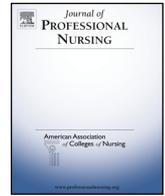




Contents lists available at ScienceDirect

## Journal of Professional Nursing

journal homepage: [www.elsevier.com/locate/jpnu](http://www.elsevier.com/locate/jpnu)

## Standardized testing in nursing education: Preparing students for NCLEX-RN® and practice



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### ABSTRACT

Standardized testing that predicts nursing student success accurately and identifies weak content areas has played a critical role in nursing education. Critics of such testing lament the harm of this type of testing, often misinterpreting common practices as well as overlooking all value. The goal of nursing school is to graduate competent professionals with adequate knowledge to practice safely, who can pass the NCLEX-RN® and gain employment. The use of standardized exit exams or comprehensive exams that are valid and reliable should be embraced as evidence-based, academically rigorous evaluation tools, much like the discipline of education has embraced the Praxis Exam. This paper will present evidence supporting the value of “program exit standardized testing” and address the importance of assessing students and focusing on minimum competency. As a profession that prides itself on the use of evidence to guide practice, we need to use evidence to guide policy development with respect to the use of standardized testing in nursing education.

### Introduction

Similar to all educational endeavors, the education and development of nurses is a complex system (Jacobson, Levin, & Kapur, 2019). There is no standard model for nursing programs, and even a cursory examination will show vast differences in curricula, resources, students, faculty, state requirements, and length of program. The one consistent aspect of nursing education is the NCLEX-RN®. “The NCLEX-RN® has been designed as a legally defensible, psychometrically sound examination to measure readiness for entry-to-practice,” (Spector, Hooper, Silvestre, & Qian, 2018, p. 27). Given the importance of this exam, one way to help ensure knowledge and skill development during the education process is the implementation of professionally developed standardized tests. These tests can identify weak areas for students and have excellent predictive validity in relation to passing the NCLEX-RN® (Barton, Willson, Langford, & Schreiner, 2014). Thus, these standardized tests can play critical role in nursing education. We begin our discussion with State Boards of Nursing (BON) and work through NCLEX-RN®, professional developed standardized testing, the philosophical/human learning argument, misunderstanding of high stakes, policy, and other domains.

### National Council for State Boards of Nursing

The National Council for State Boards of Nursing (NCSBN) is

charged with maintenance of minimum practice standards for nurses entering the workforce. The NCSBN (2018a,b) develops psychometrically sound standardized licensure examinations, NCLEX-RN®; consistent with current practice of an entry-level registered nurse (RN) is one part of that maintenance. The individual Boards of Nursing (BONs) that comprise NCSBN's membership protect the public's health and welfare, assuring that licensed RNs are capable of providing safe, competent nursing care. To achieve this mission, BONs establish standards for safe nursing care and issue licenses to practice as RNs in their respective states. Licensure in each state is the process by which BONs grant permission to an individual to engage in nursing practice after determining that the applicant has attained the competency necessary to perform within the RN scope of practice. Licensure is necessary when the regulated activities are complex and require specialized knowledge and skills and independent decision-making (NCSBN, 2016a, 2017, 2018a,b).

In addition, BONs create regulations with respect to nursing schools' first-time NCLEX-RN® pass rates. Those regulations vary across states and commonwealths. For example, the Pennsylvania (PA) BON (2018) requires academic nursing programs to have an 80% first-time pass rate. If a school does not achieve this rate, it is placed on probation, as the NCLEX-RN® first-time pass rate is what counts as a quality-nursing program. Different states have different regulations related to pass rates. We will discuss BON NCLEX-RN® first-time pass rate benchmarks in more detail later in this article.

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## NCLEX-RN®

NCLEX-RN® is a minimal competency exam that is professionally developed and tested and is the test everyone must pass to be licensed as an RN. From a quality standpoint, the reliability and validity evidence of this exam is extremely strong based on the normal expectations of a test of this magnitude (American Educational Research Association [AERA], 2014). AERA (2014) reported that the scores are internally stable, there has been appropriate item sampling validity tests, and the content and response patterns indicate it is measuring what is supposed to be measured indicating a high-quality assessment. Professionally created standardized tests comparatively are higher quality than teacher-made tests (Brookhart & Nitko, 2014). Teacher-made tests tend to be at the knowledge level on the cognitive scale and have item development errors (e.g., Brookhart & Nitko, 2014; Marso & Pigge, 1991). Finally, teacher-made tests are related; however, they are not a focus here.

