

Examining Student Preparation for Certification Examination:
An Exploratory Case Study

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Abstract

This research paper explores three university-level programs with mandatory licensing exams for graduates who wish to attain professional certification. Specifically, the study explored the affordances and constraints associated with curricular alignment and program accreditation, student success on licensure, and student satisfaction. The specific programs and the licensure exams are: the Bachelor of Science in Nursing (BScN), who are eligible to take the National Council Licensure Examination-Registered Nurse (NCLEX-RN), the Master of Applied Disability Studies (MADS), who write the Behavior Analyst Certification Board Exam, and the Bachelor of Accounting/Master of Accountancy (BAcc/MAcc), who are eligible to take the Chartered Professional Accountants (CPA) Common Final Examination (CFE). The study used a scoping review of the literature specific to the NCLEX-RN to help inform an exploratory case study of three academic programs that are offered through a University in Ontario, all leading to licensure exams. The programs are designed to ensure that students are prepared to write the licensure exams and provide more material that is integral to the practice but is not necessarily tested on the licensure exam. Using curriculum and accreditation review processes, administrators/faculty and students can provide insight into processes that could aid future students for licensure exams. When comparing the findings from analyses of transcripts from one program and documents across all three programs, it is apparent that there are many similarities across the programs despite the differences in the actual curricular goals and licenses. However, there appears to be a disconnect in the Nursing program, since they use the greatest number of the identified techniques/tools,

but still have lower percentages of first-time pass rates than the other two programs. This provides an area for future study and analysis.

Keywords: licensure exam, curriculum, baccalaureate, NCLEX-RN,

Chapter One: Introduction and Background

1.0 Introduction

Certification is defined by the Oxford dictionary as: “the action or process of providing someone or something with an official document attesting to a status or level of achievement (2018, Oxford University Press).” This certification is a means by which a third-party, such as professional societies/associations, universities, trade organizations, or private certificate-granting agencies acknowledge that an individual has achieved a level of knowledge or proficiency in the industry or profession. Certifications are usually time-limited but can be renewed indefinitely if certain requirements are met; there is generally a continuing education component to the renewal that demonstrates ongoing competency. Certifications may be endorsed by a professional association but are usually independent from membership organizations and are considered portable because they are not defined by a single company (Barnhart, 1997). Certification is common in many fields such as aviation, business, construction, education, environment, finance, health care, law, real estate, and trades. Where there is governmental regulation, the certification is generally called “licensure” and when it applies to a self-regulated profession, it is generally “registration” (FSMTB, 2019).

Many educational institutions provide undergraduate or graduate diplomas or degrees in fields that also require additional independent certification to practice as member of the profession. In these cases, the professional regulatory body determines the entry-to-practice education level and regulates the profession through curriculum content requirements and entry-to-practice standardized exams. The accreditation of educational programs may be mandatory (e.g. nursing, architecture, engineering) or voluntary (e.g.

business) (Universities Canada, 2018). Professional accreditation of the program of study, where available, focuses on provincially and/or nationally recognized standards for the discipline and the specific knowledge and skill requirements of the field. Professional Accreditation is encouraged as an additional assurance that faculty credentials and the learning outcomes established for students are consistent with national standards.

The crucial link between university programs and the program approval process by a professional regulatory body becomes evident when entry-level registration exam results are used as part of the approval process; most programs look at the first-time pass rates. The College of Nurses of Ontario (CNO) uses the first-time pass rate as one of the three outcome indicators to approve nursing programs, thus underscoring the importance of graduates to write and pass the registration exam. The exam results are publicly reported by the CNO as part of their quality assurance program to provide an indication of how well a program prepares its graduates for competent and safe practice (CNO, 2018b). This is also important because as Sears, et al. (2015) state: “The extent to which graduates of nursing programs successfully perform on standardized nursing registration examinations can have a profound impact on the prestige of nursing programs (p. 10).”

In January 2015, when the CNO replaced the Canadian Registered Nurses Exam (CRNE) with the National Council Licensure Examination (NCLEX-RN), not only did the first-time pass rates drop significantly, but they also indicated significant differences within programs where there were different delivery models. In 2015, the first year after implementation of the new exam, the first-time pass rate was 69.7% nationally compared to a previous national pass rate of 87% with the CRNE exam (CCNR, 2018). These results were 79.9% in 2016 and 82.1% in 2017, with Ontario results 67.7%, 80.1%, and

79.5% for the 2015, 2016, and 2017 years, respectively (CCRNR, 2018). The first-time pass rates in some programs also differed based on the program stream of the student (either a straight 4-year program at the university or two years at a Community College plus two years at the university (2+2)).

Both the overall drop in first-time pass rates and the disparate results from the two program streams were discussed by faculty and students, and it was especially interesting for me given my prior background in nursing education and curriculum development. In 2015, I had begun my doctoral studies and was engaged as a teaching assistant, marker-grader, and lecturer for several different courses in a university nursing program. My nursing career as a Registered Nurse, completing a three-year College Diploma and licensure exam in 1988 and a BScN/MScN in Community Health Nursing and Nursing Education in 2002, had provided me with an interest in curriculum development and caused me to want to investigate these exam results. I had also had first-hand experience in curriculum development and implementation through teaching both classroom and clinical nursing at several different community colleges and two universities. I had also previously been the single faculty member for a Practical Nursing (PN) program at a Community College when the program was introduced. The college joined a consortium of six other colleges with PN programs, buying the rights to the overall program approval, general course mapping, and sequencing, but I had to develop all the course outlines and content and then teach all nursing courses for the first cohort and act as the program coordinator.

Looking at the current situation, with lower pass rates and disparate results between different cohorts in the same program, one would be drawn to explore the possibility of

gaps in the curriculum for those students in the (2+2) program. The original research was designed to use a scoping review to delve into this question and subsequently this was expanded to include a case study to provide additional insight into possible differences between the two groups. The question of whether curriculum design affected exam performance in other programs was also raised, and the case study was expanded to include two other programs at the university, both of which also required graduates to write licensure exams in order to practice using professional credentials.

The original scoping review was used to examine the literature in nursing and helped inform the interview questions that would be addressed to all programs in the ensuing case study. I believed that the research literature on Nursing curriculum could be reflective of the more general literature on best practices in curriculum development in higher education promoting practices in ongoing attention to curriculum relevance and coherence, transparency of curricular process and development, valid and robust competency-based assessments and evaluation, meaningful preparation and practice of program outcomes prior to assessment, and opportunities for experiential and other forms of applied engagement. The case study allowed me to use a constructivist approach to explore nursing graduates' perceptions of their program and how prepared they felt to write the licensing exam. The addition of the other two programs also allowed me to take a broader look at curriculum implementation within the university and examine possible relationships between curricula and ability to pass a licensing examination. The specific programs and the licensure exams are: the Bachelor of Science in Nursing, who are eligible to take the National Council Licensure Examination-Registered Nurse (NCLEX-RN), the Master of Applied Disability Studies (MADS), who write the Behavior Analyst

Certification Board (BACB) Exam, and the Bachelor of Accounting/Master of Accountancy (BAcc/MAcc), who are eligible to take the Chartered Professional Accountants Common Final Examination (CFE).

1.1 Background

1.1.1 Nursing

There are two predominate ways that nursing has been taught in Canada. In French Canada, religious orders provided schools of nursing attached to hospitals whereas in English Canada, schools were based on the principles of Florence Nightingale and the goal was for them to be financially independent of hospitals; this did not happen and nursing schools were affiliated with hospitals (Pringle, Johnson, & Downey, 2004) . The first school was started in St. Catharines, Ontario, in 1874 – The Mack School of Nursing. The University of British Columbia established the first degree program in Canada in 1919, the same year that a Baccalaureate program was started at University of Minnesota (Pringle et al., 2004). Nursing was eventually moved out of the hospital sector and into the education sector, which was facilitated by the formation of the Ontario College systems in the 1960s (Pringle et al., 2004).

In response to the increased demands on nurses in a more complex health care environment, the Canadian Nurses Association Board voted unanimously in 1982 to require the Baccalaureate as the entry to practice requirement for nurses in Canada starting in 2000 (CASN, 2012). All provincial associations, except Quebec endorsed the decision at that time; Quebec passed the motion in 2011 (CASN, 2012). Despite this move, there were difficulties in designing programs and finding faculty to teach them and the provinces did not actually implement the recommendation until later (Pringle et al.,

2004). This movement helped provide an additional drive for research into nursing curricula design and teaching methodology, and Ontario implemented the baccalaureate degree as entry to practice effective 2005 (CASN, 2012). As a result, the 22 colleges in Ontario developed partnerships and collaborative programs with Ontario universities to meet the requirements (CASN, 2012).

After completing a recognized Ontario baccalaureate degree, either as a four-year university program (4yr) or a collaborative program with two years at a college and two years at a university (2+2), applicants registering with the College of Nurses of Ontario must successfully complete two examinations: a registration examination and a jurisprudence examination. The registration exam tests for the knowledge, skill, and judgment nurses need at the beginning of their careers in Ontario (CNO, 2017).

Beginning on January 1st, 2015, the National Council Licensure Examination for Registered Nurses (NCLEX-RN) replaced the Canadian Registered Nurse Examination (CRNE), a paper-based multiple-choice exam. The NCLEX-RN is a computer-adaptive exam that determines a writer's knowledge of entry-level nursing skills (CNO, 2017).

When the exam was first introduced, applicants were allowed a maximum of three attempts to write the exam, keeping it in line with the previous exam. However, applicants writing the same exam in the United States were given unlimited opportunities, and as a result of lobbying, discussion, and subsequent regulation changes in Canada, applicants have been allowed an unlimited number of attempts since January 2017 (CNO, 2018b). Some faculty members believe the additional attempts create a sense that students may try the exam, not expecting to pass the first time in order to get a "feel" for it, and then take subsequent attempts more seriously, or others who may have performed

poorly on the exam due to test anxiety related to the limited number of writes may be more likely to pass if they know there are unlimited writes (personal communication, 2019); both of these factors will affect the first-write pass rates for the schools.

1.1.2 Disability Studies

Disability studies can be described as “all areas of inquiry and scholarship involved in the study of issues affecting people with disabilities (Ferguson & Nusbaum, 2012, pg. 70).” In 1982, four sociologists, Darryl Evans, Gary Kiger, Stephen Hey, and John Seidel, met at a conference of the Western Social Science Association to form a special section for the "Study of Chronic Illness, Impairment, and Disability." Applied Disability Studies began that year and were the academic side of the disability rights movement (Ferguson & Nusbaum, 2012). By 1986, the group became a separate organization called the Society for Disability Studies (SDS) (Ferguson & Nusbaum, 2012). Since then, significant advances have been made and college level, baccalaureate, masters and doctoral programs have been established across the United States and Canada to provide education and research in the area of disability studies, including behaviour analysis.

The Behavior Analyst Certification Board (BACB) is the regulatory body for applied behavior analysis (ABA) which is like the CNO for nursing (BACB, 2018). Research by behaviour-analytic scientists has focused in a large part on identifying the way behaviour is learned and how it changes over time; this research informs practical applications for treatment approaches to change behaviour and improve social interactions of individuals by changing their existing behaviour to more socially acceptable behaviours (BACB, 2018). ABA was initially studied, and treatment used in

individuals with autism and intellectual disabilities but has also been successful in a variety of other areas including parenting education, addictions, dementia management, acquired brain injury rehabilitation, and occupational safety intervention (BACA, 2018).

Students graduating from an ABA program at the college level may work under licensed ABA's and may return for bridging to obtain a baccalaureate and then master's degree in order to qualify to write the licensing exam. One Canadian university that offers a masters level program that includes a research thesis and Applied Behaviour Analysis (ABA) training and through which graduates may apply to write the Behavior Analyst Certification Board Exam uses a curriculum approved by the Behavior Analyst Accreditation Board and provides a strong program with a scientist-practitioner model (CADS-FAR, 2017). Other components of the curriculum that are required prerequisites to write the exam, besides degree completion, are documentation of ongoing supervision and experience by a qualified supervisor and completion of required coursework (BACB, 2018a)

The Canadian university compares well in pass rates for the ABA; summary statistics from BACB (2018) report the overall pass rates for first time writers at all schools and the corresponding years are as follows: 2017 – 65%, 2016 – 66%, 2015 – 65%, 2014 – 60% 2013 – 58%. The corresponding results for the Canadian university are: 2017 – 89%, 2016 – 79%, 2015 – 91%, 2014 – 76%, and 2013 – 76%. The BACB provides task lists through their web site that outline the topic areas required for study and examination to serve as educational resources for instructors and study tools for candidates who are studying for the licensing exams (BACB, 2018). The program is

reviewed internally by the Academic Review Committee of the Senate and the course sequence is approved by Behavior Analyst Accreditation Board (CADS-FAR, 2017).

1.1.3 Accounting

Ontario's accounting profession dates to 1879 (CPAO, 2018). In 2014, Ontario's Certified General Accountants (CGAs), Certified Management Accountants (CMAs), and Chartered Accountants (CAs) united as Chartered Professional Accountants (CPAs) and CPA Ontario, advancing their commitment to the public and the profession. The Chartered Professional Accountants of Ontario Act, 2017 regulates individuals as Chartered Professional Accountants (CPA) in the province of Ontario to promote and protect the public interest, establish, maintain, develop, and enforce standards of qualification, practice, professional ethics, knowledge, skill and proficiency, and regulate the practice, competence and professional conduct of CPAs. Accounting degrees from universities are required by the CPA Canada to help provide the necessary formal undergraduate and graduate education requirements which, together with the Professional Education Program (PEP) and relevant practical experience allow graduates to write the Common Final Examination and pursue a Chartered Professional Accountant (CPA) designation. CPA Canada provides the syllabus for its CPA Preparatory Courses to outline the content of the courses and assist in the development of prerequisite education that will prepare the applicant for the PEP (CPAC, 2018).

After having completed the PEP or equivalent education, candidates are permitted to register for and write the three-day Common Final Examination (CFE) that caps the education portion of the CPA certification program. The CFE evaluates students on the competencies defined by the Competency Map, which outlines the knowledge, skills and

proficiency levels required to be a Canadian CPA (CPAO, 2018). Candidates are permitted three attempts; the overall results and pass rates are reported for first attempts, cumulative first and second, and cumulative for three attempts. Examples of these pass rates are: September 2017, 77.6% (first attempt); September 2016, 76.8% (first attempt), 88.6% (combined first and second attempt); and May 2016 68.7% (first attempt), 75.4% (combined first and second attempt) and 79.9% (3 attempts combined) (CPAC, 2018a). Since the actual exam is not done as part of the University curriculum, nor is it taken directly following the undergraduate program, there is not the same reporting structure for candidates who pass the exam, making it difficult to see the same direct correlation of exam results with a particular curriculum.

The University under study offers different streams for students to achieve eligibility to write the CFE and become a CPA. The basic Bachelor of Accounting (BAcc) degree can be followed by the PEP modules and then the CFE or the student can complete the BAcc, plus a Master of Accountancy (MAcc) and progress directly to the CFE. Students choosing the full-time MAcc can complete the requirements to write the CFE in about seven months, whereas those following the PEP route will require approximately two years part-time. The graduate level program is accredited by the CPA Ontario under the national CPA accreditation standards and the business school has international accreditation by the Association to Advance Collegiate Schools of Business (AACSB International). For the purposes of this study, the focus was on the BAcc/MAcc, which is a four-year honours program that provides the required university degree toward the CPA designation followed by the master's degree and immediate qualification to write the licensing exam.

1.2 Statement of the Problem

The overall problem was approached using the following questions: What are the prevalent practices in curriculum development and implementation when the curriculum is geared toward an accreditation exam? What is known from the existing literature about how academic programs prepare students for licensure examinations? How might the programs further refine curriculum processes to aid in student preparation for licensure exams? What similarities and differences are found across three such programs? What are the programs' curricular elements in the BScN (4yr) and (2+2) that might contribute to success rates on the NCLEX-RN exams?

1.3 Research Orientation and Brief Overview/Description of Approaches

Two data sets provided the background to examine the questions; it was hypothesized that these data would provide a means to examine implications for curriculum development across all three programs (Briggs, 2015). The first data set was generated using a scoping review of the literature related to curriculum and exam preparation in nursing education. This was then used in conjunction with the data obtained through an exploratory case study of all three programs that involved interviews in nursing and pre-existing documents in all to look at the overall tendencies in curriculum development in these three programs that all have a final licensure exam.

Van den Hoonard (2012) describes the analysis of pre-existing documents as something that is essential to understand contemporary society (pg. 97). By studying these documents, it is possible to determine processes used in education of students, the concerns of educators as reflected by the authors, and the relative importance various aspects of education.

