NCSBN

Bringing Nursing Regulation & Education Together

LEADER TO LEADER

FALL 2023

Next Generation NCLEX Pass Rates

Regulator Perspectives

NCSBN successfully launched the Next Generation NCLEX® (NGN) on April 1 of this year. Anecdotally, reports were that candidates liked the new format and responded positively to the changes made in the exam. However, it would be several months before the first quarter pass rates under the new exam and the new scoring model would be published.

NGN's implementation came at a time when the decrease in NCLEX pass rates had been of concern to nurse employers, nursing programs and nurse regulators for several years. Unsurprisingly, the disruptions to education and the world at large during the global COVID-19 pandemic had both an impact on nursing education and the pass rates. Nursing students dealt with the challenge of having to immediately pivot to remote learning and virtual classrooms. Clinical placements were limited, and in some cases, eliminated from the curricula. All of these circumstances had the potential to affect pass rates.

NCSBN undertook the creation of an exam that accurately reflects the increasing acuity and complexity of client care and the role of the nurse in safely managing that care.

The new iteration of the NCLEX exam, which has as its core the NCSBN Clinical Judgment Measurement Model (NCJMM), was the result of more than a decade in research and development. Cognizant that entry-level nurses are required to make increasingly complex decisions while delivering patient care, and that these decisions often require the use of clinical judgment to care for patients safely and effectively, NCSBN determined it needed to incorporate clinical judgment and decision making into the NCLEX.

NCSBN undertook the creation of an exam that accurately reflects the increasing acuity and complexity of client care and the role of the nurse in safely managing that care. NCSBN made the world's premier licensure exam even better through increased precision and items that look more like real life nursing practice.

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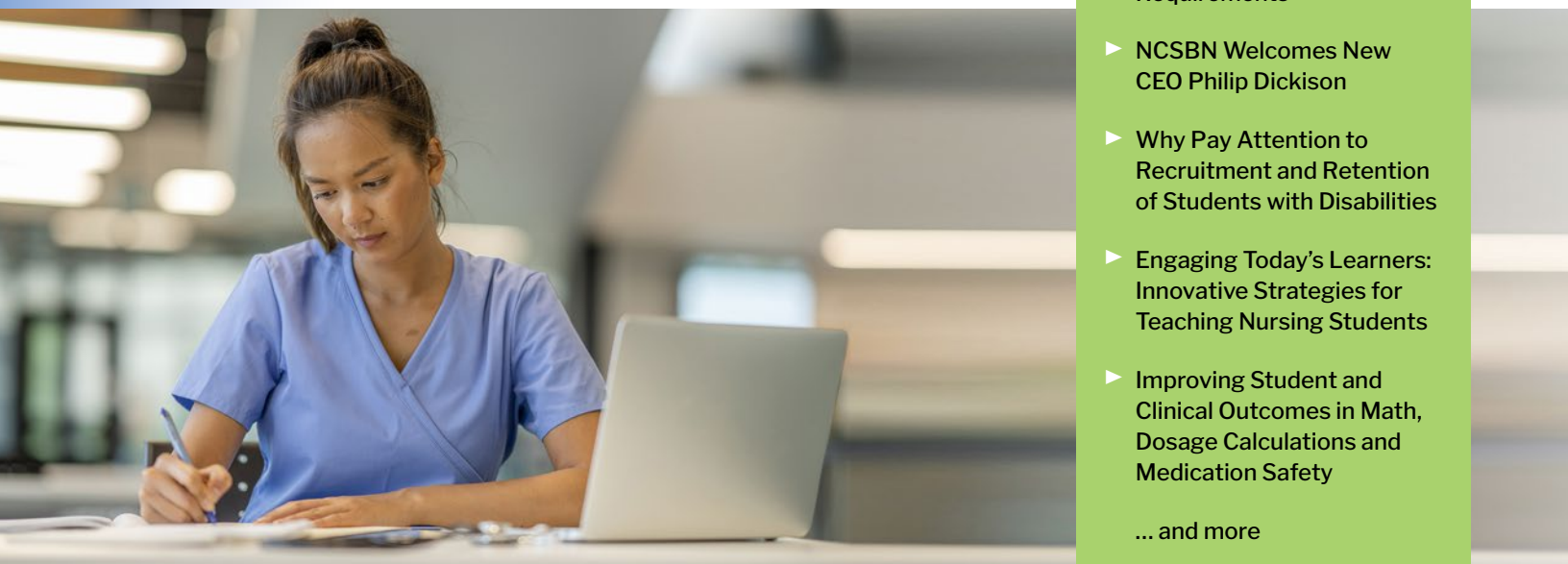