### NCLEX-RN® failure implications

There are down side risks of NCLEX-RN® failure to the student, the school where the student attended, and, in some cases, the employer. For students who repeat the NCLEX-RN® because of first time or subsequent failures, their pass rates drop to 45.56% (NCSBN, 2018a,b). The second exam pass rate drops, like most licensing exams (e.g., Bar Exam repeaters was 39%; American Bar Association, 2017) because the test scores are very stable (reliable). There may be other reasons that are programmatic in nature or at the individual student level that add to the low pass rate for repeaters. Overall, though, if you fail the first time, there is a lower chance you will pass the second time. For the student, logically, a first time NCLEX-RN® failure is associated with consequences. There is the loss of time the student is required to prepare for retaking the test. There is potential loss of employment if already employed and continued employment is based on passing the exam. In relation to this failure, there is loss of compensation for not being able to obtain an RN position or loss of income due to losing one's position for failing the NCLEX-RN®. There are also potential psychosocial consequences, such as being embarrassed among peers and losing professional status. For nursing programs, the higher the overall first-time pass rate is for a program, the more likely the reasons for failure are individual student-based issues and not programmatic in nature (Czekanski, Hoerst, & Kurz, 2018). The low NCLEX-RN® pass rate for repeaters does draw attention to the need for students to stay in school where they have access to appropriate faculty support and structure so they may achieve success. Law schools face this same issue (A. London, personal communication, April 8, 2019).

### NCLEX-RN® pass rates

NCLEX-RN® pass rates are likely the most accepted outcome metric for nursing education, as graduates must be licensed for practice. As a result, nursing programs are generally judged on their first-time NCLEX-RN® pass rate. Some BONs and national accreditors use nursing first-time pass rates as an outcome measure (Spector et al., 2018). BONs require different percentages of pass rates ranging from 75% to 90%, with 61% of BONs requiring 80% as a benchmark. Some BONs set the benchmark pass rate at the national pass rate average. The Commission on Collegiate Nursing Education and the Accreditation Commission for Education in Nursing have set an 80% standard first-time pass rate; whereas the National League for Nursing (NLN) and the Nursing Commission for Nursing Education Accreditation set an 80% first-time pass rate standard over three calendar years (NCSBN, 2016b). We recognize that not every program or school has a state level benchmark to meet on first-time pass rate; however, external constituents judge schools on their pass rates. This is easily visible in any search of nursing program websites where high pass rate percentages are proudly posted.

Lower pass-rates can leave the impression of a lower quality academic experience for those interested in nursing programs, even though there are arguments for other indicators of quality (O'Lynn, 2017).

In addition, the hospital or other clinical site may lose a potential new RN hire and the monetary investments related to RN recruitment. If the employee was hired as a graduate nurse and not as an RN (which is permitted by some states), and then fails NCLEX-RN®, the graduate nurse could lose the position at the worst or remain as a nursing assistant. The total cost to the hospital for an early departure and associated orientation costs is approximately \$80,000 (K. Tharp-Barrie, personal communication, June 8, 2018). Furthermore, hospitals may be required to pay unemployment compensation.

This assessment plays a major role in nursing education programs and the passing or failure on this assessment has implications at many levels (Spector et al., 2018). Therefore, we see schools create and use a variety of programs and policies to help ensure that students pass the test. Professionally developed assessments, standardized tests, are one way to meet this goal.

## Professionally developed standardized assessments

Because of the importance the NCLEX-RN® pass rates, many nursing programs integrate professional standardized testing into the curriculum. There is no debate about the need to protect the public through standardized evaluation measures of nursing competence (NLN Board of Governors, 2012). While, it is recognized that *licensure exams* are high stakes for students and schools, these types of exams proliferate across a variety of professional disciplines (e.g., Advanced Practice Nursing, Nutrition/Registered Dietitians, Law, Accounting, and Education).

