline. There was also an increased level of involvement from the boards of nursing with the programs experiencing declining passing percentage rates. The two outliers were responses to issues often discussed by nursing program leadership; students who delay taking the exam and are therefore at greater risk of failure, and the application of percentage-based minimum standards to programs with small graduating classes.

Research Question Four

In the fourth research question I asked what recommendations for Iowa programs and the Iowa Board of Nursing arose out of the content analysis of program responses, nursing literature, and best practices for Iowa programs and the state board of nursing. The content analysis of program improvement reports was completed and organized using the CIPP model of program evaluation. Five major themes emerged from the data analysis of program improvement plans. Themes included the use of data for various program decisions, sources programs turned to for help, changes made in admission, progression and graduation policies, faculty as resources, and faculty development. The themes and strategies identified within the themes were consistent with topics evident in the literature for addressing program evaluation and improving success on the NCLEX-RN®.

The impact and ability to evaluate these plans was hindered by the organization, content, and presentation of the reports. Program leaders had a great deal of latitude in choosing the format and organization of the reports, and the result was a general lack of detail and supporting evidence. The reports were to address seven components--administration, faculty, students, curriculum, resources, policies, and the nursing advisory committee. There were no requirements specific to length, format, or organization. There was no stated expectation of supporting rationale for plan components, timeframes, or accountability for implementation of the plan. There was no reference to, or request for, a systematic plan for program evaluation or plan for continuous quality improvement.

Content analysis from the survey sent to members of the National Council of State Boards of Nursing revealed best practices that can be considered by the Iowa Board

of Nursing. An analysis of responses from states where the NCLEX-RN® passing percentage of first-time test takers was consistently high over the past three years revealed a pattern of early intervention when program passing percentages started to decline. There was also an increased level of involvement from the boards of nursing with the programs experiencing declining passing percentage rates. The two outliers were responses to issues often discussed by nursing program leadership: students who delay taking the exam and are therefore at greater risk of failure, and the application of percentage-based minimum standards to programs with small graduating classes.

Summary

The combined results from the document analysis of the program improvement plans, analysis of responses from the state boards of nursing, and the scholarly literature reviewed in Chapter 2 provide a foundation for recommendations that could lead the state of Iowa to improved passing percentages on the NCLEX-RN® for first-time testers.

Summary of Chapter 4

This chapter presented the results of data analysis from plans of improvement submitted to the Iowa Board of Nursing by nursing programs that experienced low first time passing percentages on the NCLEX-RN®. Data from a survey of state boards of nursing were also presented. The results shown in this chapter are discussed in Chapter 5, including future implications for Boards of Nursing responding to decreasing or unacceptable passing percentages of first time NCLEX-RN test takers.

CHAPTER 5

DISCUSSION, CONCLUSIONS, AND RECOMMENDATIONS FOR POLICY,
PRACTICE, AND RESEARCH

The purpose of this qualitative research study was to identify and articulate best practices that support an increase in National Council Licensure Exam-Registered Nurse (NCLEX-RN®) passing percentages of graduates from nursing programs in Iowa. Program improvement documents submitted by nursing education programs demonstrating pass rates below the acceptable benchmark set by the Iowa Board of Nursing were analyzed for organization, structure, and content. Review of the nursing literature, including evidence-based practices and scholarly works, helped to inform the research. Exploration of regulatory practices and related outcomes provided another lens and source of data from which to view practices within Iowa. Complexity theory guided and informed this evaluation research study and was applied by incorporating Daniel L. Stufflebeam's (2003) Context, Input, Process, and Product (CIPP) model as a framework for content analysis of documents.

This study has provided greater understanding of how nursing programs responded to the Iowa Board of Nursing policy mandate. The knowledge generated supports policy recommendations for improving the percentage of graduates passing the licensure examination within six months of graduation from an approved nursing program. This chapter provides conclusions and recommendations based on the study. Findings from the study were examined from the lens of the scholarly literature and the process of program improvement, as well as best practices. The discussion focuses on

strategies, practices, and regulatory responses that would support a sustained improvement in National Council Licensure Exam-Registered Nurse (NCLEX-RN®) passing percentages of graduates from Iowa nursing programs.