While implications for research, including other scoping or systematic reviews, may be made from the result of scoping reviews – especially those conducted with the objective of being precursors to systematic reviews, implications for practice are limited by the fact that a formal assessment of methodological quality of the included studies of a scoping review is generally not performed. If implications for practice are developed, it is expected that they will clearly flow from the objectives of the scoping review. (Briggs, 2015, p.8)

Case study research is an appropriate methodology for questions that ask, “how or why”, when there is no control over behavioural events, and the study focuses on a contemporary phenomenon (Yin, 2018). This type of research has been used in a variety of fields including education (Yin, 2018). In looking at my research questions concerning how the three programs are similar and different, Yin (2018) indicates that a case study would be the favoured methodology. Since the education and the exam have already taken place, but the subjects are still available to answer questions on the experiences of the recent past, and the future is still open to modifications in curricular design that could influence future student outcomes, Yin’s (2018) design suggestion favours case study research.

The case study research design as outlined by Yin (2018) has five components: the questions, propositions (if any), case(s), the logic that links the data to the propositions, and the criteria for interpretation (p. 57).

Chapter Two: Review of Literature

2.1 Nursing Education

Many professional regulatory bodies, including nursing, use a standardized exam to test for competency prior to issuing a license or registration. The challenge for many educational institutions has been to try and predict which students will be successful and how to ensure the student success (Beeman & Waterhouse, 2001; Beeson & Kissling, 2001; Sears et al., 2015; Peisachovich, 2016; Cobbett, Nemeth & MacDonald, 2016; Sears et al., 2017).

In the United States, individual states each had State Board exams from 1941 to 1949. In 1950, nursing became the first profession to use a standardized Board exam across all states (NCSBN, 2014). In 1982, the National Council of State Boards of Nursing (NCSBN) started work on an electronic system that not only allowed for a computer administered exam, but also adapted to each candidate as they answered the questions and provided immediate scoring (NCSBN, 2014). This became the National Certification Licensure Exam for Registered Nurses (NCLEX-RN) and has been used since April 1, 1994 (NCSBN, 2014).

Canadian nursing followed a similar path, with many provinces using the U.S. National League of Nursing (NLN) exams (CNA, 2005). When the NLN announced it was discontinuing the use of these exams in Canada by 1969, the Canadian Nurses Association (CNA) developed and offered its first national registration exam in 1970 (CNA, 2005). This multiple-choice paper and pencil exam was changed in June 2005 to add a short-answer component, designed to help “assess clinical decision-making, problem-solving, and critical thinking skills (CAN, 2005 p.1)”. In 2011, Canada reviewed

its exam format and chose to align with the United States, choosing the NCLEX-RN as the licensure for RNs in most jurisdictions in Canada (NCSBN, 2014).

The introduction of the NCLEX-RN as the main licensure exam in Canada starting in January 2015 has spawned a variety of literature in both Canada and the United States. According to the Canadian Institute for Health Information (CIHI) (2015), regulated nurses represent the single largest group of health care professionals in Canada and make up almost one half of the healthcare workforce (p. 9). Because of this enormous impact of nurses on overall health care delivery, CIHI monitors many factors that influence the overall supply of nurses, including the availability of nursing education programs, the flow of nurses from graduation to licensure, the flow of nurses into and out of Canada, and the economy and health care spending and its effect on health care. The nursing supply had been showing a steady growth rate of 1.8% for the years from 2005 to 2014 (CIHI, 2015). However, in 2014, this trend reversed and there was a decline in the supply of RNs; supply decreased by 1%, the first time there had been negative growth in twenty years (CIHI, 2015). The 10-year trend between 2008 and 2017 showed an overall average annual growth of 1.7% for all classes of nurses (Registered Nurses, Nurse Practitioners, and Registered Practical Nurses), the lowest average yet (CIHI, 2018). Registered Nurses had the slowest cumulative growth of the three nursing categories, with a leveling off from 2013 to 2017 at an annual growth rate of 0.8% (CIHI, 2018). The overall growth rate for all categories from 2016 to 2017 was the slowest in 10 years, at only 0.7% (CIHI, 2018). Comparing these rates with the percentages of regulated nurses who were not employed, the rates have also been declining and the overall unemployment rate for nurses in 2017 was 0.9% (CIHI, 2018), a stark contrast to the

overall January 2018 unemployment rate in Canada of 5.9%, even though this is the lowest unemployment rate since July 2000 (Statistics Canada, 2018). In the province of Ontario, the total number of regulated nurses has grown 12.4% in 2017, with a net gain of 1,941 regulated nurses; approximately 1,497 of these were RNs (CIHI, 2018).

While it is not clear from reviewing the literature if there are absolute changes to the supply of RNs based on the introduction of the NCLEX-RN, there are certainly several themes that have emerged since the move to adopt the exam was announced in 2011. The main study supporting the change was, published in January 2012 by the National Council of State Boards of Nursing, Inc. (NCSBN), compared entry-level competencies expected of nurses in Ontario to those of nurses in the United States.

Kovner and Spetz (2013) interviewed Dr. Linda McGillis Hall from the University of Toronto regarding several issues in Canadian nursing. Topics included: nursing work environment in Canada, adoption of the NCLEX-RN in Canada, migration issues of Canadian nurses moving the United States, and economic issues of nurses. Other articles (Phillips et al., 2013; Rowan et al., 2013) discussed curriculum change and concerns of how the pressures for students to pass the NCLEX-RN exam affects curriculum design.

Rowshan and Singh (2014) provided a review of the challenges and implication of the adoption of the NCLEX-RN in Canada. They looked at reasons for its adoption, the development process of the exam, the benefits of using a computer adaptive test, and the possible effects on students who would be required to take it. Once implemented, several concerns were raised in the media, a result of which was the issuing of a press release by

the Canadian Council of Registered Nurse Regulators (CCRNRR) for “correcting inaccuracies about the new nursing exam (September 23, 2015).”

American studies in 2015 also looked at similar issues with American graduates passing the NCLEX-RN. Edwards (2015) studied the effect of curricular design on first-time NCLEX-RN pass rates in a university in the southeastern United States. McAllister (2015) studied student learning style to predict success on the NCLEX-RN. Both studies speak to the need to provide nursing education in a variety of methods to assist students in being successful on the NCLEX-RN. In contrast, Kalb et al. (2015) focused on the need for evidence-based teaching practice that prepares nurses for clinical practice and reaching learning goals and did not specifically mention the NCLEX-RN as an evaluation tool.

Xin (2015) looked at one of the themes described by McGillis Hall (Kovner & Spetz, 2013): migration intentions of Canadian nurse graduates as it related to healthy work environment. In addition to the main reasons surrounding the work environment, the author mentions that the adoption of the NCLEX-RN may also play a part in influencing the migration of Canadian nurses to the United States. Freeman, Beaulieu, and Crawley (2015), Hudspeth (2015), and Schiller (2015) also acknowledge the benefit of using the standard NCLEX-RN to provide greater mobility for nurses both between Canada and the United States and between provinces within Canada.

Research to examine exam preparation and writing identified several issues including: concerns with the test centres, writer perception of American content on the exam, problems with French language translation and study materials, restrictions on the number of attempts allowed to write the exam, direct and indirect costs of taking the

exam, and the perceived effect on the reputation of Canadian nurses due to the overall pass rates (McGillis Hall, Lalonde, & Kashin, 2016). Findings included the fact that pass rates for first time Canadian NCLEX-RN writer was substantially lower than on previous Canadian licensure exams, but the authors do not suggest curricular changes, rather they speak to the need to address the policy-related issues to “improve the experience and success of Canadian Students writing the NCLEX.” (McGillis et al., 2015 p.48)

Foth and Holmes (2016) describe the change in the pass rate for Ontario nursing graduates from 88% on the Canadian Registered Nurse Exam (CRNE) in 2014 to 68% in 2015 as a result of the failure of the competency-based education system to be aligned with the competencies found on the NCLEX-RN. They suggest that this move to competency-based testing will transform nursing education into a competency-based educational system that will limit the critical perspective and unique nursing knowledge of the nursing profession and a move away from “esoteric knowledge based on ethical norms” (p. 1) and see it as a neoliberal transformation of the nursing profession and its inherent knowledge (Foth & Holmes, 2016).

The process for the selection of the exam has been studied and the applicability of the current NCLEX-RN as an appropriate assessment tool for entry to practice in Canada has been called into question as it “does not accurately reflect the key competencies and core values that Canada has chosen to mandate and use to define their Registered Nurses (Salfi & Carbol, 2017, para. 46).” Public opinion of the change to the NCLEX-RN exam in Canada has also received significant media attention such that the media content itself has been analyzed (McGillis Hall, et al., 2017). The move to the NCLEX-RN resulted in numerous formal letters, comments on websites, and demands for reconsideration of the

decision coming from nursing stakeholder groups across Canada (McGillis Hall et al., 2016). McGillis Hall et al. (2016) also suggest that curricular revisions must be made in Canadian nursing schools to ensure adequate student preparation for the exam. This reflects previous work on curricular changes and their impact on student learning (Landeem et al., 2016). In addition, the move to the NCLEX-RN has been identified as having potential negative effects on Canadian nursing regulations, human resources, francophone and internationally educated Canadian nurses, and the Canadian health system (MacMillan et al., 2017).

2.2 Education and Curriculum Design in Post-Secondary Education

Curriculum design in post-secondary institutions encompasses many different approaches, not only dependant on the program, but also dependant on the goals of the students, school, program, professor, and the province (Kenny & Desmarais, 2012). Curriculum studies emerged in the nineteenth century and focused on the memorization of facts; this was replaced in the twentieth century by two streams, the student-centred progressivism model and the social efficacy model, which focused on the mechanics of learning (Stoica, 2019). Due in part to the increased oversight of governments in the educational programs based on the funding models of schools, the trend to make education achievable for all led to the use of models of instruction that broke the information down to small pieces or tasks that could be taught incorporating modern technology (Stoica, 2019). This has led to two main models of curricular design, one based on product and the other on process (Mendez et al., 2014). Design based on product utilizes learning objectives, lesson plans, and intention of education, while process based curriculum focuses on activities and effects with participation of students

in the curriculum design (Mendez et al., 2014). This process based design allows curriculum to focus on learning outcomes or competencies that are afforded to students during their education, but are based on the needs of society as identified through research, problem/case-based learning, inquiry learning, or other similar curricular conceptual models; this learning is then evaluated by both faculty and students and refined as required to improve the outcomes (Mendez et al., 2014).

Many universities, including the one under study, engage in curriculum mapping as a visual means of ensuring where, when, and how program learning outcomes are taught and assessed; this allows for adjustments in courses and course content to ensure the program provides a comprehensive and integrated approach to meeting learning goals, program outcomes, university requirements, and accreditation standards (Kopera-Frye et al., 2008). “The purpose, content, and design of the curriculum become readily apparent to all stakeholders: faculty, administrators, future employers, students, parents as well as external entities requiring evidence of accountability.” (Kopera-Frye et al., 2008, p.10). The mapping allows stakeholders to see how the different curricula threads and themes are woven across and through courses in all years of the program and can help demonstrate concordance between student performance and stated learning outcomes (Kopera-Frye et al., 2008). If the student performance is below what is expected, the faculty can then look at course content or sequencing of the material to help realign the material and improve student success or may determine that the issue could be a result of student behaviour, departmental resources, and/or institutional culture (Kopera-Frye et al., 2008).

McLeod and Steinert (2015) looked specifically at curriculum in the health sciences by searching the health care education literature on curriculum development. They concluded that due to the rapidly increasing information in the health sciences, the curricula require regular revision and renewal, and identified twelve “tips” to be used during these processes (McLeod & Steinert, 2015). Of interest to this paper is tip number four: “Ensure that curriculum outcomes drive teaching and learning (p. 234)” and design curriculum that is based on what the students need to know – both knowledge and skills (McLeod & Steinert, 2015). Kolomitro and Gee (2015) describe these learning outcomes at several different levels within the educational system: course learning outcomes, program learning outcomes, and provincial Degree Level Expectations (p. 3). Curriculum design experts in accounting also propose that curricula at the university level look at ways to “decrease the expectation gap between business and the academic practitioners” (Cheng, 2007 p. 581).

Chapter Three: Design

3.0 Introduction

This study utilized two data sets to provide evidence to examine the research questions. As research on education is constantly evolving and providing new evidence, a scoping review assists in mapping the key concepts and clarifying definitions and boundaries of the topic as well as help identify gaps and provide direction to the subject area (Briggs, 2015). By comparing the results of the scoping review to a second set of data derived from a case study of the programs at one university, it was possible to provide an analysis of the trends, overlaps, possible gaps, and overall challenges that shape the education of the three professional groups.

3.1 Scoping Review

The scoping review used the five-stage approach proposed by Arksey and O'Malley (2005) and included: identifying the research question, identifying relevant studies, study selection, charting the data, and collating, summarizing and reporting the results. Prior to the study being conducted, a reference librarian was consulted for assistance in mapping out terms and methods for conducting the scoping review.

3.1.1 Identifying the Research Question

The research question for the scoping review was: What are the tendencies (patterns noted in practices and processes) in curriculum development and implementation when the curriculum is geared toward an accreditation exam? Prior to the first search, it was agreed by the committee that the search would be limited to the last ten years as this would provide data relevant to the current exam systems and program requirements and would reflect current curriculum development practices. The sources

for the review included any existing literature on the topic published in English since 2009.

3.1.2 Identifying the Relevant Studies

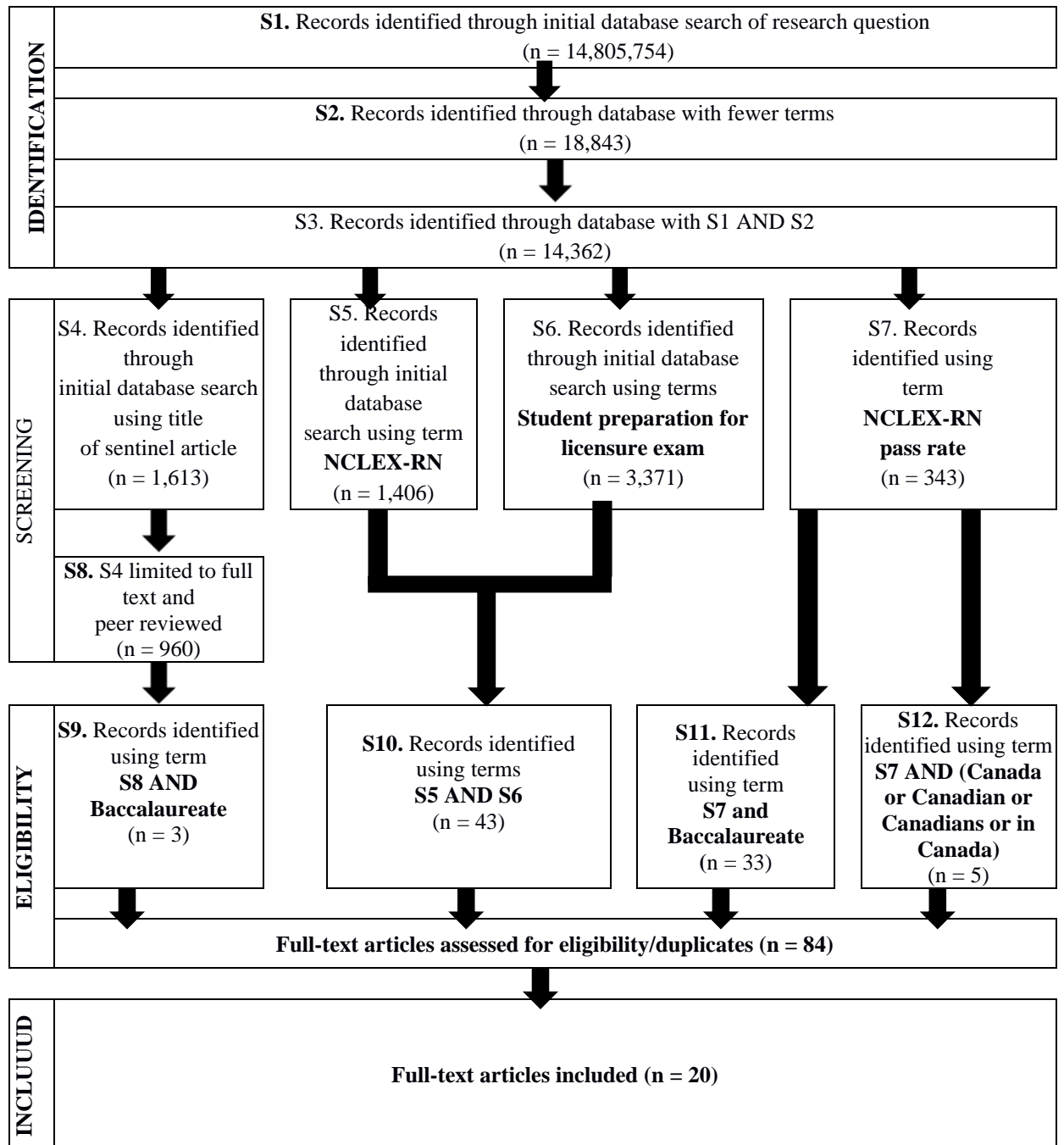
The search was conducted using the university library's Supersearch function, which allowed for simultaneous searching across sixty-two databases (See Appendix A). The abstracts and titles were analyzed to provide an index of key words and terms that described the articles, and this was then used to search again across all databases. Reference lists of the identified reports and articles were then searched for additional studies. Mendeley bibliographic software was used to manage the lists and ensure there was no duplication.