Standardized test discussions began in the early 1800s (Fletcher, 2009); however, the largest push can be observed in the early 1900s when there were 1300 achievement tests on the market (Fletcher, 2009). For the nursing profession, there has been a focus on standardized tests for the last 70 years. The benefit of administering professionally developed standardized tests in nursing programs is that the test items are highly scrutinized. Those considered experts within their field are hired to develop testing frameworks, content, and item types. For example, the Health Education Systems Incorporated (HESI) test items are psychometrically sound and are pilot-tested prior to their actual use on a test (Elsevier, 2010). This is normal for all professionally created tests, and they publish documentation related to this information. One of authors has developed frameworks and items for international tests finding that a single acceptable item can take one full workday to develop. Such effort is challenging for the everyday faculty member; as noted earlier, teacher-made test questions often contain flaws and test lower forms of thinking such as recall or comprehension (Brookhart & Nitko, 2014). Teacher-made tests generally tend to be inconsistent and lack the required critical thinking skills – the faculty member is teaching specifically to his or her course content and may lack the necessary resources to develop high-quality, rigorous test items similar to the NCLEX-RN®. Therefore, nursing faculty require educational tools – up-to-date remediation products and strong reliable and valid test questions that mimic the NCLEX-RN®. These tools could assist them in supporting students to be successful in their academic program and on the licensing exam.

Given the combination of lack of training and expertise in assessment development and the current national shortage of nursing faculty, professionally developed standardized tests are an efficient and effective way to offer reliable exam scores that can be used in valid ways. As a result, many nursing programs integrate standardized testing into the curriculum, such as HESI, NLN Testing Services, Assessment Technologies Institute, and Kaplan. Lauer and Yoho (2013) observed that 71.21% of nursing programs required remediation if a benchmark on a standardized test was not met.

Recent research on testing has demonstrated that practicing active

retrieval of knowledge enhances performance on meaningful assessments/exams and improves long-term meaningful learning (Karpicke, 2012). Retrieval in the processing of information occurs when one has to access prior knowledge to solve problems or answer questions and is different from recognition alone. Meaningful learning is thought to produce organized, coherent, and integrated mental models that allow students to make inferences and apply knowledge necessary for the nursing discipline (Karpicke & Grimaldi, 2012). Every time a student retrieves knowledge, the knowledge is changed which in turn improves the student's ability to retrieve it again in the future – thus supporting the benefits of cumulative testing.

“Testing is a powerful means of improving learning and long-term retention” (Karpicke & Roediger, 2007, p. 161). Cumulative testing is well supported in the educational research literature as a valuable learning tool. Numerous research studies with college students have supported the use of retrieval learning (Karpicke, 2012; Soderstrom & Bjork, 2014; Weimer, 2014). In the information-processing model, retrieval learning is the process of retrieving information multiple times in order to strengthen the trace of that information for later use. Faculty have found that cumulative testing supports success in the academic nursing program and on the licensing exam (Hinderer, Dibartolo, & Walsh, 2014).

Nursing programs can use these assessments in a variety of ways such as, simply diagnostic along the way and/or as an exit requirement. In relation to an exit requirement, numerous studies have shown improved NCLEX-RN® pass rates with the use in this manner (Barton et al., 2014; Lauer & Yoho, 2013; Young & Willson, 2012). A major complaint appears to center on the predictive validity of these tests related to NCLEX-RN®, which is only one part of the use of the test (e.g., diagnostic use of subsection scores from a test). The predictive validity of these tests has been documented (Chen & Bennett, 2016; Vandenhousten, 2008).

Specifically, “[B]ased on a total student sample of 49,115, one type of standardized test, the HESI, was determined to be between 96.36% and 99.16% accurate in predicting NCLEX-RN® success” (Nibert & Morrison, 2013, p. S2). Other professionally developed tests also indicate predictive validity with NCLEX-RN scores (Emory, 2013). With numerous peer-reviewed existing studies on the efficacy of the HESI Exit as a predictor of NCLEX-RN® success, the authors support standardized testing as a valuable tool in nursing education to prepare students for the NCLEX-RN® and practice (e.g., Langford & Young, 2013; Young & Willson, 2012; Zweighaft, 2013).