Limitations

This qualitative study was conducted with an awareness of several limitations. Therefore, the findings and conclusions should be considered with those limitations in mind. The first component of the study focused on a program evaluation process that is unique to the state where the study was conducted, and was limited to content analysis of documents presented to the regulatory agency in response to performance of graduates on the NCLEX-RN® exam. The second component of the study was limited to regulatory standards and rules as reported by state boards of nursing. An additional limitation is that the study only addresses the NCLEX-RN® as a benchmark of success and does not explore other possible measures or contingency factors.

Conclusions Based on Program Improvement Reports

Over a 10 year time span, 20 nursing education programs in the state of Iowa had to acknowledge and respond to the Iowa Board of Nursing (IBON) regarding poor program outcomes, as measured by graduate success on a national licensure exam. These responses, documented through program improvement reports submitted to the IBON, suggested first that there is no demographic factor that can account for poor performance. Respondent schools represented a balance between associate degree and baccalaureate degree programs; small, medium, and large programs; and both urban and rural programs. Twenty programs submitted as few as one to as many as eight reports, over a 10 year timeframe, with a total of 56 reports submitted and included in the study. Again,

the total number of reports submitted by any single program was balanced across the demographic categories, leading to the conclusion that factors other than purely location, size, or academic degree offered had the greatest influence on performance of graduates on the NCLEX-RN® licensure exam.

Program evaluation, using the CIPP model by Daniel Stufflebeam, was used as the framework for document analysis. Observations were also considered from the lens of complexity theory. Nursing is a practice discipline requiring a carefully constructed and continuously improved curriculum, responsive to changes in the practice of the profession (Matthiesen & Wilhelm, 2006). Effective program evaluation addresses the evolving standards and expectations of local and national regulatory agencies and the standards of professional organizations (Lewallen, 2015). Program evaluation also includes a combination of formative and summative evaluation components, with input from key stakeholders and regulators integrated into the plan (Matthiesen & Wilhelm, 2006). Realities of a rapidly changing health care environment, technology that has changed how individuals interact and function in the professional and personal worlds, and an explosion of new knowledge and practices in health care delivery influence the entire process. These influences lead to increased complexity in structure, delivery, and evaluation of programs preparing registered nurses.

The first, and notable, set of observations I made was in the overall organization and content of the program improvement reports, as submitted to the IBON. Successful program evaluation is based upon a well-designed and implemented plan. Keating (2011) noted that the plan “may be organized around an evaluation model or theory or by criteria set by accrediting bodies” (p. 294). The key is to have an organized plan that is

implemented and used to drive change and quality improvement. Program improvement plans presented to the IBON were presented using a variety of organizational formats. Some reports had little or no narrative, others offered some narrative description, but many reports lacked rich description and background information that would add context and understanding to the program response. Reports varied widely in length, organization, and content. Overall, program improvement reports were not organized or presented using a clear and organized format based on identified standards or compared to quality indicators or benchmarks.

Most telling was the absence of meaningful and robust data to support decisions, including data that would explain a program's specific and unique population, challenges faced, and programmatic resources. Evidence from the body of knowledge in nursing and nursing education was notably absent from most reports, and there was infrequent mention of a systematic plan of program evaluation and continuous quality improvement. While the level of detail varied widely, most plans were missing criteria that are integral to a defensible plan for improvement: specific goals that are prioritized, measurable, and realistic, supported by resources, time specific, or with identified target dates and with accountability assigned and documented. There was little evidence of prioritization or of identifying and securing resources needed for strategies proposed. Goals cannot be met if they are not carefully planned, supported, articulated, implemented, and reviewed, with adjustments made as needed on the course to goal attainment. The lack of structure, detail, evidence, and accountability inhibit effective and defensible decision-making by the IBON.