Table 1: *Initial Inclusion and Exclusion Criteria for the Scoping Review*

| | Inclusion | Exclusion |
|--------------------|---|--|
| Focus of the study | a) Baccalaureate nursing education | a) Associate degree nursing |
| Methods | Qualitative or Quantitative | |
| Publication Types | Peer reviewed literature; grey literature | Conference posters and abstracts, newspapers |
| Publication Years | 2009 – current | Before 2009 |
| Language | English | Non-English |
| Country | Canada, United States | |

After the initial search, the question was narrowed to include only the terms “curriculum development and implementation” and then the first two search terms were combined to further refine the results. On review, one study appeared numerous times (Carr, 2011), so the title of that article was searched as a sentinel study. These results were narrowed to find full text articles. Additional searches were then executed using the

identified terms and were then combined and examined to determine a reasonable working set for further examination. (See Figure 1.)

Figure 1 *Flow Chart of Article Selection*

3.1.3 Study Selection

Articles were screened by the author and one committee member to further refine the search. Articles were excluded if they did not address the curriculum in a Baccalaureate nursing program, were duplicate articles, did not address both curriculum and exam preparation in a baccalaureate program. (See Appendices B and C). As noted in the introduction, this review was undertaken with the assumption that the curriculum development practices identified in Nursing could a) resonate with the accepted best practices in higher education curriculum development and b) could inform the construction of the interview questions posed to all three programs in the case study.

3.1.4 Charting the Data

The data extraction process employed a table to record the key information of each source and relevant findings and results. The initial template was modified to add additional information throughout the process.

- a. Author(s)
- b. Year of publication
- c. Origin/country of origin (where the study was published or conducted)
- d. Key Aims/Objectives
- e. Methodology/methods
- f. Strategies/Interventions Suggested/Used
- g. Limitations
- h. Analysis and Synthesis
- i. Conclusions
- j. Recommendations for Future Research

Following this process, the results were classified using major conceptual categories. These categories were then used to explore the results of the case study analysis of the curricula of three programs to probe plausible explanations for performance on licensure examinations and provide analyses and evidence for suggestions of future curricula designs that will support the education of these students. (See Appendix D)

According to Bengtsson (2016) several different methodologies can be used for qualitative studies, one being content analysis. The objective is to provide a high quality interpretation of the data that leads to an understanding of the phenomena (Bengtsson, 2016). Through adherence to the qualitative perspective, rigour, and credibility, trustworthiness is achieved by “staying true” to the text (Bengtsson, 2016, p. 8). Downe-Wambolt (1992), as cited in Bengtsson, (2016), defines content analysis as a means to make objective inferences that are reliable and avoid bias from the researcher. Bengtsson (2016) also explains that content analysis links results to context and provides a means to draw conclusions from data by combining them with questions and theories and it can also be used for all types of written texts, regardless of the source. Overall, content analysis strives to reduce the volume of text and provide a synthesis that describes and quantifies it through manifest analysis, using a literal description of obvious/evident elements, and latent analysis, providing several different plausible interpretations of the data based on the reviewer’s knowledge and experience and other sensitizing concept interpretations that links the results to the environment (Downe-Wambolt, 1992 in Bengtsson, 2016).

3.2 Case Study

The case study research design as outlined by Yin (2018) has five components: the questions, propositions (if any), case(s), the logic that links the data to the propositions, and the criteria for interpretation. For the purposes of this research, the data that were subjected to content analysis used the results of an exploratory case study of three academic programs that are offered through a University in Ontario, Applied Disability Studies, Nursing, and Accounting. The nursing program case study included interviews with graduates of both streams that are offered, the straight 4-year BScN degree program and the 2+2 College/University program. (See Appendices E, F, G, H, I, J, and K for ethics approval, consents and questionnaires.)

3.2.1 Questions

Two sets of questions were used in the nursing case study, one for administrators/faculty, and one for students. Questions were designed to assist in answering “how” or “why” the two program streams were similar or different based on each subject’s current or recent past experience (Yin, 2018). Questions for both groups, although somewhat different, were grouped in three main areas: curriculum, supports, and exam preparation. Curriculum was further subdivided into strategies, tools, interventions, and barriers, whereas supports were subdivided into program supports and peer support. Exam preparation was examined in the categories of strategies, curricular preparation and extracurricular preparation.

3.2.2 Propositions

The overall problem was approached using the following questions: What are the tendencies in curriculum development and implementation when the curriculum is geared

toward an accreditation exam? What is known from the existing literature about how academic programs prepare students for licensure examinations? How might the programs further refine curriculum processes to aid in student preparation for licensure exams? What similarities and differences are found across three such programs? What are the programs' curricular elements in the BScN (4yr) and (2+2) that might contribute to success rates on the NCLEX-RN exams?

The research questions have been translated into propositions for the purpose of the case study. The propositions are: Curriculum will tend to reflect the subject areas required for graduates to be successful on a licensing exam. Administrators/faculty will design programs and curriculum to assist students to be prepared to write licensing exams. Administrators/faculty and students will be able to provide insight into curricular processes that could aid in preparing future students for licensure exams. There will be similarities across programs when each program is required to write licensure exams despite differences in the actual curricular goals and licenses. There will be many similarities in two programs that prepare students to write the same NCLEX-RN exam even though the curricula may differ.

3.2.3 Case

Yin (2018) defines case as “a contemporary phenomenon within its real-life context, especially when the boundaries between a phenomenon and context are not clear and the researcher has little control over the phenomenon and context” (p.13). Yin uses cases to answer the “how” and “why” questions for the phenomenon of interest and finds it particularly useful in program evaluation (Yin 2018). The use of cases allows the

researcher to draw from multiple variables and areas of evidence and therefore provides triangulation and validity (Yin 2018)

For the purpose of this research, the case includes three different programs and two different levels of informants. This selection of these elements of the case is logical as all programs are affiliated with the same university and all programs have a final licensing examination that is required of graduates of the programs. Since it is not entirely clear whether the curricula of the programs prepare the students for success on the licensure exam or are driven by the need for the students to be successful, and are therefore driven by the exam, this case certainly meets Yin's requirement that the researcher does not have control over the phenomena or the context. Also, since the students who enrol in these programs have varied backgrounds, interests, capabilities, educational levels, sociocultural levels, and personal characteristics, the researcher has little control over this set of subjects, other than the fact that all students recruited were already successful in graduating from their respective programs and had passed their licensure exam.

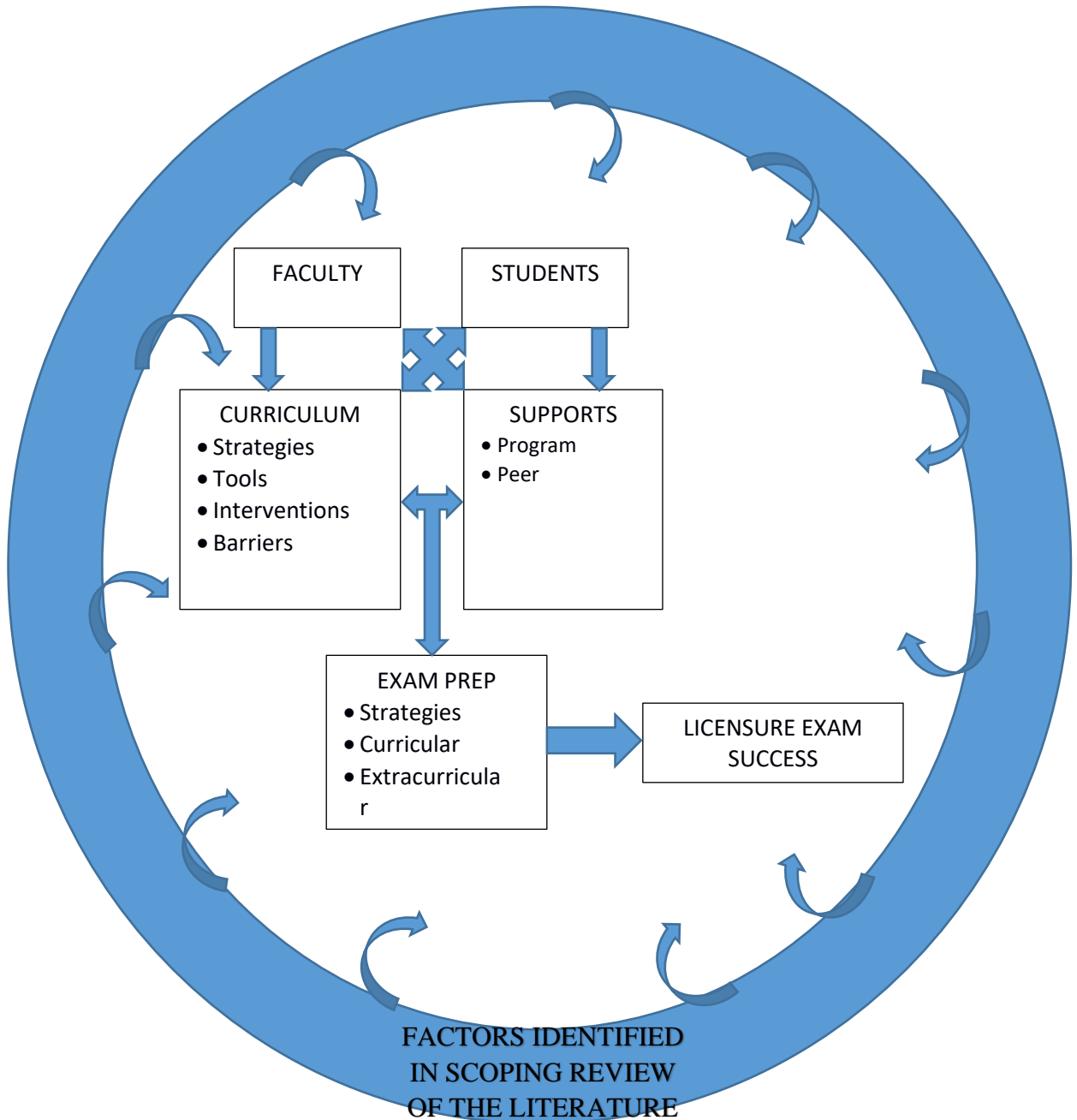
Recruitment of students was done via invitation using the department alumni lists with contact information for students who have given permission to be included. Snowball technique was also used to gain additional subjects. Recruitment of one administrator/faculty member from nursing was done via direct contact by telephone/email once ethics approval had been obtained. Interviews were audiotaped and then transcribed and analyzed. Participants may have alternatively chosen to complete the questions and submit via email. Participants who were interviewed in person or via telephone were provided a transcript of their interview within 2 weeks and were given 2

weeks from that date to review it, after which they received a prompt for one further week for review and after which it was assumed that the transcript met their expectations.

3.2.4 Logic that links data to propositions

Analysis of the data were reviewed to link patterns, insights, and concepts to interpret the information (Yin, 2018). Data were analysed using the original propositions to organize the information and provide possible explanations to the original questions (Yin, 2018). Figure 1 shows the logic model that had been developed to examine the data. This model allows for the expansion of the case study by incorporating the contextual conditions of curricula and real-world conditions as found in the scoping review of the literature (Yin, 2018). The circle represents the factors identified in the scoping review of the literature; the arrows indicate the potential for those factors to affect any or all of the components within the study, and the flow chart maps the connections between the steps of the case study.

Figure 2: Logic Model



3.2.5 Criteria for interpretation

Notes taken during the conversation were recorded on a copy of the interview script. Comments submitted via email are considered as personal correspondence. Both these sets of data were included as part of the data collection process during the interviews. Feedback of the analysis will be available as a brief summary to participants by electronic or hard copy mail out, whichever they prefer, if they wish to receive it. Although no one withdrew from the study, it would have been handled by removing their data from any electronic records, shredding paper records, and destroying any audio tapes if not already de-identified. If participants had withdrawn, the candidate would have been able to complete the study using document analysis. Participant names, initials, and organizational names were not retained once data analysis collection was complete; fictitious names were used for public documents.

Data extraction was carried out by analyzing the content within each academic program, using both faculty and student responses, and then across the three programs, looking for common words, themes and ideas. This was then compared against the analysis of the curricula of the programs that was conducted using publicly available documents and curriculum documents provided by the schools. A manifest analysis was completed to state the obvious facts by looking at the surface structure (Bengtsson, 2016). A latent analysis was then carried out to suggest plausible interpretations that can be induced from the data, or “What intended to be said?” (Bengtsson, 2016, p. 9). This was then analyzed by comparing it to the information identified by the scoping review of literature on the subject.

To improve construct validity, multiple sources of evidence were used, and key informants reviewed the draft case study report (Yin, 2018). Case evidence was obtained through interviews of former students of the nursing program who have graduated and received a passing grade on the licensure exam, interviews with faculty/administration in the nursing program, the curriculum documents of all three programs and the literature in the subject areas based on a scoping review.

Chapter Four: Findings

4.1 Scoping Review

The research question for the scoping review was: What is known from the existing literature about how academic programs prepare students for licensure examinations? Prior to the first search, it was agreed by the committee that the search would be limited to the last ten years as this would provide data relevant to the current exam systems and program requirements and would reflect current curriculum development. This question was very wide, and the number of references was unmanageable ($n = 14,805,754$), so it was narrowed to include only the terms “curriculum development and implementation” ($n = 18,843$) and then the first two search terms were combined to further refine the results ($n = 14,362$). These results were then narrowed down using four different search terms.

The first term was chosen based on the observation that one study appeared numerous times (Carr, 2009), so the title of that article was searched as a sentinel study. Not only did this article describe effective steps that were implemented to improve the student pass rates, but it stressed the importance of continuous re-evaluation of the curriculum and implementation of changes based on the review. The Carr search produced 1,163 results, which were narrowed to 960 full text articles. This was then narrowed to full text and peer reviewed articles, yielding 960 articles and then further narrowed to articles including baccalaureate, revealing 3 articles. The second term used to narrow the results was “NCLEX-RN”, resulting in 1,406 articles. When combining these two new sets of results, a total of 3 articles were identified. The records identified through the initial (narrowed) database search terms were then searched using the terms

“student preparation for licensure exam”, yielding 3,371 items. When these were combined with the term “NCLEX-RN”, 43 articles were identified. The fourth narrowing term was, “NCLEX-RN pass rate” resulting in 343 articles. These articles were then subjected to searches to include “baccalaureate”, providing 33 articles, and “Canada or Canadian or Canadians or in Canada”, yielding another 5 items. These data are summarized in Table 2.