### The high stakes argument

The *high stakes* argument, or at least its concept, has been in the academic and public sphere since the mid-1960s (Anastasi, 1966). The problems with this issue as a generic argument are: (1) the layers of the educational system; (2) the role of choice in test participation; and (3) where the risk lies. High stakes testing is a constant topic now and the issues are not any different in the current period. The first is what high stakes mean. In general, a high stakes exam is really the use of achievement test results that carry serious consequences for students or for educators (AERA, 2010). The *National Council on Measurement in Education (2018)* defines high stakes testing as “[A] testing program for which there are important consequences” (p. 1). A more widely offered definition is “...a single, defined assessment that draws a clear line between those who pass and those who fail and delivers direct consequences to students, teachers, and schools...” (Schneider, 2014, p. 211). An important caveat in this is who made the choice related to the importance of exam results. Most high stakes tests in the current environment are for students in grades 3 through 12 in the United States (U.S.) where students have little choice in test participation. Furthermore, students have few rights to opt-out of the system. As noted in the *AERA (2010) Position Statement*:

Schools may be judged according to the school-wide average scores of their students. High school-wide scores may bring public praise or financial rewards; low scores may bring public embarrassment or heavy sanctions. For individual students, high scores may bring a special diploma attesting to exceptional academic accomplishment; low scores may result in students' being held back in grade or denied a high school diploma.

State legislators placed this reward or punishment process upon the schools. Those who are impacted by the test, students and teachers, had no voice in this process. Thus, it is quite high stakes for them because they have no voice. Lack of voice is one of many layers here that are missed when people state negative aspects of a high stakes test. However, at the post-secondary level, these issues are distinct from K-12 education and have different focus points.

This distinction has been noted for quite some time; however, it seems to have been lost in NLN's current arguments or the articles cited concerning high stakes testing (NLN Policy, 2012; Spurlock, 2006; Spurlock & Hunt, 2008). Crawford (1970), in a presentation about minimum passing levels for medical schools, discussed the exam as having high stakes because of the immediate “impact on the public and the potential for immeasurable good or irreparable harm (p. 1).” Thus suggesting the importance of focusing the high stakes testing discussion on the profession's mission of providing services to, for example, clients or patients, rather than a focus on the student.

Using the generic high stakes argument within a postsecondary program, there are exams that instructors give, along with many other types of assessments. Indeed, any one of these assessments could be considered high stakes. Any single assessment worth 40% of a grade could be considered high stakes, as failing it most likely will cause a failure of that course, which will most likely have a negative impact a student's on-time trajectory. However, standardized exit exams for a program, appear to have garnered the most attention. They are not the typical teacher-made class exam or a licensing exam; rather they are professionally developed, as discussed previously. This puts standardized tests in a unique position. In addition, some programs use these tests during the course of the curriculum attaching a minimum score for graduation, while others do not. For example, two of the authors previously administered both a general and accelerated baccalaureate program at an Eastern U.S. four-year research-intensive university. The following requirements were necessary to pass the final capstone course for graduation:

- Minimum course pass rate of “C” or 77 for all nursing courses (students permitted to only have one nursing course failure with the exception of the capstone course);
- Grade of Pass in all Clinical Courses;
- Comprehensive HESI final score of 950 (three attempts allowed);
- Grade of Pass on a Final Complex Standardized Patient Exam; and
- Successful demonstration of 10 Core Critical Nursing Skills in the last semester.

The exit exam, in this case a HESI test, is one of several elements required for graduation. While some may view the HESI Exit score bar as high, it was set at the very beginning of the program. Completion of all these elements resulted in an NCLEX-RN® pass rate for a 10-year period with 98% or higher NCLEX-RN® first-time pass rate for over 2000 diverse students (MacFadyen, 2008). Students who were not successful in the exit standardized test attempts were offered remediation for typically five to ten weeks until they achieved mastery of the content.