Review of the literature revealed the wide variety of approaches and strategies programs use in an effort to increase success, as measured by graduate success on the licensure exam. Educators observe a wide variety of influences that may trigger fluctuations in first time pass percentages. Introducing curriculum changes, new faculty, rotating or introducing new clinical practice sites, changes in practice protocols, and other factors influence student outcomes in any given year. The three-year cycle of changes in the NCLEX-RN® test plan and the passing standard add to the difficulty of tracking and assessing improvement strategies. Small programs can have widely variable statistics based on the impact of two or three students passing or failing the exam (Giddens, 2009; Taylor, Loftin, & Reyes, 2014).

Programs in Iowa reported using data to drive or explain decisions regarding admission or progression policies, although the reporting often lacked detail and context. Assessment data also drove decisions about curriculum, such as moving, decreasing or increasing content, and when making changes to the clinical component. Efforts were made to identify high-risk students and implement strategies that would either stop them from entering the program, or block progression if performance was below an identified threshold. Strategies to increase academic success through tutoring or non-academic support were sought. Programs did reach out to experts, consultants, and student support personnel for advice, programmatic development, or to provide additional resources.

Changes were made to admission, progression, and graduation policies. Strategies presented included implementation of entrance exams with required achievement scores, minimum requirements for GPA, or specific pre-program course work, limiting the number of times a student could repeat a course, and using

standardized tests as part of the grade or progression criteria. Changes were often documented without the context of evidence to support the change, or monitor the impact through intended or unintended outcomes.

Interventions related to faculty were organized under two main themes, faculty as a program resource and faculty development. Programs reported challenges in recruiting and retaining a qualified faculty. Faculty development was encouraged by many programs, especially in the areas of writing test items and, more broadly, through participation in nurse educator conferences and workshops.

Five major themes were identified in the program improvement reports analyzed in the study. It is important to note that these themes were not mutually exclusive, and no theme could be fully examined in isolation of the others. This is consistent with the reality of health education programs. There is no magic bullet or checklist to help a struggling program improve the passing percentage on the NCLEX-RN®. There is no definitive formula to increase student success, and there will usually be a variety of strategies implemented (Lavin & Rosario-Sim, 2013).

These themes, and the interconnectedness among them, are congruent with complexity theory. Healthcare is complex, and with increased emphasis on patient safety, there has been a resultant increase in the competency requirements of entry-level nurses (Carrick, 2011). Nursing care is now delivered in a multitude of settings, and patients have diverse needs and expectations (Finkelman & Kenner, 2016). Complexity and quality must be merged in the program evaluation and problem solving processes to effectively produce change and sustain improvement in outcomes. Meaningful collaboration and dialog with key stakeholders is critical when planning and

implementing change in a complex system. Significant improvement in program outcomes can rarely be accomplished without an infusion of resources, administrative support, expertise from all aspects of the problem, and a well-designed plan for implementation and monitoring. A key component with complexity and program improvement processes is gaining a clear understanding of the problem and all influencing factors. Deeply exploring an issue and considering all aspects of influence, along with possible solutions, is critical to presenting and implementing a successful plan of program improvement.

Conclusions Based on State Boards of Nursing Survey

Analysis of the responses from the state boards of nursing yielded two significant themes. First, boards of nursing in high-performing states demonstrated a pattern of early intervention. Programs were put on notice and expected to quickly implement strategies to improve outcomes. An underlying difference in approach or philosophy might explain the difference in time frames. It is understood in academia that implementation of change is a process that takes time. Assessing a trend, determining an action or curricular change, seeking required approvals, implementing the changes, and monitoring responses could take years. Respect for this process may explain why some states allow a period of years to pass before enacting serious sanctions against a program. Conversely, others may believe that select strategies that can be implemented very quickly to counteract a downward trend and improve outcomes for currently enrolled students, while longer-term solutions are sought and implemented for future student populations. Approaches to resolving this potential conflict in establishing timelines for improvement must consider a balance among stakeholder needs. The needs and expectations of current students and

recent graduates must be considered, and short-term interventions for these stakeholders must be part of the solution.