Table 2 *Scoping Review Data*

| | Search Term | Limiters | n |
|----|--|--|------------------|
| S1 | what are the tendencies in curriculum development and implementation when the curriculum is geared toward an accreditation exam | Limiters - Scholarly (Peer Reviewed) Journals; Full Text; Published Date: 20090101-20191231 Expanders - Apply related words; Also search within the full text of the articles Search modes - Find any of my search terms | n = (14,805,754) |
| S2 | curriculum development and implementation | Limiters - Published Date: 20090101-20201231 Search modes - Find all my search terms | n = (18,843) |
| S3 | S1 AND S2 what are the tendencies in curriculum development and implementation when the curriculum is geared toward an accreditation exam AND curriculum development and implementation | Limiters - Published Date: 20090101-20191231 Search modes - Find all my search terms | n = (14,362) |
| S4 | Carr, S.M. (2011). NCLEX-RN pass rate peril: One school’s journey through curriculum revision, standardized testing, and attitudinal change. Nursing | Limiters - Published Date: 20090101-20191231 Search modes - Find all my search terms | n = (1,613) |

| | | | |
|-----|--|--|-------------|
| | Education Perspectives, 32, 384-388 | | |
| S5 | Carr, S.M. (2011). NCLEX-RN pass rate peril: One school's journey through curriculum revision, standardized testing, and attitudinal change. Nursing Education Perspectives, 32, 384-388 | Limiters - Scholarly (Peer Reviewed) Journals; Full Text; Published Date: 20090101-20191231 Full Text Search modes - Find all my search terms | n = (960) |
| S6 | NCLEX-RN | Limiters - Scholarly (Peer Reviewed) Journals; Full Text; Published Date: 20090101-20191231 Expanders - Also search within the full text of the articles Search modes - Find all my search terms | n = (1,406) |
| S7 | Carr, S.M. (2011). NCLEX-RN pass rate peril: One school's journey through curriculum revision, standardized testing, and attitudinal change. Nursing Education Perspectives, 32, 384-388 AND NCLEX-RN | Limiters - Journals; Full Text; Published Date: 20090101-20191231 Expanders - Also search within the full text of the articles Search modes - Find all my search terms | n = (3) |
| S8 | student preparation for licensure exam | Limiters - Scholarly (Peer Reviewed) Journals; Full Text; Published Date: 20090101-20191231 Expanders - Also search within the full text of the articles Search modes - Find all my search terms | n = (3,371) |
| S9 | student preparation for licensure exam AND NCLEX-RN | Limiters - Published Date: 20090101-20191231 Search modes - Find all my search terms | n = (43) |
| | Search Term | Limiters | n |
| S10 | NCLEX-RN pass rate | Limiters - Published Date: | n = (343) |

| | | | |
|-----|---|--|----------|
| | | 20090101-20191231 Search modes - Find all my search terms | |
| S11 | NCLEX-RN pass rate AND baccalaureate | Limiters - Scholarly (Peer Reviewed) Journals; Full Text; Published Date: 20090101-20191231 Search modes - Find all my search terms | n = (33) |
| S12 | NCLEX-RN pass rate AND (Canada or Canadian or Canadians or in Canada) | Limiters - Published Date: 20090101-20191231 Search modes - Find all my search terms | n = (5) |

Overall, the review had been narrowed down to 84 full text articles which were then reviewed and assessed for eligibility and duplicates by two committee members. The 84 articles were individually reviewed and then discussed to decide on inclusion or exclusion. Consensus was reached to include the final number of articles in the analysis, which were 20 articles.

The data extraction process employed a table to record the key information of each source and relevant findings and results. (See Table 2) The initial template was modified to add additional information throughout the process. The following sections describe each of these in further detail.

4.1.1 Article Characteristics

Articles were published between 2009 and 2019, with the majority (85%) published since 2014. There was only one article published in 2009 (Carr), one in 2010, there were no articles from the years 2011 and 2012, and one from 2013. Eleven articles

were from the United States and nine were from Canada. Of those articles from Canada, 100% were published since 2014. The NCLEX-RN has been used in the United States since 1982 and in Canada since 2015.

4.1.2 Article Key Aims and Objectives

Carr (2009) was written to describe the means that were implemented in one university to improve the first-write pass rate on the NCLEX-RN. This theme was continued in several other American articles (March & Ambrose, 2010; Cole & Adams, 2014; Mager et al., 2017; Matthew, et al., 2018). Other themes revealed in the key aims and objectives were also reflective of themes from Carr (2009): curricular revisions (Shoemaker et al., 2017; Mager et al., 2017; Phillips et al., 2013; Matthew et al., 2018), standardized testing (Cobbett et al., 2016; Shoemaker et al., 201; Csekanski et al., 2018; Cole & Adams, 2014; Gatto & Madden, 2019; March & Ambrose, 2010), and attitudinal changes for both faculty and students (Csekanski et al., 2018; Gatto & Madden, 2019; March & Ambrose, 2010).

Other themes evident in the objectives of the articles under review are: developing effective guidelines for NCLEX-RN exam preparation in Canadian nursing schools (Cobbett, et al., 2016; McGillis Hall et al., 2018), comparing student characteristics with NCLEX-RN success (McCarthy et al., 2014; Sears, Othman & Mahoney, 2015; Sears et al., 2017), and the implementation of the NCLEX-RN in Canada (Cobbett et al., 2016; McGillis Hall et al., 2018; McGillis Hall, Lalonde & Kashin, 2016; Rowshan & Singh, 2014; Sears et al., 2015; Salfi & Carbol, 2017; Peisachovich, 2016; Sears et al., 2017).

4.1.3 Methodology

Several different types of methodology were used in the final set of articles. Nine used quantitative methods (Cobbett et al., 2016; Matthew et al., 2018; Shoemaker et al., 2017; McCarthy et al., 2014; Cole & Adams, 2014; Gatto & Madden, 2019; Bristol et al., 2019; Peisachovich, 2016; Sears et al., 2017), the first six of which were retrospective and the remaining three used different models such as survey (Bristol et al., 2019), purposive sampling with pre and post-test (Peisachovich, 2016), and cross-sectional exploratory study (Sears et al., 2017). Five of the articles used qualitative approaches, including narrative (Csekanski et al., 2018), content analysis (McGillis Hall et al., 2018), thematic analysis (McGillis Hall et al., 2016), e-mail survey (Phillips et al., 2013) and interpretive, descriptive (Landeem et al., 2016). Six articles conducted various types of reviews including a retrospective review of programs and/or interventions (Carr, 2009; March & Ambrose, 2010; Mager et al., 2017), a background paper review (Rowshan & Singh, 2014), a systematic review of the literature (Sears et al., 2015), and a review of two papers (Salfi & Carbol, 2017).

4.1.4 Strategies/Interventions Suggested/Used

The articles that were reviewed included a wide variety of curricula strategies and interventions that were grouped into four main areas: institutional, faculty, student, and standardized exam preparation.

Institutional strategies and interventions ranged from analysis of admission and advancement criteria (Cobbett et al, 2016; Matthew et al., 2018; Cole & Adams, 2014; Sears et al., 2015) and curriculum reviews (Matthew et al., 2018; Shoemaker et al., 2017; McGillis Hall et al., 2018; Carr, 2009; Mager et al., 2017; March & Ambrose, 2010;

Phillips et al., 2013; Landeen et al., 2016; Sears et al., 2017), to support for faculty development (Mager et al., 2017). Some of the items pertaining to faculty were very specific, such as teaching them how to write questions that were more closely aligned with the NCLEX-RN style and difficulty of questions (Gatto & Madden, 2019; Mager et al., 2017), having faculty take the same NCLEX-RN prep course that the students took (Carr, 2009), and teaching faculty how to teach test-taking skills (Carr, 2009). Other faculty driven strategies/interventions were more general, such as incorporating computer assisted testing (Cobbett et al, 2016; Csekanski et al., 2018; Gatto & Madden, 2019; Mager et al., 2017; March & Ambrose, 2010; Rowshan & Singh, 2014), using more interactive teaching methods (Cobbett et al, 2016; Cole & Adams, 2014; Bristol et al., 2019; Carr, 2009; March & Ambrose, 2010; Peisachovich, 2016), and teaching students critical thinking skills (Carr, 2009; Mager et al., 2017; Sears et al., 2015; Peisachovich, 2016; Landeen et al., 2016).

Student related items included providing student support both within the nursing programs (Matthew et al., 2018; Shoemaker et al., 2017; Cole & Adams, 2014; Gatto & Madden, 2019; Carr, 2009; Mager et al., 2017; March & Ambrose, 2010; Phillips et al., 2013; Rowshan & Singh, 2014; Sears et al., 2015; Peisachovich, 2016; Landeen et al., 2016) and support after graduation (Csekanski et al., 2018; Carr, 2009; Mager et al., 2017; March & Ambrose, 2010). They suggested such things as having regular reviews of academic performance with remediation and/or tutoring (Matthew et al., 2018), writing the NCLEX-RN as soon as possible after graduation (Cobbett et al, 2016), and maintaining high academic standards (Matthew et al., 2018; Rowshan & Singh, 2014; Sears et al., 2017).

The final set of strategies and interventions are related to the actual preparation for the NCLEX-RN. Canadian concerns do vary somewhat from those in the United States primarily since the NCLEX-RN was only adopted as the licensure exam in Canada in 2015. There was some discussion as to whether the exam is in fact a valid assessment tool for Canadian nursing school graduates. Salfi and Carbol (2017) concluded that the studies used to justify the validity and use of the NCLEX-RN with a Canadian audience did not provide valid evidence and the test needs to be tailored for the Canadian audience. Having said that, there are still many recommendations for strategies and interventions to assist students be successful on the NCLEX-RN regardless in which country they attended school, which is important for Canadian graduates since they are still writing the NCLEX-RN in its original format.

The first group of strategies suggested by the articles in this review are those that can be grouped into general behaviours or study techniques. These are then also divided into intra-curricular and extracurricular. Intra-curricular activities occur at some point within the actual course curriculum and are provided by the school and/or faculty. Such items outlined by the articles include the use of tutors (Shoemaker et al., 2017), individualized study and remediation plans (Shoemaker et al., 2017; Mager et al., 2017; Rowshan & Singh, 2014), attending test anxiety workshops (Shoemaker et al., 2017; Rowshan & Singh, 2014), attending content reviews, (Csekanski et al., 2018), and study and test-taking skills embedded in courses (Mager et al., 2017). Extracurricular activities included postgraduate coaching (Csekanski et al., 2018), cognitive behavioural therapy (Csekanski et al., 2018), content reviews (Csekanski et al., 2018), required NCLEX-RN in-person review course (Csekanski et al., 2018; Cole & Adams, 2014; Carr, 2009), focus

groups for those who were not successful in passing the NCLEX-RN (Mager et al., 2017).

The second group of strategies suggested for students are those that directly incorporate the use of technology similar to that which is used on the actual NCLEX-RN. The authors identified two main products, the Elsevier Health Education Systems Incorporated (HESI) Assessment, and Assessment Technologies Institute (ATI) products. Both companies market assessment tests that can be used as pre-admission tools, provide tools that can be incorporated into curriculum, and review packages and tests that may predict success on the NCLEX-RN. The articles in this review discuss strategies and interventions that incorporate this technology as methods to help increase the pass rates of graduates on the NCLEX-RN. Some of the articles suggest the use of these tools by students within the curriculum (Cobbett et al, 2016; Shoemaker et al., 2017; Csekanski et al., 2018; McCarthy et al., 2014; Gatto & Madden, 2019; Mager et al., 2017; March & Ambrose, 2010) and others as extracurricular supports (Csekanski et al., 2018). The other main strategy for students that was discussed in the articles under review was the use of an NCLEX-RN review course. One recommended on-line (Carr, 2009), two recommended face to face (Csekanski et al., 2018; Cole & Adams, 2014) and two recommended the course but did not specify the format (Carr, 2009; Rowshan & Singh, 2014).

Another student factor that was addressed in the reviewed articles was the length of time between graduation and writing the NCLEX-RN. Cobbett, Nemeth, and MacDonald (2016) found that the longer a student waited to write the exam after graduation, the less likely they were to pass the exam. McGillis Hall, Lalonde, and

Kashin (2016) identified the need for better translation of the NCLEX-RN into the French language and also the need for French language preparation material including NCLEX-RN preparation courses.

4.1.5 Limitations

The studies in this review had several different limitations identified. Cobbett, Nemeth, and MacDonald (2016), was a preliminary study, with a phase two study planned. Several were limited to one program or small sample size (Matthew et al., 2018; Csekanski et al., 2018; Cole & Adams, 2014; Bristol et al., 2019; Peisachovich, 2016; Sears et al., 2017), limited by the time period under study (Shoemaker et al., 2017), limited data collected (McCarthy et al., 2014; Cole & Adams, 2014), unclear definitions used, limited follow up interviews, and methodology (Phillips et al., 2013).

4.1.6 Analysis and Synthesis

Articles both draw conclusions about causes based on effects (analysis) and infer effects based on given causes (synthesis) (Ritchey, 1991). Overall, the articles in this review shared several themes: analysing NCLEX-RN pass rates based on predictive factors (Cobbett et al, 2016; Matthew et al., 2018; McCarthy et al., 2014; Sears et al., 2015; Sears et al., 2017), describing the processes that were used to improve NCLEX-RN pass rates (Shoemaker et al., 2017; Cole & Adams, 2014; Bristol et al., 2019; Gatto & Madden, 2019; Carr, 2009; Mager et al., 2017; March & Ambrose, 2010; Rowshan & Singh, 2014), the effect of implementing the NCLEX-RN in Canada (McGillis Hall et al., 2018; McGillis Hall et al., 2016; Rowshan & Singh, 2014; Peisachovich, 2016), and the use of innovative curricula (Phillips et al., 2013; Landeen et al., 2016).

4.1.7 Conclusions

The main theme in the conclusions of the articles that were reviewed was that many different factors lead to student success on the NCLEX-RN and both schools and students must be diligent in maintaining high levels of preparation for writing the exam. These preparations could include: using the predictive value of standardized computer tests (Cobbett et al, 2016; McCarthy et al., 2014; Carr, 2009; Mager et al., 2017; March & Ambrose, 2010), using computer adaptive practice exams and/or instructional materials (Cobbett et al, 2016; Matthew et al., 2018; Shoemaker et al., 2017; Gatto & Madden, 2019; Carr, 2009; Mager et al., 2017), using standardized exams to guide remediation (Cobbett et al, 2016; Matthew et al., 2018; Gatto & Madden, 2019; Carr, 2009; March & Ambrose, 2010), raising admission criteria and advancement requirements (Matthew et al., 2018; Mager et al., 2017; Sears et al., 2015), providing tutoring (Matthew et al., 2018; Carr, 2009; March & Ambrose, 2010), teaching test taking strategies (Matthew et al., 2018; Csekanski et al., 2018; Carr, 2009; Mager et al., 2017), provide a free on-campus NCLEX-RN review class (Matthew et al., 2018), curriculum review and alignment with NCLEX-RN learning outcomes (Matthew et al., 2018; Csekanski et al., 2018; Carr, 2009; Mager et al., 2017; March & Ambrose, 2010; Phillips et al., 2013; Peisachovich, 2016; Landeen et al., 2016), have faculty use higher cognitive level test questions (Gatto & Madden, 2019; Mager et al., 2017), have students register and pay for writing the NCLEX-RN course prior to graduation (Carr, 2009;)

Canadian articles also concluded that the NCLEX-RN has been received negatively in Canada (McGillis Hall et al., 2018; McGillis Hall et al., 2016), posed a risk to the reputation of nurses in Canada (McGillis Hall et al., 2018), and questioned whether

having curriculum that focused on writing the NCLEX-RN was a good idea since the NCLEX-RN only tests for entry to practice and does not address those skills that will be needed by nurses at higher levels (Rowshan & Singh, 2014). Salfi and Carbol (2017) concluded that the studies used to justify the use of the NCLEX-RN were not a valid approach and the exam needs to be tailored for the Canadian audience.

4.1.8 Recommendations for Future Research

There were several recommendations for future research coming from the articles in this review. Cobbett et al. (2016) plan to conduct a phase two study to expand on their original research. Matthew et al. (2018) suggest generalizing their research to additional programs. Other researchers suggested ways to expand on the studies to increase the amount of information obtained (Matthew et al., 2018; McCarthy et al., 2014; Bristol et al., 2019), increase research in the area of curriculum (Bristol et al., 2019; Phillips et al., 2013). Canadian authors had specific suggestions for research based on the short time this exam has been used in Canada, both in the area of student success on the exam and the outcomes for health care based on the adoption of the exam and how it might influence the nursing curriculum in Canada (Rowshan & Singh, 2014; Sears et al., 2015; Peisachovich, 2016; Sears et al., 2017).

4.2 Case Study

For the purpose of this research, the case study included three different programs and two different levels of informants. Three programs were chosen at one University, all of which required graduates to write a licensing exam in order to gain a professional designation. The programs were Bachelor of Science in Nursing (Honours) (BScN), Master of Arts (MA) in Applied Disability Studies, specializing in Applied Behaviour

Analysis (ABA) / Master of Applied Disability Studies (MADS), specializing in Applied Behaviour Analysis (ABA), and Bachelor of Accounting/Master of Accountancy (BAcc/MAcc). The sample consisted of one administrator/faculty member and three students from BScN program (1 student from the 2+2 stream and 2 students from the 4 yr. stream), and the curriculum and program documents from the BAcc/MAcc and Applied Disability Studies (ADS) programs.

Interviews were conducted in person and by email as per the preference of each subject. Program documents, curricula, and interview transcripts were analysed for themes within and across the programs based on the logic model developed for the study. Themes under curriculum were divided into subcategories of strategies, tools, and interventions. Themes under supports focused on program and peer. Themes were then reviewed in terms of exam preparation strategies, both curricular and extracurricular, and finally, licensure exam success was evaluated. The following sections provide the summaries of the themes that emerged.