This is not the high stakes experience that most people think of in the K-12 environment where teachers and students are punished with few options to opt out. By opt-out, which has not been discussed in the high stakes argument, we mean that postsecondary education students have options of which professional program to join. This in turn leads to

the authors' disagreement with the NLN statement and several other issues. The [NLN \(2012\)](#) published the following policy statement, which is still cited today:

There is no debate about the need to protect the public through standardized evaluation measures of nursing competence and there is a clear understanding that licensure exams are themselves high-stakes for students, faculty, and schools of nursing. It is the prevalent use of standardized tests to block graduation or in some other way deny eligibility to take the licensing exam that is most concerning to the NLN (p. 1).

The authors concur with the majority of the tenets of [NLN's \(2012\) Fair Testing Guidelines for Nursing Education](#). However, the authors remain concerned about the NLN's stance on disregarding program-exit standardized test scores as a measure of minimum competency and permitting graduation despite known knowledge deficits. As stated previously, students are not required to apply and accept any specific nursing program. This is not a local public/charter/virtual school where you are required to attend by law. Students have options of which professional nursing school they want to attend. There are approximately 2272 Associate Degree in Nursing (ADN) and Bachelor of Science in Nursing (BSN) programs in the U.S. ([Spector et al., 2018](#)). One cannot argue that it is high stakes for the student, when they made the choice to join a program that has an exit exam requirement. The NLN policy ignores program and faculty autonomy to make internal policy decisions that lead to success for their programs. Finally, and most importantly, the exams help diagnose knowledge deficits and hold students accountable for their learning along the way. Ignoring this may result in a de facto decision permitting graduation despite known knowledge deficits identified through testing, enabling subsequent potential practice as a graduate nurse irrespective of the student's scores.

Given the nature of postsecondary choice, we propose that high stakes is an incorrect description of the test that denies the meaning of the experience. Furthermore, referring to program or school level exit standardized tests as high stakes testing, the focus appears to be directed on the harm inflicted on nursing students. Indeed, students (at Richard J. Daly College and City Colleges of Chicago) have led protests against use of standardized tests in nursing education programs calling for their total elimination; although the reasons for students' protests are not fully understood ([Marin & Moseley, 2014](#)). Some have coined the use of any type of program exit testing as high stakes. Unfortunately, there is also an impression that students are typically denied graduation by a single testing attempt. However, the authors have not been able to identify any program that uses one single attempt on an exit standardized test to determinatively deny or permit graduation. We purport that the use of the label high stakes testing (1) denotes a negative connotation to both students, parents, and (2) characterizes these assessments as pejorative. It would be more appropriate for faculty reconsider the language used with respect to exit testing using a more accurate description such as license test preparation examination as a program required assessment.

### Brief policy comparison

BONs, such as New York (NY) and Texas (TX), have a Policy Advisory Statement on use of high stakes exams. Their policies offer faculty guidance on use and percentage of weight assigned to the final course grade in nursing courses. It is unclear what evidence select BONs are using to determine these policies given the multiple studies conducted on the exit or end of program exams or their usefulness as a predictor of NCLEX-RN® success. The impetus for creating such advisory policies has not been published. We do not know if political pressure from students and their families might be one of many factors in creating such policies. The authors are concerned that a select number of BONs' advisory guidelines infringe on the autonomous rights of nursing faculty, "their academic freedom," in accredited nursing

programs to determine the best procedures for effective faculty evaluation of student performance. Unless such restrictions are based on sound evidence, the authors view these measures as overly restrictive and furthermore may result in additional NCLEX-RN® failures.

NY, however, provides a comparative case. NY has a BON policy advisory that states on single exit standardized tests, to determine graduation, no exam can exceed 10% of the final course grade. The average NY NCLEX-RN® pass rate ranged from a low of 76.8% to a high of 85.0% from 2014 to 2017 ([NY State BON, 2017](#)). The average TX first-time pass-rate from 2014 to 2017 ranged from a low of 81.02% to a high of 89.77% ([TX BON, 2018](#)). Utah (UT) is a different comparison, as it has no requirement for pass-rates on the NCLEX-RN®. In 2018, their overall pass rate was 84.90% (1580/1861) for UT educated first-time takers with a range of passing for programs was 53.01% to 100% ([UT BON, 2018](#)).