Second, a pattern of board of nursing involvement when a program's NCLEX-RN® passing percentages dropped below the stated benchmark was noted across the survey respondents. Although varied in the details, boards of nursing tended to reach out quickly to programs with declining passing percentages and start the process of communication and monitoring. The level of board or board of nursing staff involvement and response also escalated with each year, if improvements were not demonstrated. Site visits and increased reporting and accountability were added to the procedures, with some states requiring program administrators to appear before the board. Requiring college or university leadership to respond or appear, along with the program administrative leaders, was a strategy used by some states and would certainly emphasize the expectation that improvements in outcomes are not optional.

Recommendations

Based on the findings in this study, several recommendations are suggested for the Iowa Board of Nursing and other policy makers, nursing education practice, and future research. Success on the licensure exam is critical to the individual student, the nursing education program, and the community where graduates intend to live and work. Local communities rely on successful graduates to support ongoing nursing workforce demands, including delivery of quality health care to the community in which they live. A logical response to the workforce shortage would be an increase in enrollment, graduation, and licensure of new RNs. However, nursing education programs struggle to meet the increased demand for nurses caused by the workforce shortage, and the problem

is compounded when passing percentages on the licensure exam are lower than established benchmarks.

Failing the licensure exam impacts the graduate and others. Shultz (2010) stressed that “a graduate’s failure to pass the licensure exam has implications far beyond those for the individual student” (p.205). Education programs must implement proven strategies to increase the success of graduates on the licensure exam. It is unacceptable that so many college graduates with degrees in nursing are left, literally, without the credentials to enter the workforce and their chosen profession. Regulators and other stakeholders must also contribute to the process by holding programs accountable for quality outcomes, including acceptable pass rates on licensure exams.

Recommendations for Policy

The Iowa Board of Nursing should strengthen the process for working with programs to elicit compliance to established standards and success in graduate performance on the NCLEX-RN® exam. There needs to be an expectation of significant and timely improvement when programs fail to meet the standards. A greater emphasis should be placed on a process of continuous program assessment and quality improvement. A restructured process for identifying and communicating with programs the fail to meet the benchmark should be developed. Early intervention and monitoring are one component that needs to be implemented. Programs should be made accountable for detailed, quality improvement plans that are supported by data and rationale, incorporating accountability, timelines, resources, and expected outcomes. Short term and longer-term interventions and outcomes should be considered. A culture of high expectations should be supported by a culture of support and clarity, framed within a

clear and unambiguous process of accountability. Active involvement through increased reporting is needed, and a stronger focus on site visits should be considered.

Potential students should be able to access program passing percentage rates and status in compliance with Board of Nursing rules quickly and easily. Guidance counselors and other stakeholders should also have ready access to this information. The Board of Nursing should require that programs post this information in a clear and easily located position in their marketing and informational materials. This information should also be easily found on the Board of Nursing website, along with information on how to prepare for a career in nursing that includes selecting a nursing education program.

The IBON should have a thoughtful and deliberate discussion about the NCSBN's Nursing Education Committee recommendation that BONs "work toward requiring national nursing accreditation of all prelicensure programs" (NCSBN, 2012). Many of the benefits of the accreditation process can be facilitated through board of nursing rules and procedures. However, the fact that graduates from a program that is not accredited may experience barriers to employment or when seeking to transfer credits for continuing their education (Finkelman & Kenner, 2014) must be part of the conversation. At the very least, Board of Nursing expectations and standards should be more in alignment with the national accreditation standards. This serves to more fully protect the public, which includes current and potential nursing students and the future nursing workforce.