4.2.1 Curriculum – Strategies

Overall, the three programs used many similar strategies in their curriculum development, including curriculum reviews, and ensuring that the curriculum met the requirements for their respective certification, licensing, accreditation, and professional bodies in addition to those required by the University. Despite having some large classes, all programs provided some small group opportunities through tutorials, on-line learning opportunities, group assignments, and use of electronic resources.

Nursing students commented on specifics of wanting curriculum reviews and the nursing faculty member stated that in addition to the ongoing yearly reviews, the

program's strategic plan calls for a full program curriculum review this year. The curriculum needs to continue to meet the entry to practice competency standards of the CNO, but since the introduction of the use of the NCLEX-RN as the licensing exam, the curriculum needs to ensure students will also be successful on that exam. One student made specific mention of increasing the support for medication and math calculations; the nursing faculty member stated that the entry level requirements had recently been increased to require a grade 12 level math course for all applicants specifically to help address this area. They have also revised the curriculum in the last few years to incorporate student suggestions such as adding a pathophysiology course; this was also important because there is a lot of pathophysiology on the NCLEX-RN exam. One student commented on the lack of a formal med/surg course:

“The program lacked a formal theoretical course for medical/surgical nursing, which was an integral component of the NCLEX examination. The course that was offered was informal in the sense that each week students presented on different medical/surgical issues and health risks, which was not helpful due to the lack of consistency in teaching styles. There was limited retention based on discussions I had with peers due to this approach to the course (NS1, personal communication, May 2019)”.

Course delivery modalities were also an issue for one student: “There was an online health assessment course, which was highly ineffective for knowledge translation. Health assessment is very hands-on and should have been taught in an environment that allowed for that. (NS2, personal communication, 2019)”.

Curriculum strategies in the BAcc/MAcc program have been reviewed regularly and were updated six years ago to allow a full accreditation of the program by the CPA Ontario. Their courses are constantly reviewed to ensure they meet the requirements of the CPA competency map. Alumni surveys indicated that students enjoyed the program

and appreciated the way it was tailored to providing education on writing skills as well as the accountancy components. Alumni liked that the program allowed them to complete the requirements for the licensure exam an entire year faster than using the CPA course modules and program reviews indicated that faculty were also happy that this made the program more marketable to students.

Applied Disability Studies constantly reviews its overall curriculum and the individual courses. This is done in conjunction with the task lists that are required by their certification body and the mandated hours of study for each course. According to program review documents, faculty are also looking at the curriculum with a view to obtaining a higher accreditation standard with their professional organization and building towards submitting a statement of intent for a doctoral program. Current curriculum prepares students to write either the exam under the 4th edition task list as well as the 5th edition. This can be difficult due to the time constraints for programs at the University and changes within individual courses must remain strategic in finding ways to remove some content in order to add required components.

4.2.2 Curriculum – Tools

All three programs commented on the positive use of technology. Nursing students found the simulation lab to be very helpful, and in fact wanted more use of this tool. One student suggested that there be mandatory lab simulation use in all semesters;

I think that the simulation lab needs to be used more effectively to support the knowledge acquisition from theory sources. For high-risk nursing environments or skills, it would be beneficial to use the nursing lab to practice care in a low risk setting. The lab was not used to its full capabilities in terms of supporting theory courses, as it was only mandatory for two semesters out of the four-year program. Having the opportunity to solidify knowledge with clinical practice in a safe setting, such as the nursing lab, would have improved student confidence and

preparedness when leaving the program (NS2, personal communication, June 2019).

Another nursing student commented on the good balance of clinical and classroom experiences (NS1, personal communication, May 2019), while a third stated, “there should be more tools in place to help first and second year students succeed (NS3, personal communication, May 2019).”

BAcc/MAcc documents stressed that the incorporation of technology in the classroom could help students when taking the CFE. For example, the handbook of accounting rules is available for use as an electronic copy, and students can use this e-copy during the CFE, as well as the e-copy of the income tax act. Curriculum reviewers have suggested that faculty use these electronic resources rather than the paper ones to assist students become familiar with the tools they will be able to use on the CFE (AF1, personal communication, 2019).

MADS student surveys showed appreciation of the use of online courses to allow their continuation of employment during school. The computer-assisted personal license system of instruction with immediate feedback was a tool that assisted in student success.

4.2.3 Curriculum – Interventions

Across the three programs, one of the common curricular interventions is the use of field work. Nursing incorporates clinical experiences in their practicum courses in all four years of the program (University Calendar, 2019c). ADS courses provide seven practicum courses and give the graduating student 300 hours of supervised time toward the 1500 hours required to write the certification exam (University Calendar, 2019b). The

MAcc program provides all students with the option of a four-month paid co-op, which can be extended up to 12 months (University Calendar, 2019a).

ADS courses provide specific interventions for students who are entering the program after having a prolonged gap between their undergraduate program and the master's program or are accepted without satisfactory prior undergrad level or college level ABA coursework. They must complete a course through on-line upgrading courses or in-house ABA tutorial prior to registration (University Calendar, 2019b). Within the program, students receive instruction in all Behaviour Analysis classes from faculty with Board Certified Behaviour Analyst (BCBA) credentials. Part-time faculty are supported by regular full-time faculty to ensure continuity between sections of classes; they are provided with the syllabus and mentoring in teaching the course.

Curricular interventions for the accounting program in addition to the co-op work, include the accreditation review process for CPA Ontario. CPA Ontario reviews the program as part of the quality improvement process through a committee of faculty who look at the course outlines and identify any gaps in conjunction with the professional body. This also identifies training needs for the faculty, both internally and working with CPA, Ontario.

4.2.4 Supports – Program and Peer

All programs have identified supports at both the program level and peer level. The program supports in terms of the curriculum, as discussed above, comprised the majority of those supports that were identified. They all provided support to the faculty in the form of work shops, mentorship, test-writing, and organizational support. All faculty members felt supported by their respective deans and departments.

Using University documents, many program specific supports are also identified.

For example, the nursing program highlights supports provided to students:

By placing our students in hospital settings and working with community throughout the entire program, there is an added level of quality and familiarity, which provides students every opportunity to excel. (University Nursing, 2019)

The nursing department also provides a variety of facilities to assist students in learning skills. These include: a simulation lab, clinical lab, isolated room for critical care training, primary health care office, debrief room, and a community apartment for training students in nursing home visits. (University Nursing, 2019). One student commented on the ability to gain additional experience in research.

... those who were actively involved with the department were able to gain additional opportunities to participate in research. These opportunities encouraged further learning and provided valuable knowledge that was transferable to writing the licensure exam (NS2, personal communication, 2019).

Students in the MAcc program found the program very helpful and the MAcc program webpage provides the highlights of the ways in which it supports students.

The Master of Accountancy (MAcc) program encourages the development of critical thinking, analysis and communication skills. The program prepares you to become a strategic and well-rounded professional in accounting and provides you with advanced coursework covering the CPA elective modules of Assurance, Tax, Finance and Performance Management. In addition, our program covers the content for Capstone 1 and 2 which provides you with the necessary integration and case analysis skills to prepare you for successful completion of the Common Final Exam (CFE). (University MAcc, 2019)

The ADS program highlights accessibility of its programs to support both full-time students and those who work. “Courses are offered during the week and on weekends for full-time students and on weekends for students working part-time. Some courses may be fully or partially online (University ADS, 2019).

Peer supports for faculty were similar in all three programs. All programs are supported by the University's Centre for Teaching and Learning through such things as workshops, test item writing skills, teaching case-based courses, assistance in methods to increase student engagement, and technical support for computer programs. The Centre webpage provides additional information on the services and tools that are available to faculty to support them with instructional development (University, 2019).

Students discussed their peers in terms of differences in learning styles or exam success, but overall, did not provide a great deal of comment on peer support.

4.2.5 Exam Prep – Strategies - Curricular

Program reviews indicate many strategies for exam preparation have been incorporated in the various programs. According to the administrator/faculty member, (NF1, personal communication, 2019), the nursing program has implemented more focus on using computer-based and on-line exams and increased the number of NCLEX-RN style questions in multiple choice exams. One professor in the nursing program added the HESI as a curriculum tool that students took at the beginning, the middle, and the end of a course as a means for studying and progression, but not as an evaluation method. Faculty have also considered implementing the Elsevier Adaptive Quizzing tool since it can be used over all four years of the program and can be incorporated into the university's computer learning platform, Sakai (NF1, personal communication, 2019).

The faculty in the nursing department are very cognizant of the effect that switching to the NCLEX-RN has had on the students emotionally and have provided exam taking instructions to help reduce anxiety. NF1 (personal communication, 2019), stated that faculty are discussing the pass rates with students and pointing out that more

Canadian students are passing the exam now than in the initial implementation period and they are educating them on the type of questions and content that is prevalent on the exam (medical/surgical is predominant).

Nursing students that were interviewed wanted more NCLEX-RN style questions during their program and a curriculum that was more NCLEX-RN driven. One student commented that the use of clinical experiences and other research experiences were helpful in preparing for the exam as they “provided valuable knowledge that was transferable to writing the licensure exam (NS2, personal communication, 2019).” Another comment spoke to the student’s engagement in the program and how well it helped prepare for the exam.

... students who participated in the program actively by doing assigned course readings not only had better academic success but felt less overwhelmed with content when studying for the licensure exam (NS2, personal communication, 2019).

While the nursing program is trying to add components to its curriculum that will help students be more successful on the NCLEX-RN, they must remain diligent in following the CNO guidelines in preparing graduates who are competent in the entry to practice skills. Both MAcc and ADS acknowledge similar requirements in their program reviews, and both address the issue through curriculum design.

The MAcc program is accredited to follow the CPA Ontario competency map and not only covers the courses required for graduates to write the CFE, but also adds additional courses to provide a more knowledgeable graduate. Program reviews indicate three changes that worked well for the program in helping to prepare students for the CFE were changing one course from a textbook oriented course to a case-based course

(because the CFE is all case-based), adding an immersive case that students worked on in teams over a four week period, and having students use previous CFE exams to write a weekly practice exam, which was then evaluated and corrected by the student.

Curricular exam preparation in the ADS program was also addressed in the course design. In order to be eligible to write the BACB exam, students must have completed a verified course sequence. The University curriculum is constantly reviewed to ensure it meets the current task list, and at the present time, it also meets the next iteration of the task list so graduates will have sufficient time to write the exam if they have difficulty gaining the required practice hours before the new exam is. Faculty maintain academic freedom to cover the material in ways that is meaningful to the students but still meets the task list requirements. Since the BACB exam is multiple choice, most of the courses do incorporate some multiple-choice questions at some point but some faculty believe that graduate level programs should evaluate students at a higher level.

One of the other instructional tools that is used in the ADS program to help prepare students for the exam is the use of a computer-assisted personal license system of instruction (PSI). PSI is system of instruction is where students work through material step by step and it may involve some multiple choice options to test their knowledge. They have to master the material for the first module before they can move the second and they get immediate feedback as to their success. If they fail the quiz, they ave to review the module and read supplemental material and try to testing the quiz again.

4.2.6 Exam Prep – Strategies – Extracurricular

All three programs acknowledge that while they do provide strategies within the curriculum to help prepare students for success on the licensing exam, students do also

rely on extracurricular means. With the move to the NCLEX-RN, Canadian students were at a disadvantage because the programs were not used to providing testing with computer accessed exams. One way the University nursing program addressed this was to require students to take the exit HESI as part of courses in fourth year. The cost of the exam is borne by the students and is over and above their tuition.

We implement it into [Course AA} and [Course BB] because I did it when I was teaching, and it was a requirement for them to do it. Unfortunately, they have to pay too. And again, which is my other big issue and I think if you talk to most Canadian schools, they will tell you the cost of the student has gone up astronomically because schools can't afford all these extra resources and the costs pushes back to the student. How I mitigated the cost, instead of having them buy one of those textbooks to do the questions they did this exam because the exam has built-in questions. Initially the exam told them their negative questions, what they got wrong and gave them a study plan. Now, they don't get to see what they got wrong; they just get study plans now. (NF1, personal communication, 2019).

NF1 (personal communication, 2019) does point out that the students may in fact gain a false sense of security if they obtain a score of 900 or above on the HESI, which indicates there is a good likelihood of passing the NCLEX-RN, and so the student does not study and fails the NCLEX-RN; faculty must include this in the education surrounding the use of the HESI. The other issue with now requiring the exam as a pass/fail part of the course, the school needs to accommodate them in computer labs with supervision. In terms of the cost, NF1 (personal communication, 2019) states:

I'd like the students not have to pay for a lot of these resources. I don't see any way especially with this new fiscal environment with a Provincial Government funding that was just announced, decreased funding. That's a big one. I'd like to see all the students be successful. But again, how I study for exams may not be the way somebody else does.

Students from all three programs do have access to purchase study materials for exam preparation. Accounting also uses an exam after the program is completed and

before the CFE. Students pay \$100 to write the exam and it is professionally marked by paid CPAs. ADS do not use a formal extracurricular tool for students. Students are able to purchase study material from one or two companies and those companies offer mock multiple-choice exams. Two nursing students used UWorld Saunders Practice Workbook, two took a two-day NCLEX-RN prep course at University of Toronto, and one student used a set of 12 pod casts by Mark Klimek, which was an A-Z NCLEX-RN study guide. One student did comment on the anxiety level of taking the NCLEX-RN in the second cohort of Canadian students.

I lived with 5 other girls in the program and 2/6 of us passed first write. 2/6 passed third write. one passed fourth write and one has yet to pass and it has been over 3 years so she will need to redo some things to be eligible to write again. I know for a couple of the girls they are very intelligent they just have some test anxiety and felt under prepared for this type of exam. (NS1, personal communication, 2019).

4.2.7 Licensure Exam Success

Licensure exam success is measured by all three programs based on first write success. For the nursing and ADS programs, the results are publicly reported; CPA Ontario does not publicly report their results. For all programs, there is no requirement to write the exam immediately after graduating, and in fact for the ADS program, graduates must have completed a total of 1500 hours of supervised clinical practice before being eligible to write the BACB exam (BACB, 2018). All three programs do encourage their graduates to write the exam as soon as possible, also encouraging them to prepare well by studying and doing practice exams.

The nursing program has one distinct difference from the other programs in that it has two different delivery models, the 2+2 and 4-year models. In interviewing the administrator/faculty member regarding differences in pass rates between the two groups,

it was clear that the curriculum outcomes for both cohorts were the same, as were entrance requirements, and even textbooks (NF1, personal communication, 2019). Class sizes do differ, with the 2+2 group having smaller class sizes. Student NS2 (personal communication, 2019), who was from the 2+2 program stated,

Starting the program with smaller class sizes gave me the opportunity to create a good rapport with my profs. I felt comfortable reaching out to them with questions or problems and they were very helpful. I think university can be daunting and starting out at college was a good transition for me. I felt confident by the time I went to [University]. I also was almost forced to pay attention or show up to class as it would be noticed if I was absent or wasn't participating in lectures. In some of our classes at [College] we had weekly quizzes that were worth a very small percentage but made us participate more actively and attend classes. I also felt more prepared clinically. We started placements in first year and were doing a lot more than the [University] students clinically (e.g. giving medications).

One possible issue raised by the faculty member was the issue of transitioning from a smaller school to a university and entering as a third-year student instead of a first year. One way this has been addressed for the students who will be attending the university has been to arrange a bus trip for them at the end of second year. "They visit the campus and they talk to different people here, look at the off-campus housing, just so they're prepared." (NF1, personal communication, 2019). There is one other trend emerging with the 2+2 students, and that is the fact that some of the students who live local to the university choose to go away to the college for the first two years to have that leaving-home experience and then come back for the final two years. This also allows them to save money because the tuition is less expensive in the college system (NF1, personal communication, 2019).

Chapter Five: Discussion, Conclusions & Future Considerations

5.1 Discussion

The combined scoping review and case study allowed for several different areas to be studied including the affordances and constraints associated with curricular alignment and program accreditation, student success on licensure exams, and student satisfaction. The original questions were: What are the tendencies (patterns of practice and process) in curriculum development and implementation when the curriculum is geared toward an accreditation exam? What is known from the existing literature about how academic programs prepare students for licensure examinations? How might the programs further refine curriculum processes to aid in student preparation for licensure exams? What similarities and differences are found across three such programs? What are the programs' curricular elements in the BScN (4yr) and (2+2) that might contribute to success rates on the NCLEX-RN exams? Through the analysis of the scoping review, several themes and interventions emerged. These included:

- attitudinal changes for both faculty and students
- comparing student characteristics with licensing exam success
- curricular review and revision
- curriculum review and alignment with licensing exam learning outcomes
- developing effective guidelines for licensing exam prep in Canadian schools
- have faculty use higher cognitive level test questions
- provide a free on-campus licensing exam review
- providing tutoring / review
- raising admission criteria and advancement requirements
- standardized testing
- teaching test taking strategies
- using computer adaptive practice exams and/or instructional materials
- using standardized exams to guide remediation
- using the predictive value of standardized computer tests

The interventions were grouped into four categories, institutional, faculty, student, and standardized exam preparation; some interventions overlap in more than one category.