PA does not have a BON policy advisory against the use of exit exams; however, it does have a NCLEX requirement pass rate of 80% for a nursing program to maintain accreditation. From 2014 to 2017, the average NCLEX-RN® pass rate in PA ranged from a low of 82.2% to a high of 91.10% ([PA State BON, 2018](#)). The PA BON, for example, does not take any position with respect to the use of standardized testing. Dr. Linda Kmetz, Chair of Pennsylvania's BON has authorized the following statement: "The PA State Board of Nursing does not have any regulation that addresses the use of standardized testing. It is at the discretion of the individual school." (L. Kmetz, personal communication, June 8, 2017). Dr. Kmetz went on to say, "The State Board is concerned about program quality which is measured primarily by the NCLEX-RN® pass rates" (Kmetz, personal communication, June 8, 2017). The simple fact is that passing the NCLEX-RN® is required to be a licensed nurse and will remain a major indicator of quality.

### Philosophical/human learning argument

From research on human learning, motivation, and achievement, there are individual student aspects that affect academic performance and those differences have been discussed in a variety of ways such as grit ([Duckworth, 2016](#)), mindset ([Dweck, 2016](#)), or attribution of success or failure ([Schreiber, 2017](#)). Nursing students, however, have not always been discussed in these areas. We are arguing that one appropriate and successful way to adjust for these differences are use of both diagnostic exams throughout the learning process and as an exit requirement. This provides many opportunities to identify weak areas of knowledge and skills and to hold students accountable for the whole progression of learning.

Accountability for student learning outcomes is a mutual endeavor between students and faculty. As adults, students must assume responsibility for their learning and be active in the learning process. Faculty are responsible for providing high quality instruction, content, and activities that prepare students for professional nursing practice. This process also holds faculty accountable for what the students are learning in their classes when the diagnostic content aligns with their course material. If students are doing well on the related course material, they should do well on the standardized assessment.

Historically, there has also been media and public perception that nursing is not intellectually challenging ([BBC, 2010](#)). It is hard to imagine that medical or law students (or their parents) would state their respective professional education is too academically challenging; yet, nursing faculty and deans frequently hear nursing students levy this claim. Nursing is an intense rigorous career as is the educational process related to becoming a nurse. The need for a nurse to possess a high level of competency can be observed in any critical care unit where a number of novice nurses (newly graduated RNs) are nowadays commonly employed to care for seriously ill patients in critical care, emergency rooms, and other high acute-care settings. When almost one third of RNs are employed outside traditional acute-care settings, in a shift toward more out-patient, ambulatory, and community-based care, the

skills of judgment, clinical reasoning, and right actions of nurses are no less important, even if less life threatening (Buerhaus, 2017; Bureau of Labor Statistics, 2018). Nursing school faculty have a clear responsibility to graduate safe, competent clinicians.

Based on these responsibilities, we believe program data that informs curricula should be evaluated continuously. This would assure that learning progression and graduation policies remain contemporary and valid in light of the increased practice demands. Today, we would assert that nursing programs commonly include exit testing as a course requirement and not as a stand-alone barrier to graduation. In addition, nursing programs can provide a student with remediation (either optional or required), with an opportunity to re-test. Nibert, Young, & Britt's (2003) study of 35 nursing programs' progression policies did not identify a program that did not permit at least one opportunity to re-test. In addition, while we cannot confirm this practice as universal today, our assumption is that the practice of at least one test re-take remains the predominant practice.