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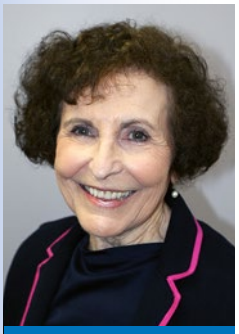

Janice I. Hooper, PhD, RN, FRE, CNE, FAAN, ANEF

Gerianne Babbo, EdD, MN, RN

Philip Dickison, PhD, RN

Jennifer Lewis, PhD, MSN/MBA, RN

While some in the nursing community called for a delay in the implementation of NGN due to the pandemic, NCSBN continued to move forward. Assuring that new nurses entering the profession were safe and competent to practice within an increasingly volatile and challenging health care environment was paramount to public safety and of upmost importance to NCSBN and its member boards.

This huge undertaking was only possible because of the incredible assistance of more than 600 expert nurse volunteers who contributed their time and effort as subject matter experts.

Lead Nursing Consultant for Education at the Texas Board of Nursing, **Janice I. Hooper, PhD, RN, FRE, CNE, FAAN, ANEF,** says, "My reaction in following the development of the NGN is that I am impressed with the extensive research that has guided the process. Since the practice analysis from 2012 indicated that nurses at all levels are engaged in decision making based upon their knowledge and patient assessment, the development of the NGN was a logical step for the NCLEX. The new direction initiated a 'jump' start in nursing education and created a new excitement as we were moving beyond the pandemic. I knew faculty would develop new teaching strategies that would improve nursing education and consequently, nursing practice!"

In the past six years, 127 item development panels were held to write and review all NGN items. This huge undertaking was only possible because of the incredible assistance of more than 600 expert nurse volunteers who contributed their time and effort as subject matter experts.

In addition to research and development work that was the foundation for the updated exam, NCSBN also conducted extensive outreach to keep stakeholders updated as we approached the implementation date. NCSBN gave 143 presentations across multiple professional groups. There was outreach to all important stakeholders, from leading regulators and educators in the U.S. and Canada to publishers that provide preparatory resources for students. More than 60 presentations pertaining to the research results were given at professional conferences. These presentations allowed NCSBN to reach more than 22,000 attendees from 2018 to 2022.

NCSBN CEO **Philip Dickison, PhD, RN,** who was previously its chief operating officer overseeing the NCLEX launch, noted about this undertaking, "Although clinical judgment was being taught in prelicensure programs, NCSBN worked with educators to explain how the NGN was being constructed using the Clinical Judgment Measurement Model at its core," he notes. "Educators were introduced to the types of questions that would be included and the type of exam experience a candidate will have."

The first quarter passing rates for the NGN saw an increase in the number of both registered nurse and licensed practical/vocational nurse candidates who successfully passed the exam. Exam passing rates for April 1 – June 30, 2023, can be found here. These passing rates are similar to statistics reported prior to the pandemic.

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"The Washington state programs were thrilled with the NGN pass rates! It was a such a positive boost to program morale after all the experiences with COVID-19 and the declining pass rates during that time period," comments **Gerianne Babbo, EdD, MN, RN,** director for nursing education, Washington State Board of Nursing.