Table 3 shows that there are possible interventions available in all categories and discussions would need to be held with administrators, faculty, and students to decide on priorities, feasibilities, and processes for implementation.

| Institutional | Faculty | Student | Standardized Exam Preparation |
|---|--|---------------------|---|
| comparing student characteristics with licensing exam success | attitudinal changes | attitudinal changes | provide a free on-campus licensing exam review |
| curricular review and revision | have faculty use higher cognitive level test questions | | using computer adaptive practice exams and/or instructional materials |
| curriculum review and alignment with licensing exam learning outcomes | providing tutoring/review | | |
| developing effective guidelines for licensing exam prep in Canadian schools | using standardized testing in courses | | |
| raising admission criteria and advancement requirements | teaching test taking strategies | | |
| using standardized exams to guide remediation | | | |
| using the predictive value of standardized computer tests | | | |

When these same suggestions are looked across the three programs in the case study, it is easy to see the similarities and differences across and within the programs(See Table 4).

| Intervention | Nursing | Accounting | Applied Disability Studies |
|---|----------------|-------------------|-----------------------------------|
| attitudinal changes for both faculty and students | ✓ | ✓ | |
| comparing student characteristics with licensing exam success | ✓ | | |
| curricular review and revision | ✓ | ✓ | ✓ |
| curriculum review and alignment with licensing exam learning outcomes | ✓ | ✓ | ✓ |
| developing effective guidelines for licensure exam preparation in Canadian schools | + | ✓ | ✓ |
| have faculty use higher cognitive level test questions | ✓ | ✓ | ✓ |
| provide a free on-campus licensing exam review | + | | |
| providing tutoring/review | ✓ | ✓ | ✓ |
| raising admission criteria and advancement requirements | ✓ | | |
| standardized testing | ✓ | | |
| teaching test taking strategies | ✓ | ✓ | ✓ |
| using computer adaptive practice exams and/or instructional materials | ✓ | ✓ | ✓ |
| using standardized exams to guide remediation | ✓ | ✓ | ✓ |
| using the predictive value of standardized computer tests | ✓ | | |
| <i>Notes: ✓ denotes program uses this intervention + denotes program would like to implement this intervention</i> | | | |

Half of these interventions are being practiced in all three programs. The main differences are likely due to the recent implementation of the NCLEX-RN for the nursing program and the changes in both curriculum and student preparation during this transition period.

The propositions developed for the case study were as follows:

1. Curriculum will tend to reflect the subject areas required for graduates to be successful on a licensing exam.
2. Administrators/faculty will design programs and curriculum to assist students to be prepared to write licensing exams.
3. Administrators/faculty and students will be able to provide insight into curricular processes that could aid in preparing future students for licensure exams.
4. There will be similarities across programs when each program is required to write licensure exams despite differences in the actual curricular goals and licenses.
5. There will be many similarities in two programs that prepare students to write the same NCLEX-RN exam even though the curricula may differ.

5.2 Conclusions

In looking at the curriculum requirements and what is being offered in the three programs at this university, the curriculum is reviewed regularly to ensure it aligns with the subject areas required for successful completion of the licensure exam. The programs are designed to ensure that students are prepared to write the licensure exams and provide more material that is integral to the practice but is not necessarily tested on the licensure exam. Using curriculum and accreditation review processes, administrators/faculty and students can provide insight into processes that could aid future students for licensure exams. Based on the results of the case study, this already occurs, and students regularly benefit from the suggestions of previous graduates. However, there appears to be a

disconnect in the Nursing program, since they use the greatest number of these techniques/tools, but still have difficulty with students not passing the licensing exam. It is recommended that this be an area for discussion during the next nursing program curriculum review.

When comparing the results across all three programs, it is quite apparent that there are many similarities despite the differences in the actual curricular goals and licenses. While the NCLEX-RN and BACB exams use multiple-choice formats compared to the case based CFE, thus necessitating some differences in curricular approaches for preparation, all are similar in that the programs do provide supports to their students in preparing for the licensure exam, both in format and content.

Finally, in reviewing the responses regarding the similarities and differences with the two streams of the nursing program (2+2 and 4yr), it appears that there are more similarities than differences and there is no glaring reason that students should have different results on the licensure exam. Perhaps the upcoming comprehensive curriculum review will be able to shed additional light on this area of inquiry, if not through the curriculum mapping, then through an analysis of the other factors affecting curricular outcomes such as course content or sequencing of the material to help realign the material and improve student success or determining whether the issue could be a result of student behaviour, departmental resources, and/or institutional culture as suggested by Kopera-Frye et al. (2008).

5.3 Limitations

Some of the limitations in this research are the use of a single site, sample size, and limited time that the NCLEX-RN has been used as the licensing exam in Canada.

Other limitations include the variance in the formats of accreditation exams and consequences of passing or failing the other two accreditation program exams. Also, different interview methods were used, in person and email, based on the preference of the participant.

5.4 Future Considerations

Future research that could be considered in this area would be to look at student success on the NCLEX-RN after it has been in use for a few more years. It would also be interesting to compare student demographics and characteristics between the 2+2 and 4yr nursing students to see if there are any underlying causes that may account for differences in success on the licensure exams if the trend continues. Further, it would be prudent to explore the experiences of students who do not pass BCBA accreditation exams but who are able to continue to function in their jobs as non-accredited specialists. This research did not address some of the overall Canadian concerns in the literature, namely the translation of the NCLEX-RN and prep courses into French and addressing the differences in Canadian and American content or looking at the actual validity of the exam for Canadian students.

Postscript

In order to maintain confidentiality of the institution involved in the study, several references have had identifying information removed. For additional information on these resources please contact:

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Appendix A

Databases Searched Using “Supersearch”

1. ERIC,
2. CINAHL,
3. Regional Business News,
4. GeoRef,
5. Fuente Académica,
6. EconLit,
7. SPORTDiscus,
8. Communication & Mass Media Complete,
9. Gender Studies Database,
10. Business Source Complete,
11. Bibliography of Native North Americans,
12. Library,
13. Information Science & Technology Abstracts,
14. Academic Search Complete,
15. Film & Television Literature Index with Full Text,
16. GreenFILE,
17. Food Science Source,
18. America: History and Life with Full Text,
19. Historical Abstracts with Full Text,
20. PsycARTICLES,
21. PsycBOOKS,
22. ScienceDirect,
23. Oxford Handbooks Online,
24. Art Full Text (H.W. Wilson),
25. Oxford Reference,
26. Research Starters,
27. SciELO,
28. Humanities & Social Sciences Index Retrospective: 1907-1984 (H.W. Wilson),
29. Art Index Retrospective (H.W. Wilson),
30. LUNA Commons,
31. Oxford Dictionary of National Biography,
32. Readers' Guide Retrospective: 1890-1982 (H.W. Wilson),
33. Manuscriptorium Digital Library,
34. Newswires,
35. Book Review Digest Retrospective: 1903-1982 (H.W. Wilson),
36. LexisNexis Academic: Law Reviews,
37. Supplemental Index,

38. Complementary Index,
39. University University Library Catalogue,
40. J-STAGE, Grove Art Online,
41. American National Biography Online,
42. Grove Music Online,
43. Archive of European Integration,
44. Directory of Open Access Journals,
45. University University Digital Repository,
46. OAPEN Library,
47. Education Source,
48. Gale Virtual Reference Library,
49. Mintel Oxygen Reports, BioOne Complete,
50. History of Science,
51. Technology & Medicine,
52. Center for Research Libraries,
53. Academic OneFile,
54. Rock's Backpages,
55. Literature Resource Center,
56. Cairn.info,
57. Cochrane Database of Systematic Reviews,
58. Erudit, JSTOR Journals,
59. IBISWorld, MathSciNet via EBSCOhost,
60. Early Canadiana Online,
61. IEEE Xplore Digital Library,
62. CPI.Q (Canadian Periodicals)

Appendix B

Summary of Article Review

| Authors/date / country | Key aim(s) and OBJECTIVE S | Methodology | Strategies/ Interventions Suggested /Used | Limitations | Analysis and synthesis | Conclusions | Recommendations for future research |
|--|--|---|--|-------------------|--|--|--|
| 1) Cobbett, Nemeth, MacDonald (2016), Canada | To help inform Canadian nursing schools about best practices in developing effective guidelines for NCLEX-RN exam preparation, remediation, testing, and re-testing within the Canadian context. | Phase one results of two phased, multi-site, ex post facto study; Phase one used convenience sample of new nursing alumni from 3 universities in 3 provinces to gain scores on HESI Exit Exam, GPA, and CAT along with NCLEX-RN writing date and pass/fail result. Quantitative analysis. | HESI NCLEX-RN student preparatory learning resources within the Canadian context | Preliminary study | Analysis described as Phase One study results supporting the predictive value of the use of the HESI RN Exit Exam and CAT exam along with remediation policies in the nursing programs to include standardized examinations. Study found no relationship between GPA and success on NCLEX-RN; also found an inverse relationship | Support for predictive value of HESI RN Exit Exam and CAT exam; adoption of remediation policies to include standardized exam practice; use of results of HESI exam results to guide remediation | Phase Two study will repeat Phase One and will investigate potential relationships between HESI RN Exit Exam and CAT exam scores, HESI Specialty Exam scores, and 3-day live face-to-face review, and the success on NCLEX-RN. |

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| | | | | | between length of time from graduation to writing exam - the longer the time from graduation to exam, the less likely to pass exam. | | |
| 2) Matthew, Aktan & Paterson (2018) USA | To describe one nursing school's journey to a sustained pass rate of 80% on NCLEX-RN first write and to examine factors associated with success among first-time writers of NCLEX-RN. | Qualitative narrative approach used to describe processes in improving/sustaining pass rate; Retrospective comparative study design used to determine predictors for NCLEX-RN success over 4 years. | Analysis of admission criteria; curricular changes to reflect NCLEX-RN; assessment of student support; systematic evaluation of student academic performance on regular basis | Limited to one program | Analysis described correlational statistics and associations between SAT verbal score, overall GPA, science GPA, nursing GPA and first time pass rate on NCLEX-RN; review of admission criteria, curricular changes to reflect NCLEX-RN blue print, assessment of student support, and regular | Admission criteria should be changed, and requirements raised for both entry and remaining in the program. Program should provide tutoring in nursing and science courses, assistance in stats, test-taking strategies, peer tutoring and mentoring. Introduction | Could be generalized to additional programs; ESL status and other factors as risk factors for failing NCLEX-RN on first writing should be explored. |

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| | | | | | <p>systematic evaluation of student's academic performance were successful in reaching and maintaining national standard of 80% success on NCLEX-RN for first time writers. Study results support other works that GPA, nursing GPA, science GPA, SAT reading, and SAT math were significantly related NCLEX-RN success for first-time takers. Study contributes to existing literature on preadmission, program, and post-</p> | <p>of a course for transition into practice (10 students max); use of commercially available predictor exam and subsequent remediation, and a free, on-campus NCLEX-RN review class. Curriculum should be reviewed by an expert and faculty provided development and support to align course content, assessments, and learning outcomes.</p> | |
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| | | | | | graduation supports as success factors. | | |
| 3) Shoemaker et al. (2017) USA | To compare the performance of the initial intervention strategies to the revised intervention strategies in helping students achieve NCLEX-RN success. | 2 years after implementation of curricular changes, retrospective data analysis with the national pass rates comparing NCLEX-RN pass rates with the national pass rates for 5 most recent cohorts (quantitative). | formed task force; curriculum re-examined using AACN's Essentials and NCSBN test plan; minimum pass for courses raised to C+ (77-79%); increase # of NCLEX-RN formatted questions throughout curriculum; at-risk students placed in structured tutoring program with individualized study and remediation plans; all seniors attended a test anxiety workshop; HESI; ATI | Limited data available because of the short period since implementation of the new tools; several changes were implemented simultaneously | Analysis described demographics and comparison across cohorts as well as process to adjust national pass rate across years to a common adjusted pass rate. Statistical z test of the proportional analysis used to analyze the null hypothesis. | Pass rates for first time NCLEX-RN improved to a level above the national average in the first 2 years of implementation of a computerized curricular assistive tool was implemented. Success was due in part to having a champion for faculty and students and integrating the tool into the curriculum in multiple ways. | None |

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| 4) Csekanski, Mingo, Piper (2018) USA | To close the loop for graduates on NCLEX-RN preparedness. | Qualitative narrative approach used to describe one intervention designed to support graduates preparing for NCLEX-RN. Intervention assisted students to develop individual study plans and provided individual and group support facilitated by an expert tutor. | Senior Seminar in last semester and postgraduate coaching intervention that included cognitive behavioural techniques; content reviews; test-taking strategies; Exit HESI, required in-person NCLEX-RN review course | Single school | Analysis not described. Results presented with descriptive summary statistics and narrative. | Preparation for the NCLEX-RN needs to be incorporated throughout the nursing program and needs to continue after program completion to help mitigate barriers to success such as test anxiety, poor test-taking strategies, family and personal responsibilities. | None |
| 5) McCarthy, Harris, Tracz (2014) USA | To explore whether preprogram factors labeled as academic aptitude, and in-program factors, labeled as nursing aptitude, were | Retrospective quantitative study to analyze six independent pre-nursing program predictors and five independent in-program criterion variables. All | | Limited to BSN students, did not look at age, ethnicity, socioeconomic status, family status job status, or motivation. | Analysis described use of canonical correlation analysis to answer the first research question: Are academic aptitude and nursing | The results showed a significant relationship between four of the six pre-program Tests of Essential Academic Skills | 1) Replicate study with more nursing programs and other standardized testing variables. 2) Analyze demographics along with standardized testing, also include attrition statistics. |

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| | related to first try pass rates on the NCLEX-RN in baccalaureate nursing programs. | nursing students graduating from 2009/10 and 20010/11 academic years in 4 programs that were part of a single state university system. | | | <p>apitude correlated? Multiple linear regression analysis was used to answer the second research question: Does nursing aptitude correlate with first try NCLEX-RN pass rates, controlling for academic aptitude of BSN students? Logistic regression analysis was used to answer the third research question: Do academic aptitude and nursing aptitude predict first-try NCLEX-RN pass rates for BSN students at</p> | <p>(TEAS), reading, math, science, and English and in all five in-program variables as tested throughout the 4-year program using the ATI package of 8 tests. Results are consistent with other research in the literature that show testing can predict success on the NCLEX-RN.</p> | <p>3) Examine in-program variables related to instructor impact, teaching strategies, and faculty support on NCLEX-RN success, including other routes to writing the exam. 4) Conduct a qualitative study with students who were unsuccessful on first try.</p> |
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| | | | | | universities participating in the study? | | |
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| 6) Cole & Adams (2014) USA | To describe one nursing school's journey to develop a positive progression approach to promote student success on standardized exams, exit exam scores, and NCLEX-RN pass rates. | Retrospective pilot study from a secondary examination of data set. | Positive Progression Approach: minimal use of lectures - used case studies, simulation, interactive strategies; exit exam for each course 10% of final grade; remediation contract; 14-step exit exam review; 2 critical thinking courses; required licensure exam prep course face to face | Limited to a single pilot study at one school. | Analysis described the pass rates on standardized exams starting with the first cohort who received the intervention (without full implementation of the policy). | The authors describe this as a successful implementation of their process, but the data do not necessarily support this conclusion. | The authors acknowledge that this is a challenging and time-consuming process with extra work required by faculty. They do not clearly define recommendations. |
| 7) Bristol et al. (2019) USA | To report results of a survey re extent to which nurse educators report lecture and active learning in prelicensure courses. | Survey. Gathered percentage of hours using lecture; how students would describe classes in terms of lecture or active learning; NCLEX pass rate for their school in 2017. | Active learning strategies to promote higher learning and critical thinking skills, | No demographics or school data collected; data based on instructor self report; faculty reported on student perceptions | Analysis described the percentages of time teachers used active learning compared with passive learning strategies; analysis showed no difference in | No difference was found in the first-time NCLEX pass rates based on the faculty's perception of the extent to which active learning was used. There | Repeat survey with demographic data questions; provide definition of active learning; survey faculty and students |