#### *Other domains: the discipline of education and the Praxis Exam*

Similarities to standardized testing in nursing with the HESI Exit exist in our universities related to the undergraduate degree in education. The Educational Testing Service develops and administers the Praxis Exam, which is one of a series of U.S. teacher certification exams. A variety of Praxis Exams are usually required before, during, and after teacher training courses in the U.S. Programmatic decisions on test requirements vary across institutions. Education programs have their own gateway systems that are similar to the discussion here. Some programs require students to pass the Praxis Exams (as a sophomore) as entry into the professional program, or before graduation (Educational Testing Service Praxis, 2018). Others use the Pre-service Academic Performance Assessment, as a minimum competency test with three content areas—reading, mathematics, and writing. For some programs, achievement of a passing score at the gateway can be accomplished in one of two ways – taking the Pre-service Academic Performance Assessment test or meeting ACT/SAT cut-score criteria. Failure to meet the criteria or pass the test will cause a student to be removed from the program. In addition, there is commonly a GPA requirement and, most importantly, a review by multi-levels of faculty and administrators, including Program Advisors, Academic Advisors, and the Program Directors or Chairs. Each one of these aspects might be referred to as high stakes.

#### **Preparation for the NCLEX-RN®**

The majority of students and faculty are concerned about student performance on the NCLEX-RN®. High failure rates can damage a nursing program's reputation and can cause a possible loss of new students. Although schools make every effort to select the best applicants for their respective programs, some students struggle based on academic or personal issues during their academic experience. Identifying academic performance trends that result in poor NCLEX-RN® performance is critical. Such factors may include previous course failures, significant absenteeism, borderline science and clinical nursing grades, and decreased study time because of personal commitments (Smith Glasgow, Dreher, & Oxholm, 2012).

Schools of Nursing have selected varied means of assessing learning. Passing requirements based on evaluation data and confirmed nursing expertise can assist students in acquiring the requisite knowledge to pass the NCLEX-RN® successfully and practice safely as a professional nurse. One essential best practice is that curriculum requirements are communicated to students. As the practice of nursing changes over time, curriculum and policy changes need to reflect increasing nursing standards, as well as the introduction of new drugs, treatments, and technologies. At the beginning of each academic year, therefore, students should be required to read the School's Policies and Student

Handbook with their actual or electronic signature acknowledging that they understand that they are responsible for understanding and abiding by the current policies. Additional information should also include the University Catalog, handbook, and course profile further attesting to this requirement.

It is in the students' best interest for faculty to emphasize the importance of preparing for standardized tests and the NCLEX-RN® exams early in the curriculum. Furthermore, faculty need to assist students in mastering content and improving scores, rather than waiting to bolster weaknesses in the last term of the program. This approach can decrease both anxiety for students and associated stress on faculty. A comprehensive approach to NCLEX-RN® success is warranted, including for example: (1) content-specific computerized assessment exams; (2) test-taking seminars; (3) incorporation of NCLEX-RN® practice test items, and NCLEX-RN® advisement system.

Nursing faculty must also establish clear policies that promote students' success. Rather than offering a stand-alone, comprehensive exam at the end of a program, faculty members need to design a comprehensive integrated approach to NCLEX-RN® preparation delivered throughout the curriculum. Such a system includes faculty's use of clinical specialty assessment exams as well as use of a review course with a comprehensive exam and remediation throughout the student's program of study (Smith Glasgow et al., 2012).

When developing academic admission and progression policies for undergraduate nursing programs, it is critical for faculty to determine factors that promote success in their respective academic program on the NCLEX-RN® based on the literature and their own program outcomes. By analyzing the data, faculty can determine, for example:

- trigger courses necessary for NCLEX-RN®;
- number of maximum nursing failures allowed before dismissal;
- GPA of required science courses prior to admission;
- GPA of required nursing courses; and
- Other unique factors required for student success (e.g., English language proficiency, maximum number of course withdrawals allowed to progress to graduation) (Czekanski et al., 2018).

The Commission on Collegiate Nursing Education also requires Schools of Nursing to demonstrate its systematic program evaluation. HESI Exit Summary Reports, for example, provide content area scores that can be used to evaluate curricular strengths and weaknesses. Smith Glasgow et al. (2012) provide many other additional critical issues to be considered when making these important decisions.