"The increase in those who passed the exam is a reflection of how well the enhanced test mirrors actual nursing practice," Dickison asserts. "It is now the first licensure examination to extend the CAT methodology to polytomously scored (partial credit) items, which increases the precision of measurement and allows for better differentiation in candidates' understanding than simply placing their responses in 'all correct' or 'all incorrect' groupings."

Jennifer Lewis, PhD, MSN/MBA, RN, director, Education, North Carolina Board of Nursing, says, "North Carolina program directors are excited to see the positive trends in pass rates from the previous quarter, and they are cautiously optimistic that those trends will continue to the end of the calendar year."

NCSBN's foundational mission is public protection. In order to assure a safe and competent nursing workforce, NGN, just like all previous versions of the NCLEX, will be continually evaluated to make sure it remains current with nursing practice. ◆

Next Generation NCLEX Pass Rates

Educator Perspectives

Eileen Fry-Bowers, PhD, JD, RN, CPNP-PC, FAAN

Lisa Gonzalez, MSN, RN, CNE, CCRN-K

Lee Schmidt, PhD, RN

Nursing programs around the U.S. worked steadfastly to prepare their students for the April 2023 launch of the Next Generation NCLEX® (NGN). *Leader to Leader* spoke with three experts in the field of nursing education on their programs' experiences before and after the launch:

Eileen Fry-Bowers, PhD, JD, RN, CPNP-PC, FAAN, Dean of the University of San Francisco's School of Nursing and Health Professions

Lisa Gonzalez, MSN, RN, CNE, CCRN-K, Professor of Nursing at the College of Southern Maryland

Lee Schmidt, PhD, RN, Executive Associate Dean for Academic Affairs at the Marcella Niehoff School of Nursing at Loyola University, Chicago

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What has your experience been with the NGN's launch in spring 2023?

Eileen Fry-Bowers: I can say from my colleagues and faculty, overall, there was a great deal of anticipation, but also some trepidation. It's something we've been hearing about and preparing for, but you never know exactly what it's going to be until reality hits. Everybody was thinking, "I think we're prepared; I hope we're prepared, but let's see." I think everybody had a little bit of anticipation around the launch.

> I can say from my colleagues and faculty, overall, there was a great deal of anticipation, but also some trepidation.
>
> – Eileen Fry-Bowers

Lee Schmidt: We knew it was coming. Our faculty really thought it was a pretty seamless transition. We've been doing a fair amount of faculty development; the types of things you have to do to understand what's happening and then to be able to communicate that to students. It wasn't a major stressful event.

Lisa Gonzalez: My perspective is a little unique. I was invested in the NGN early on because of my background, recognizing that learning to think like a nurse was essential. When I was a clinical instructor early on in my nursing education career, I remember working with students and realizing they can write a care plan, but if they are not thinking like a nurse, they are missing something. So, very early on, I recognized that learning clinical judgment and clinical reasoning were key ingredients to becoming an effective nurse.

Leading up to the NGN, it felt kind of like a snowball. There was so much conversation and buzz around it that I think a lot of people had a nice fair warning. Because of the conversation, there was a lot of idea-sharing, resources and support. There was a learning curve as well. Some wondered, "How is this different than what we were doing before?" For us, we had this heightened awareness that, yes, this new test is coming, so we must get ready.

How did your faculty prepare for the launch of the NGN?

Fry-Bowers: Initially, faculty were taking advantage of the meetings and presentations at conferences, listening to webinars — just trying to familiarize themselves with the NGN, what to anticipate in terms of the questions and so forth. As it got closer, faculty really dove into understanding clinical judgment teaching models, and then also trying to change the way they assessed students in the classroom.

One of the things I've heard a lot from my faculty is that they've increased the use of case studies, and the problem-based learning process, to really reinforce critical thinking skills and to help develop the skills that were necessary to meet the demands of the NGN in terms of the types of questions; this helped them move away from that standard multiple-choice model of questions and really be able to think things through more expansively.