Recommendations for the Practice of Nursing Education

Stufflebeam provided a comprehensive checklist for implementing the CIPP model. He encouraged evaluators and other potential users to build a program evaluation plan that included both proactive assessment for program improvement and retroactive

evaluation to assess program quality. Stufflebeam (2007) also stated a need to share lessons learned, and emphasized that “evaluation’s most important purpose is not to prove, but to improve” (p. 2), making the CIPP model ideal for programs seeking to create a plan of systematic evaluation for continuous program improvement.

Programs are encouraged to develop or improve robust, working, systematic plans of program evaluation and improvement. It is important to recognize and incorporate variables that are unique to a program and those that are universally critical to the profession and the process of educational effectiveness. Administrators and other stakeholders need to be fully informed and actively involved in supporting program quality. Program leadership should be supportive of initiatives that move the expectations of quality to a level that serves all stakeholders more effectively, ensures well prepared graduates, and better facilitates a safe and competent nursing workforce.

In addition, nursing programs are encouraged to search the literature, do in-depth and critical self-assessment, and engage experts in a quest to improve the quality of curriculum, teaching strategies, evaluation of students, and program outcomes. Admission, progression, and graduation policies should be reviewed with a balanced approach, using both national and local standards to identify the best criteria and responses for their program. Stakeholders, including practice partners and employers, students and alumni, should be involved in the process. Resources and support need to be carefully measured and realistic goals and outcomes set using all the available information.

All nursing programs should seek national accreditation. Program leaders and faculty should actively seek the highest level of quality possible and gather information

and resources that elevate program success, incorporate new curriculum designs and current standards, engage students in active learning leading to enhanced clinical decision-making, and develop faculty that meet the education and practice standards needed to develop new practitioners.

It is recognized that making a significant change in educational outcomes is not a rapid process and that improvements occur over a period of years. However, given the critical impact of failing the licensure exam, there are strategies that can be implemented in the short term to better prepare current students for success after graduation. Strategies such as intensive remediation based on feedback from standardized tests and arranging for a high quality NCLEX review course at no additional cost to students are two potential strategies. Programs need to be very clear and direct when informing students about their passing percentages and the need to participate in provided support activities. Programs might consider having students sign an acknowledgement of risk, should they decline the provided support. It should not be acceptable to continue to graduate students without providing evidence of significant and proven interventions to increase the passing percentage of currently enrolled and soon to graduate students.

Recommendations for Future Research

This study provided important and informative information about practices that may be contributing to the less than acceptable performance of Iowa nursing program graduates on the NCLEX-RN® licensure exam. The results also support opportunities for future research regarding programmatic quality improvement and increased success of Iowa graduates on the licensure exam. A deeper examination of attributes among students, faculty, curriculum, and outcomes might provide opportunities to understand

the differences between successful outcomes and unsuccessful outcomes. A study exploring the practices of regulation and education in Iowa and a state with comparable demographics might reveal new attributes not yet considered, or provide a greater understanding of variables more commonly studied. A deeper understanding, using a case study approach, of highly successful programs and programs that have struggled for an extended time period could be very informative and reveal unexplored barriers or success strategies.

Learning more about how other state boards of nursing made decisions about passing percentage benchmarks, timeframes for improvement, and the level of involvement of the board staff with programs could also be informative. Further research of education program practices in states with a strong and consistent record of NCLEX-RN® licensure exam success for first time test takers is another promising area for research.

The nursing profession is rapidly evolving and changing in response to changes in the health care system, technological advances, growth in online learning and simulation, and academic progression initiatives. These changes provide ample opportunity for stakeholders in Iowa to collaborate in the development, delivery, and evaluation of innovative program delivery using shared resources and expertise. These potential creative solutions provide ample opportunity for grants and research to benefit both the state and the nation as we continue to forge ahead in the complex world of healthcare education and practice.