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| | | | | | the first-time pass rate for NCLEX | were many other factors that could have been looked at that were not included | |
| 8) McGillis Hall et al. (2018) CAN | To examine perceptions of implementation of NCLEX-RN in Canada | Qualitative content analysis of media reports | curricular alignment/revisions needed for Canadian schools to prepare for NCLEX-RN; | None noted by authors | Analysis described the use of a four-member research team that independently categorized descriptive themes, dealt with inconsistencies that emerged and generated a set of consistent codes to verify informational content. | The authors concluded that most media reporting had been negative and posed a risk to the reputation of nurses in Canada | The authors suggest multiple items that should be implemented by any country considering implementing the NCLEX-RN. |

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| <p>9) McGillis Hall, Lalonde, Kashin (2016) CAN</p> | <p>To explore the experiences of graduate student nurses who were the first to write NCLEX-RN. To determine issues with implementation and address inconsistencies .</p> | <p>Qualitative thematic analysis of interview data.</p> | <p>better translation to French of NCLEX-RN; French language preparation material; NCLEX-RN prep courses</p> | <p>None noted by authors</p> | <p>Analysis described the use of research team to transcribed and perform content analysis on the interview data. Content from the data guided development of codes and overarching themes and sub-themes. Researchers reached consensus on representative themes that were then analyzed.</p> | <p>The authors concluded that the overall experience of first time NCLEX-RN writers in Canada was less than positive.</p> | <p>Future considerations were made related to the NCLEX-RN policy-related issues but did not specifically address recommendations for research.</p> |
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| <p>10) Gatto & Madden (2019) USA</p> | <p>To determine the effects of a faculty development workshop, to increase the cognitive levels of questions on teacher-made tests, and of the integration of computerized student learning and assessment tools on remediations and NCLEX-RN first time pass rates.</p> | <p>Retrospective analysis of two interventions.</p> | <p>item-writing workshop for faculty; purchased a computerized learning and assessment tools for students; content-specific standardized exams after</p> | <p>None noted by authors</p> | <p>Analysis described the NCLEX-RN pass rates for at-risk students before implementation and for those three cohorts who received 1, 2, or 3 years of the intervention.</p> | <p>The authors concluded that standardized testing and student remediation were important in reducing the number of at-risk students. They also concluded that faculty education in writing test questions at a higher cognitive level helped improve student success.</p> | <p>There were no suggestions for future research.</p> |
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| 11) Carr (2009) USA | To describe one university's journey through curricular revision, standardized testing, and attitudinal change to improve their first-write pass rate on the NCLEX-RN. | Retrospective review of changes and outcomes | weekly comprehensive exams with minimum grade; completion of entire online review course; registering and paying for NCLEX-RN exam prior to graduation, using class time; critical thinking exam give to entry-level students; pharmacology and leadership exams added; curriculum assessment based on NCLEX-RN test plan; taught faculty how to teach test-taking skills; faculty took same review course on line that seniors took; | None noted by authors | Analysis described the different methodologies (improve-test-taking strategy, improve test-taking preparation, changes to nursing curriculum, and interventions to change student and faculty attitudes) used at the school between 2002 and 2008 and the NCLEX-RN first-time pass rates | All components of the interventions are important, and they work together to provide the overall improvements in the results. However, they must be constantly reviewed for effectiveness and revised to maintain the highest possible pass rates. | The author states that the preparation of students for the NCLEX-RN exam is a never-ending process of evaluation and change. |
| 12) Mager, Beauvais & Kazer (2017) USA | To describe a successful 10-step action plan implemented to remediate a brief dip in | Description of the 10-steps including rationale, list of changes and some analysis of the outcomes. | implement organizational structures to promote success; reviewed curriculum in conjunction with | Small sample size made it difficult to determine trends and there was insufficient | Analysis described the 10-step process and how well the strategies worked both | The authors concluded that many factors contribute to student success on | continue to monitor NCLEX test plan changes, national standards, and methods to ensure a robust and rigorous curriculum. |

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| | NCLEX-RN pass rates at one university. | | <p>student performance outcomes; measured critical thinking using ATI tools; conducted a curricular gap analysis; examined test construction, test item analysis, and relation to the NCLEX; instituted use of computer-based testing; examined grading and exam practices; incorporated study and test-taking skills into introductory nursing courses; examined course-grade data from unsuccessful NCLEX completers; focus groups with faculty and students</p> | <p>data to allow for changes to progression policies.</p> | <p>individually and.</p> | <p>the NCLEX-RN and they looked most closely at outcomes, curriculum, and grading practices to improve student readiness and success.</p> | |
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| 13) March & Ambrose (2010) USA | To highlight the process employed to support and facilitate student preparation for NCEX-RN success at one | Retrospective review of changes and outcomes | modification of senior-level course work, use of a computerized end of program examination, individualized remediation, one-on-one faculty/student interaction to develop NCLEX study plan | None noted by authors | The authors describe the processes employed starting in 2004 to try and improve success for first-time NCLEX-RN pass rates and look at the actual pass rates, which declined in early 2005 but have regained previous levels above 91% since October 2005 | A proactive approach is needed to maintain curriculum and student preparation to ensure high pass-rates on NCLEX-RN. | Course content adjustments based on changing needs for students |
| 14) Phillips et al. (2013) USA/CAN | To describe what innovative curricula were being implemented; identify challenges faced by the faculty; explore how the curricula were evaluated. | Qualitative study using e-mail invitation and curriculum rubric to determine school's level of innovation. | Conceptualizing; designing; delivering; evaluating; support | 1) The method of soliciting responses consisted of one e-mail. 2) Only 15 out of 40 schools were selected for interview. 3) Definition of innovation used in question may not have completely | Analysis used Mayring's (2000) qualitative content analysis and text analysis. Themes were identified and used to develop the Curriculum Innovation Model. | The Curriculum Innovation Model was developed from the findings of the study and supports the NLN's Excellence in Nursing Education Model. | More research is needed in the area of curriculum reform and innovation to meet the demands of complexity in today's health care environment. |

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| | | | | captured the essence of innovations in schools. | | | |
| 15) Rowshan & Singh (2014) CAN | To examine the reasons for adopting the NCLEX-RN in Canada, how the exam is developed and the use of a computerized adaptive test to administer it. | Background paper/review of exam development, content, administration and passing grade as well as potential advantages and disadvantages. | Suggest using studying for the exam based on NCLEX test plan; using a standardized commercial test preparation tool; using strategies to reduce text anxiety | None noted by authors | Analysis and synthesis of the literature showed that Canadian students will have to change their studying methods to increase their success on the NCLEX-RN. | The authors question whether nursing schools need to focus on teaching directly to the NCLEX-RN test plan, which only focuses on entry level knowledge and skills or continue to teach to higher level skills that will be needed after the first 12 months. | Comparing Canadian and US first time pass rates; assisting the importance of standardized testing or the effects of how curriculum changes will affect NCLEX-RN Canadian graduate pass rate; how adequate the NCLEX exam prepares graduates for nursing in Canada; the implementation of computer assisted testing into the Canadian nursing curriculum; implications and effects of NCLEX-RN on Canadian nursing in general |

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| <p>16) Sears, Othman & Mahoney (2015) CAN</p> | <p>to examine the evidence describing the relationship between undergraduate nursing program performance and NCLEX-RN performance as well as other factors contributing to NCLEX-RN success</p> | <p>Systematic review of the literature between 1984 and 2015</p> | <p>Suggest using higher entrance standards, standardized entrance and exit exams, teaching more critical thinking skills, providing psycho-social support to students.</p> | <p>None noted by authors</p> | <p>Analysis showed academic factors are a high predictor for success on the exam; stress and highly negative emotions inversely result in success on the exam; speaking English as a first language showed high correlation with exam success; other non-academic factors showed varying results.</p> | <p>The authors concluded that there is still much work to be done to identify the predictors of success on the NCLEX-RN.</p> | <p>Cross-sectional and longitudinal data need to be studied. Comparative analysis of performance on the NCLEX-RN with overall undergraduate program performance and specific course performance needs to be studied.</p> |
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| 17) Salfi & Carbol (2017) CAN | To report findings from a review of two NCSBN studies to assess whether they provide enough evidence to conclude the NCLEX-RN is applicable to the Canadian testing population. | Review of two papers using four guiding questions; first two questions used to review methodology, results and conclusions in the documents; next two questions answered by commentary on assessment practice and recommendations . | | | Analysis showed that the studies used as evidence to support the use of the NCLEX-RN as a valid tool for Canadian test takers were fraught with | The studies used to justify the use of the NCLEX-RN test with a Canadian audience are not a valid approach and the test needs to be tailored for the Canadian audience. | |
| 18) Peisachovich (2016) CAN | to investigate the use of experiential education approaches in preparing internationally educated nurses for writing the NCLEX-RN in Canada | A purposive sample of ten participants in their first term of and IEN program in Ontario wrote a pre and post NCLEX-RN style mock exam and were given six interactive case scenarios. | scenarios focused on six different physiological complexities; scheduled over a six-week period; | sample size and composition; length of study; role of the researcher and position in relation to the study; setting | Analysis indicated an urgent need for application and integration of content and the use of experiential education approaches to enhance NCLEX-RN scores among Canadian students | there is a need to explore more ways to improve education for IENs and other nursing students to ensure success on the NCLEX-RN; there is a need to study how to best assist faculty to develop new | Eight recommendations: explore how results of NCLEX-RN influence patient care outcomes; investigate application of other experiential education approaches and conduct research in other courses in the curriculum; explore challenges with implementation of CAT in nursing |

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| | | | | | | resources that align with the NCLEX-RN and to embed them in the curriculum | curriculum; compare first-time pass rates of Canadians vs. US; conduct more pre and post studies to explore CAT in Canadian context; research how critical thinking developed through experiential education impacts NCLEX-RN scores; explore NCLEX-RN scores of novice nurses from different backgrounds; integrate Pearson VUE Alternative Item Format Online Tutorial to allow students to practice mock NCLEX-RN |
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| 19) Landeen et al. (2016) CAN | To evaluate the impact of curricular changes on students' deep learning | Interpretive Descriptive qualitative research design; 25 faculty members were interviewed re their perceptions on changes in students' overall performance after implementation of changes to curriculum. | shift to person-centred care, increasing professional confidence, improved clinical reasoning and judgement; no changes to integrating pathophysiology or evidence-informed decision-making | | Analysis indicated that initial impressions of curricular revisions were positive for student learning outcomes. | The authors conclude that curriculum renewal can serve as a starting point for educational research and serve in the quality improvement process. | Longer term analyses of teaching and learning approaches such as retention rates, results on national credentialing exam and graduate and employer feedback; other research methodologies could be used; longitudinal follow-ups |
| 20) Sears, Othman, O'Neill, Hopman (2017) CAN | To examine the NCLEX-RN performance of BScN graduates from 3 sites of one program across the first two years of its use. To investigate the relationship between undergraduate academic performance and NCLEX-RN performance, and to | Two-year cross-sectional exploratory study; 215 students; course grades, final program percentage grade and GPAs, students' time to complete the program examined against result of NCLEX-RN | No changes in curriculum; no interventions | Study generates limited data with respect to NCLEX-RN failure reports; results from a single curriculum | Analysis indicated that overall 66% of graduates passed the NCLEX-RN and 34% failed. Those who passed had a higher GPA and took a shorter time to complete the degree/ | the study concludes that high academic performance remains a strong predictor for NCLEX-RN success. | Larger, multicentre studies |

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| | determine predictors of success and/or failure on the exam. | | | | | | |
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Appendix C

Research Ethics Board Approval



Brock University
 Research Ethics Office
 Tel: 905-688-5550 ext. 3035
 Email: reb@brocku.ca

Social Science Research Ethics Board

Certificate of Ethics Clearance for Human Participant Research

DATE: 5/23/2018

PRINCIPAL INVESTIGATOR: CONNOLLY, Maureen - Kinesiology

FILE: 17-337 - CONNOLLY

TYPE: Ph. D. STUDENT: Helen Taylor
 SUPERVISOR: Maureen Connolly

TITLE: Examining Student Nurse Preparation for Certification Examination: A case study

ETHICS CLEARANCE GRANTED

Type of Clearance: NEW

Expiry Date: 5/1/2019

The Brock University Social Science Research Ethics Board has reviewed the above named research proposal and considers the procedures, as described by the applicant, to conform to the University's ethical standards and the Tri-Council Policy Statement. Clearance granted from 5/23/2018 to 5/1/2019.

The Tri-Council Policy Statement requires that ongoing research be monitored by, at a minimum, an annual report. Should your project extend beyond the expiry date, you are required to submit a Renewal form before 5/1/2019. Continued clearance is contingent on timely submission of reports.

To comply with the Tri-Council Policy Statement, you must also submit a final report upon completion of your project. All report forms can be found on the Research Ethics web page at <http://www.brocku.ca/research/policies-and-forms/research-forms>.

In addition, throughout your research, you must report promptly to the REB:

- a) Changes increasing the risk to the participant(s) and/or affecting significantly the conduct of the study;
- b) All adverse and/or unanticipated experiences or events that may have real or potential unfavourable implications for participants;

- c) New information that may adversely affect the safety of the participants or the conduct of the study;
- d) Any changes in your source of funding or new funding to a previously unfunded project.

We wish you success with your research.

Approved:



Ann-Marie DiBiase, Chair
Social Science Research Ethics Board

Note: Brock University is accountable for the research carried out in its own jurisdiction or under its auspices and may refuse certain research even though the REB has found it ethically acceptable.

If research participants are in the care of a health facility, at a school, or other institution or community organization, it is the responsibility of the Principal Investigator to ensure that the ethical guidelines and clearance of those facilities or institutions are obtained and filed with the REB prior to the initiation of research at that site.

Appendix D

Ethics Review Board Approval – Renewal

Brock University Research Ethics Board (REB)

Annual Renewal/Final Report Form

Please indicate if this is an:

- Annual renewal** request for ongoing research
 or
 Final report request for completed research

Selecting a Research Ethics Board

In July 2011 Brock established two Research Ethics Boards. Files will be allocated to one of two REB panels based upon the type of research undertaken.

If your research involves or involved any of the following, submit to the Bioscience Research Ethics Board (BREB):

- physiological measures such as EEGs, heart rate, GSR, temperature, blood pressure, respiration, vagal tone, x-rays, MRIs, CT or PET scans;
- ingestion or other use of food, beverages, food additives, or drugs, including alcohol and tobacco;
- medical techniques or therapies, including experimental medical devices;
- physical exertion beyond normal walking;
- physical movement in participants who have medical vulnerabilities (e.g., spinal cord injury, osteoporosis);
- human biological materials (e.g., tissues, organs, blood, plasma, skin, serum, DNA, RNA, proteins, cells, hair, nail clippings, urine, saliva, bodily fluids);
- interventions with the potential for physiological effects (e.g., diet, exercise, sleep restriction); and/or
- use of medical or official health records (e.g., hospital records).

If none of the above points are or were characteristic of your research, submit to the Social Science Research Ethics Board (SREB)

Indicate which REB panel is appropriate for this application:

Bioscience (BREB) OR **Social Science (SREB)**

If you have questions about or require assistance with the completion of this form, please contact the Research Ethics Office at (905) 688-5550 ext. 3035, or reb@brocku.ca. Once complete, please return this form with all accompanying material to reb@brocku.ca. Researchers may submit this form electronically (as a PDF or Word attachment), provided that they include digital or scanned signatures. Alternatively, Principal Investigators (i.e., faculty only) may email the form with a note in lieu of signatures, provided that the application is sent from their Brock University email addresses.

SECTION A – GENERAL INFORMATION

Examining Student Nurse Preparation for Certification Examination: A Case Study

1. Title of the Research Project:

File Number: 17-337

2. Principal Investigator:

Maureen Connolly

Email: *mconnolly@brocku.ca*
 Department: *Kinesiology*
 Phone Ext.: *3381*

Principal Student Investigator:

Helen Taylor

Email: *helen.taylor4@brocku.ca*
 Department: *nursing*

3. Faculty Supervisor:
 (required if different than PI)

Email:
 Department:
 Phone Ext.:

4. Original Approval Date: *5/23/2018*

SECTION B – STATUS OF PROJECT

1. This study is Active - the researcher will be recruiting, contacting participants, and/or collecting data during the next approval period.

This is an **annual** renewal for **ongoing research**. There are no changes in the protocol last approved.

There have been **no** modifications to the protocol since receiving original ethics clearance.

I am **requesting** to have **changes** in the protocol approved. Attached please find a completed Request for Ethics Clearance of a Revision or Modification form (for human participants).