#### *NCLEX-RN® proposed changes*

The proposed changes to the NCLEX-RN® items currently under development are anticipated to go into effect on April 1, 2023. These proposed changes will make the exam more cognitively complex to respond to an increasingly complex practice setting. The technological advances in testing options have allowed test item writers the ability to create intricate cognitive models which can be transferred to assessment models to create these new items NCSBN (NCSBN, 2018a,b). The advances in computation for the mathematical models for scoring and score development have also aided in this progress. For example, in the NCLEX-RN® re-design, the items can include changing information in a scenario over time to examine if the test taker is using correct, abductive reasoning (i.e., developing hypotheses in the test item scenarios). Thus, the cognitive complexity of the test will increase because of the more complex nature of the items (Doyoung, 2018; NCSBN, 2018a,b; Paas, Renkl, & Sweller, 2003). This increase in complexity will cause an increased cognitive load for the student. By cognitive load, the authors mean the number of elements and levels of interactivity among those elements within an item (Paas et al., 2003).

In Dickison et al. (2016), the example items show the level of simulation that is possible in current testing technology. There are

multiple interacting elements that generate hypotheses (abductive reasoning) and prioritize those hypotheses – absorbing a great deal of the computational power in working memory. If test takers have not encoded that information for easy retrieval and use in working memory, their ability to answer the questions will be severely diminished. Schools of Nursing do not have the human capital and fiscal resources to have faculty consistently engaged in development of these new items. Schools will need a third party to help in the development of these complex test items, in addition to ensuring the highest level of test item security. There will also be changes to the learning activities, tasks, and student-faculty engagement in course work that will force students to integrate knowledge succinctly across courses.

## Conclusion

Many nursing faculty already acknowledge that there is: (1) a plethora of published literature discussing ways to improve NCLEX-RN® pass rates; and (2) no single method currently exists that assures the best way to achieve student success on the NCLEX-RN®. Faculty would benefit from evaluation of their own student outcome data making curricular and evaluation decisions based on that data. The respective autonomous faculty set the competency score “bar” or grading metrics that support their respective academic program outcomes. The authors have taught in several different academic nursing programs and attest that programs are different with respect to student demographics, student profiles, curricula, and university culture. Therefore, faculty are in the best position to set the competency score. Given the cost of higher education, it seems wise and ethical to provide every resource available to students to assist them with passing the NCLEX-RN® to assure their obtaining gainful employment as RNs.

The 2013–2014 NCSBN Strategic Practice Analysis has highlighted the increasingly complex decisions newly licensed nurses make during the course of patient care. As patient care becomes more complex, the NCLEX-RN® will need to respond accordingly to protect patients' safety with an adequately trained nursing workforce (NCSBN, 2018a,b). How will students know that they are sufficiently prepared for practice as RNs in some states or their ability to pass the NCLEX-RN® in all states? An acceptable score on a standardized exit or comprehensive exam will provide guidance in this area. Given that some graduates can enter nursing practice provisionally before taking the NCLEX-RN®, while in some states, graduates do not have to take the NCLEX-RN® for up to one year post-graduation – patient safety must take priority.

Society deserves safe, competent practitioners who possess knowledge and clinical reasoning competencies. Graduating students also need to know they have demonstrated the minimal competencies that should highly predict their NLCEX-RN® success. If (1) safe, competent practice can be evaluated based on exit standardized tests (that closely mirror the NCLEX-RN®) as an evaluation method used by nursing programs and (2) this practice encourages students to study aggressively and perform better, then it is the authors' opinion, that exit standardized tests fulfill that purpose. A comprehensive set of graduation metrics should inform faculty and students whether students are actually learning the requisite knowledge, clinical reasoning skills, communication skills, and the necessary ethics/values to practice safely and persist to graduation. The goal is to graduate competent professionals who (1) have adequate knowledge to practice safely, (2) can successfully pass the NCLEX-RN®, and (3) gain employment. Thus, standardized exit exams or comprehensive exams that are valid and reliable should be embraced as an evidence-based, academically rigorous evaluation tool, much like the discipline of education has embraced the Praxis Exam. As a profession that prides itself on the use of evidence to guide practice, we need to use evidence-based criteria to guide policy development with respect to standardized testing in nursing education.

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