Final Thoughts

During a public awareness campaign years ago, the phrase ‘every patient deserves a nurse’ became popular. I turned the phrase into ‘every family needs a nurse’ when I was dealing with family healthcare crises. Nurses care for the most vulnerable among us. They are the hub of the healthcare team, the center of communications, the one in the best position to protect the patient. This is an immense responsibility, and one that must never be undervalued by our society. Regardless of our role as family, patient, healthcare provider, regulator, educator, or citizen; we have a shared responsibility to contribute to a safe and effective system of healthcare delivery. We must set high expectations for those who potentially, and literally, hold our lives in their hands. We cannot settle for anything less.

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APPENDIX A.

PERFORMANCE OF CANDIDATES EDUCATED NATIONALLY AND IN IOWA PROGRAMS ON THE NCLEX® EXAMINATION FOR REGISTERED NURSES BY NUMBER OF FIRST-TIME TEST TAKERS AND PASSING PERCENTAGE

NCLEX - Registered Nurse	FY 2002	FY 2003	FY 2004	FY 2005	FY 2006	FY 2007	FY 2008	FY 2009	FY 2010	FY 2011	FY 2012	FY 2013	FY 2014
<i>National</i>													
Total													
Number of													
Test Takers	67,120	79,549	82,742	94,058	105,427	114,771	123,141	133,788	143,709	145,613	151,135	152,243	155,335
Number													
Passing the													
Exam	57,696	69,430	71,674	81,028	92,272	100,544	105,295	116,954	127,611	127,743	134,394	132,504	128,243
Passing													
Percentage	85.96%	87.28%	86.62%	86.14%	87.52%	87.60%	85.51%	87.42%	88.80%	87.73%	88.92%	87.03%	82.56%
<i>Iowa</i>													
Total													
Number of													
Test Takers	1,086	1,278	1,378	1,621	1,789	1,988	1,875	2,016	2,059	2,081	2,104	2,103	2,206
Number													
Passing the													
Exam	934	1,095	1,139	1,338	1,487	1,679	1,508	1,673	1,755	1,775	1,846	1,810	1,814
Passing													
Percentage	86.00%	85.68%	82.65%	82.54%	83.12%	84.46%	80.43%	82.99%	85.24%	85.30%	87.74%	86.07%	82.23%

Source: Iowa Board of Nursing Annual Reports

Note: The passing standard increased for examinees sitting for the exam after April 1, in the following years: 2004, 2007, 2010, 2013

APPENDIX B

SURVEY SENT TO STATE BOARDS OF NURSING

Survey Questions sent to Boards of Nursing via the NCSBN list serve by the Iowa Board of Nursing Associate Director of Practice and Education.

Introduction.

Virginia Wangerin, MSN, RN, CNE is a doctoral student at Iowa State University in the School of Education. Ms. Wangerin is conducting research on the strategies to address low passing percentage rates of first-time NCLEX-RN® test takers. One component of the study involves identifying regulatory standards of state boards of nursing that are specific to the NCLEX-RN® passing percentage rates of first-time NCLEX-RN® test takers.

Please respond to the following questions regarding your state's administrative rules or legislated initiatives aimed at setting a benchmark for NCLEX-RN® passing percentage rates of first-time NCLEX-RN® test takers of programs approved or accredited by the state board of nursing.

Demographics

- Identify the state responding
- Provide name/title and contact information of the individual responding to the survey for possible follow up or clarification.

Please answer the following questions regarding strategies your agency uses to establish and meet minimum acceptable National Council Licensure Exam-Registered Nurse (NCLEX-RN®) passing percentage rates of first-time test takers.

- Does your state have legislation or rules that benchmark a standard for the minimum acceptable National Council Licensure Exam-Registered Nurse (NCLEX-RN®) passing percentage rates of first-time NCLEX-RN® test takers?
YES or NO
 - If yes, please
 - Briefly describe the rule or process and any formal response to a programs low passing percentages, such as requiring reports, limiting admissions or revoking program approvals.
 - Provide a link or directions to the legislative rule or to an explanatory document as provided to the heads of nursing programs and available to the public.

Thank you for responding to the survey. A summary of responses will be made available to all participants after results.