There have been **changes** to the research team who interact with participants and/or have access to personal data. Please list former/new personnel and position:

**Please complete sections C and D.*

2. This Study is Completed

Interaction with research participants has been completed.

Contact with participants is for feedback only.

**Please complete sections C and D.*

3. Discontinued or withdrawn Research

The proposed research has been withdrawn.

*Please provide a brief explanation as to why the proposed research was not completed:

*Was any part of the proposed research carried out? If yes, describe participant involvement:

*If participants were contacted and data collected, please explain what participants were told regarding the discontinuation of this research and the disposal of their data:

**Please complete sections C and D.*

SECTION C – PARTICIPANT INFORMATION (This section is required for projects deemed active or complete. For discontinued or withdrawn research, please fill out as much information as you can.)

1. Total number of subjects enrolled in the study to date: 6
2. Number of participants that have completed the study: 4 - 2 pending interviews
3. Number of additional participants still required for the study: 6
4. Number of participants that have withdrawn from the study: none.

If the withdrawal rate was higher than anticipated please describe any known circumstances:

SECTION D – PROJECT INFORMATION (Researchers are required to fill out ALL items in this section)

- Have any ethical concerns arisen in the course of conducting this research? Yes [] No []
- Since the original ethics clearance was granted, have there been any previously unidentified risks or benefits to participants? Yes [] No []
- Have any participants experienced adverse events as a result of their participation in the study? Yes [] No []

If you answered yes to any of the above questions, please describe the situation in detail and explain how it was resolved:

What procedures/safeguards are now in place to protect participants from these risks?

What is the funding status of the project?

[] Funded Agency Funding Period

Title of Grant (required if different than title of ethics clearance)

[] Unfunded

SECTION E – SIGNATURES

My signature certifies that the above information is correct and that no additional procedures will be conducted without ethics clearance. Proper safeguards to confidentiality and security of data will be maintained until all data are destroyed.

Maureen Connelly

15-04-2019.

Signature of Principal Investigator

Date

Signature of Principal Student Investigator (optional)

Date

Signature of Faculty Supervisor

Date

***Office Use Only**

I have reviewed the above continuing review/final report.

Research Ethics Board Chair or Delegate

Date

Notes:

Appendix E

Informed Consent – Faculty

Date: _____

Project Title: Examining Student Preparation for Certification Examination: A case study

Principal Investigator (PI): Dr. Maureen Connolly
Department of Kinesiology
Brock University
905-688-5550 ext. 3381
mconnolly@brocku.ca

Student Principal Investigator (SPI): Helen Taylor, PhD(c)
Department of Graduate Studies, FAHS
Brock University

INVITATION

You are invited to participate in a study that involves research. This research will look at three programs where there is a mandatory licensing exam for graduates who wish to attain professional certification and explores the affordances and constraints associated with curricular alignment and program accreditation, student success on licensure exams, and student satisfaction.

WHAT'S INVOLVED

As a participant, you will be asked to provide answers to a series of questions related to your experience as a faculty member who is familiar with the curriculum and program delivery at a program at xxxxxxxx University. Questions will be administered during an audio taped interview or may be answered in writing and returned via email. Participation will take approximately one hour of your time.

Notes taken during the conversation will be recorded in a journal. Comments that may be submitted via email will be considered as personal correspondence. Both these sets of data will be included as part of the data collection process during the interviews.

You will receive a copy of the transcript within 2 weeks of the interview; you will have 2 weeks in which to review it for accuracy, which should take less than 1 hour. If you have not returned the transcript within 2 weeks, you will receive a prompt to reply with any amendments. If you do not reply at that time, I will assume the transcript meets your expectations and will use the data you have provided.

POTENTIAL BENEFITS AND RISKS

Possible benefits of participation may include a raised awareness of the curriculum and may enable more focused attention on curriculum gaps. These gaps can hopefully be addressed in curriculum retreats and/or curriculum planning for the respective programs.

Faculty may experience negative emotions about their home program/teaching when discussing barriers to curriculum design, but risks are mitigated by the program's ongoing curriculum planning process.

CONFIDENTIALITY

Participant names, initials and organizational names will not be retained once data analysis collection is complete; fictitious names will be used for public documents.

The information you provide will be kept confidential. Your name will not appear in any thesis or report resulting from this study; however, with your permission, anonymous quotations may be used.

Data collected during this study will be stored using locked filing cabinets, in a locked office. Administrative safeguards include the limited access to personal information about participants. and computers containing research data will be password protected and stored/used away from public areas Consent forms will be stored securely, apart from audiotapes and transcripts. Technical safeguards include use of computer passwords and anti-virus software that protect data from unauthorized access, loss or modification. Data will be de-identified as soon as possible and kept until the final paper is prepared, after which time data will be shredded and audio tapes will be destroyed.

Access to this data will be restricted to Dr. Maureen Connolly and Helen Taylor.

VOLUNTARY PARTICIPATION

Participation in this study is voluntary. If you wish, you may decline to answer any questions or participate in any component of the study. Further, you may decide to withdraw from this study at any time and may do so without any penalty. Consent may be withdrawn before, during, or after the interview in person, by telephone, via email, or via Canada Post. Audiotapes, notes, and transcripts will be destroyed if you withdraw from the study provided the data has not yet been de-identified.

FEEDBACK TO PARTICIPANTS

A short summary as feedback will provided to you so you have an opportunity to learn the outcomes of this research. You can receive this electronically or as a hard copy mail out, whichever you prefer. You will be asked for your preference at the time of the interview.

PUBLICATION OF RESULTS

Results of this study may be published in professional journals and/or presented at conferences. Feedback about this study will be available from Dr. Maureen Connolly (mconnolly@brocku.ca) or Helen Taylor (ht84at@brocku.ca) in June 2019.

CONTACT INFORMATION AND ETHICS CLEARANCE

If you have any questions about this study or require further information, please contact Dr. Maureen Connolly or Helen Taylor using the contact information provided above. This study has been reviewed and received ethics clearance through the Research Ethics Board at Brock University **17-337-CONNOLLY**. If you have any comments or concerns about your rights as a research participant, please contact the Research Ethics Office at (905) 688-5550 Ext. 3035, reb@brocku.ca.

Thank you for your assistance in this project. Please keep a copy of this form for your records.

CONSENT FORM

I agree to participate in this study described above. I have made this decision based on the information I have read in the Information-Consent Letter. I have had the opportunity to receive any additional details I wanted about the study and understand that I may ask questions in the future. I understand that I may withdraw this consent at any time.

Name: _____

Signature: _____ Date: _____

Appendix F

Script and Questions for Administrators/Faculty

I want to thank you for taking the time to speak with me today.

My name is Helen Taylor and I would like to talk to you about your experiences as a faculty member in the _____ xxxxxxxxxxxx University Nursing program. Specifically, as one of the components of my PhD research, I am doing a case study to assess program effectiveness in order to capture lessons that can be used in future interventions. The interview should take less than an hour. I will be taping the session because I don't want to miss any of your comments. Although I will be taking some notes during the session, I can't possibly write fast enough to get it all down. Because we're on tape, please be sure to speak up so that I don't miss your comments. All responses will be kept confidential. This means that your interview responses will only be shared with research team members and we will ensure that any information we include in any results does not identify you as the respondent. Remember, you don't have to talk about anything you don't want to, and you may end the interview at any time. Are there any questions about what I have just explained? Are you willing to participate in this interview?

1. What strategies (e.g., assessment and quality improvement process), interventions (preservice training, training of faculty, training of support/clinical staff, community and stakeholder mobilization, other), and tools were used (curricula, etc.) to prepare students for successful completion of the licensing exam? Please list.
2. Which of these strategies, interventions and tools would you consider to be key program elements? Please explain.
3. To what extent did participation in the collaborative program advance or hinder student success? Please explain.
4. What worked well in the university program? Please elaborate.
5. What would you change in the university program? Please elaborate.
6. What strategies, interventions, tools, etc., would you recommend be sustained and/or scaled up? Please provide a justification for your response.
7. What strategies, interventions, tools should be discontinued? Why?
8. What were some barriers, if any, that you encountered? Staff turnover? Lack of key support? Lack of technical assistance?
9. How did you overcome the barrier(s)?
10. What opportunities do students have for exam conditions preparation, intra and extracurricular?
11. What recommendations do you have for future efforts such as these?
12. Is there anything more you would like to add?

Shortly after the interview has been completed, I will send you a copy of the transcript to give you an opportunity to confirm the accuracy of our conversation and to add or clarify any points that you wish. Thank you for your time.

Appendix G

Informed Consent – Student

Date: March 26, 2019

Project Title: **Examining Student Preparation for Certification Examination: A case study**

Principal Investigator (PI): Dr. Maureen Connolly
Department of Kinesiology
Brock University
905-688-5550 ext. 3381
mconnolly@brocku.ca

Student Principal Investigator (SPI): Helen Taylor, PhD(c)
Department of Graduate Studies, FAHS
Brock University

INVITATION

You are invited to participate in a study that involves research. This research will look at three programs where there is a mandatory licensing exam for graduates who wish to attain professional certification and explores the affordances and constraints associated with curricular alignment and program accreditation, student success on licensure exams, and student satisfaction.

WHAT'S INVOLVED

As a participant, you will be asked to provide answers to a series of questions related to your experience as a student who graduated from the BScN program at xxxxxxxxxxxxxxxx University. Questions will be administered during an audio taped telephone interview or may be answered in writing and returned via email. Participation will take approximately one hour of your time.

Notes taken during the conversation will be recorded in a journal. Comments that may be submitted via email will be considered as personal correspondence. Both these sets of data will be included as part of the data collection process during the interviews.

For audio-taped interviews, you will receive a copy of the transcript within 2 weeks of the interview; you will have 2 weeks in which to review it for accuracy, which should take less than 1 hour. If you have not returned the transcript within 2 weeks, you will receive a prompt to reply with any amendments. If you do not reply at that time, I will assume the transcript meets your expectations and will use the data you have provided.

POTENTIAL BENEFITS AND RISKS

Possible benefits of participation may include a raised awareness of the curriculum and may enable more focused attention on curriculum gaps. These gaps can hopefully be addressed in curriculum retreats and curriculum planning for the respective programs.

Possible risks are that you may experience some retrospective distress because of participation. The research faculty supervisor is available for follow up discussions regarding curriculum process.

CONFIDENTIALITY

Participant names, initials and organizational names will not be retained once data analysis collection is complete; fictitious names will be used for public documents.

The information you provide will be kept confidential. Your name will not appear in any thesis or report resulting from this study; however, with your permission, anonymous quotations may be used.

Data collected during this study will be stored using locked filing cabinets, and the location of computers containing research data away from public areas. Administrative safeguards include the limited access to personal information about participants. Consent forms will be stored securely, apart from audiotapes and transcripts. Technical safeguards include use of computer passwords and anti-virus software that protect data from unauthorized access, loss or modification. Data will be de-identified as soon as possible and kept until the final paper is prepared, after which time data will be shredded and audio tapes will be destroyed.

Access to this data will be restricted to Dr. Maureen Connolly and Helen Taylor.

VOLUNTARY PARTICIPATION

Participation in this study is voluntary. If you wish, you may decline to answer any questions or participate in any component of the study. Further, you may decide to withdraw from this study at any time and may do so without any penalty. Consent may be withdrawn before, during, or after the interview in person, by telephone, via email, or via Canada Post. Audiotapes, notes, and transcripts will be destroyed if you withdraw from the study provided the data has not yet been de-identified.

FEEDBACK TO PARTICIPANTS

A short summary as feedback will be provided to you so you have an opportunity to learn the outcomes of this research. You can receive this electronically or as a hard copy mail out, whichever you prefer. You will be asked for your preference at the time of the interview or may indicate it on your email response.

PUBLICATION OF RESULTS

Results of this study may be published in professional journals and presented at conferences. Feedback about this study will be available from Dr. Maureen Connolly (mconnolly@brocku.ca) or Helen Taylor (ht84at@brocku.ca) in September 2019.

CONTACT INFORMATION AND ETHICS CLEARANCE

If you have any questions about this study or require further information, please contact Dr. Maureen Connolly or Helen Taylor using the contact information provided above. This study has been reviewed and received ethics clearance through the Research Ethics

Board at Brock University **17-337-CONNOLLY**. If you have any comments or concerns about your rights as a research participant, please contact the Research Ethics Office at (905) 688-5550 Ext. 3035, reb@brocku.ca.

Thank you for your assistance in this project. Please keep a copy of this form for your records.

Please also forward this request to anyone you might know who would also be interested in participating in this research.

CONSENT FORM

I agree to participate in this study described above. I have made this decision based on the information I have read in the Information-Consent Letter. I have had the opportunity to receive any additional details I wanted about the study and understand that I may ask questions in the future. I understand that I may withdraw this consent at any time.

Name: _____

Signature: _____ Date: _____

Appendix H

Script and Questions for Students

I want to thank you for taking the time to speak with me today. My name is Helen Taylor and I would like to talk to you about your experiences as a graduate from the _____ (xxxxxxxxx University) Nursing program. Specifically, as one of the components of my PhD research, I am doing a case study to assess program effectiveness in order to capture lessons that can be used in future interventions. The interview should take less than an hour. I will be taping the session because I don't want to miss any of your comments. Although I will be taking some notes during the session, I can't possibly write fast enough to get it all down. Because we're on tape, please be sure to speak up so that I don't miss your comments. All responses will be kept confidential. This means that your interview responses will only be shared with research team members and we will ensure that any information we include in any results does not identify you as the respondent. Remember, you don't have to talk about anything you don't want to, and you may end the interview at any time. Are there any questions about what I have just explained? Are you willing to participate in this interview?

1. What degree did you graduate with from University?
2. What was your graduation year?
3. What is your present employment status (FT/PT/Casual)?
4. How many times did you write your licensing exam in order to be successful?
5. Did you take any specific practice exams or preparation courses either within your program or outside your program? Please elaborate.
6. To what extent did participation in your program at University advance or hinder student success? Please explain.
7. What strategies, interventions, tools, etc., would you recommend be sustained and/or scaled up? Please provide a justification for your response.
8. What strategies, interventions, tools should be discontinued? Why?
9. What were some barriers, if any, that you encountered? (e.g.: Staff turnover? Lack of key support? Lack of technical assistance?)
10. How did you overcome the barrier(s)?
11. What recommendations do you have for future efforts such as these?
12. Is there anything more you would like to add?
13. Did you graduate from the collaborative (2+2) program or the 4-year program?

If you graduated from the **Collaborative** program, please answer the following questions:

1. What worked well in the collaborative program? Please elaborate.
2. What would you change in the collaborative program? Please elaborate.

If you graduated from the **4-year program**, please answer the following questions:

1. What would you change in the 4-year university program? Please explain why.
2. What would you change in the 4-year university program? Please explain why.

Once you have returned your responses to me, I will review them and reply to you within one week if I have any need of clarification. I would hope you will be able to provide clarification within one week. Thank you for your time.

Appendix I

Student Questions via email

I want to thank you for taking the time to answer these questions today.

Please complete the informed consent and return with this questionnaire.

All responses will be kept confidential. This means that your interview responses will only be shared with the research team members and we will ensure that any information we include in any results does not identify you as the respondent. Remember, you don't have to respond to anything you don't want to.

If you have any questions before, during, or after answering these questions, please email me. If you wish to discuss anything by telephone or in person, please provide me with a contact number and convenient time, and I will telephone you.

Please answer the following questions and return to me via email:

1. What degree did you graduate with from University?
2. What was your graduation year?
3. What is your present employment status (FT/PT/Casual)?
4. How many times did you write your licensing exam in order to be successful?
5. Did you take any specific practice exams or preparation courses either within your program or outside your program? Please elaborate.
6. To what extent did participation in your program at University advance or hinder student success? Please explain.
7. What strategies, interventions, tools, etc., would you recommend be sustained and/or scaled up? Please provide a justification for your response.
8. What strategies, interventions, tools should be discontinued? Why?
9. What were some barriers, if any, that you encountered? (e.g.: Staff turnover? Lack of key support? Lack of technical assistance?)
10. How did you overcome the barrier(s)?
11. What recommendations do you have for future efforts such as these?
12. Is there anything more you would like to add?
13. Did you graduate from the collaborative (2+2) program or the 4-year program?

If you graduated from the **Collaborative** program, please answer the following questions:

1. What worked well in the collaborative program? Please elaborate.
2. What would you change in the collaborative program? Please elaborate.

If you graduated from the **4-year program**, please answer the following questions:

1. What would you change in the 4-year university program? Please explain why.
2. What would you change in the 4-year university program? Please explain why.

Once you have returned your responses to me, I will review them and reply to you within one week if I have any need of clarification. I would hope you will be able to provide clarification within one week. Thank you for your time.