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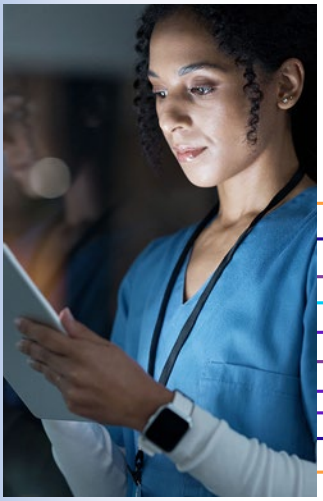


Schmidt: I do think it's caused us to be a little more intentional in how we present our content in terms of incorporating more case studies. Our simulation team adopted the Clinical Judgment Measurement Model to make sure our simulation scenarios in the undergraduate nursing program were aligning with that model and our debriefing even uses the terminology of the model. It's embedded in our overall debriefing model. I think that was really helpful, too. We educated ourselves so that we could educate the students and allay their anxieties, but also educated ourselves so that we could make some adjustments into our teaching. We were fortunate to be able to use external resources, too.

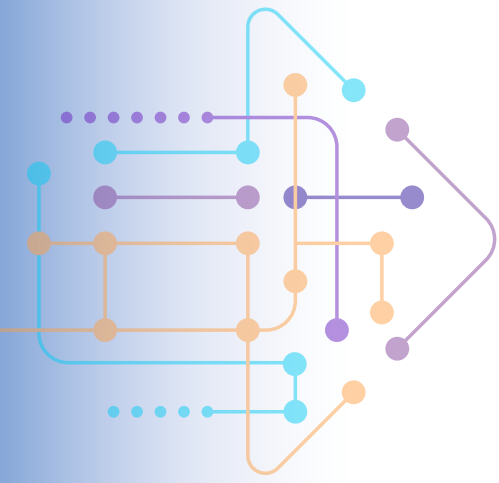
Gonzalez: There was a big learning curve, so we ended up participating in faculty development workshops. The state of Maryland launched an NGN faculty development initiative as well. The University of Maryland organized and hosted online workshops for nursing educators throughout the state. I was asked to present one of the workshops to share how concept mapping can be useful as a teaching strategy to develop students' clinical judgment.

The University of Maryland initiative and other faculty development opportunities felt like a nice, coordinated effort. There was so much thought, intentionality and support out there. This was probably one of the best-case scenarios with how this went, which is why I am not surprised to hear the students are doing so well.

> I do think there was a lot of panic out there with some of the students, too, so it was important just to allay the fears and get it back to: think like a nurse.
>
> – Lee Schmidt

What are your students' overall impressions of the new NGN launch? Have you noticed a difference in students' outlooks before and after the launch?

Schmidt: Anecdotally, what students have told us is that taking the exam wasn't as scary as they thought it would be. I speak to the leadership classes every year in their final semester. I talk about Nurse Practice Acts, NCSBN and the NCLEX. Those are the three topics I cover, and I include that information: this is coming, this is how you prepare for the NCLEX, these are the types of questions. I give them the statistics that we have for our pass rates, how long people typically take with the exam. I think even just doing that is important, just building that in. I do think there was a lot of panic out there with some of the students, too, so it was important just to allay the fears and get it back to: think like a nurse.



Gonzalez: I am keeping up with students, and many of them say that they felt like they were prepared, they knew what to do and they could do it. They felt like it was exposure to things they learned about in their nursing program at the College of Southern Maryland, and in their test prep efforts. Some of them actually enjoyed having that added context. As a nurse, those contextual factors do matter, and they do give them the tools they need to be able to think through questions appropriately, like a nurse would. Since they had been practicing this kind of thinking all along in the nursing program, they felt like the NGN was a natural extension of that.

Has the NGN affected the way you or your faculty teach, or has it affected the way your students want to learn?

Fry-Bowers: We're trying to change our overall approach to educating our students. We're using the clinical judgment model for the NGN and also the implementation of the AACN New Essentials both synergistically to really try to help our students to develop that clinical judgment to be more practice ready. I think our students are understanding that we're trying to get them to the point where they can go out and be more prepared in their first years as a professional nurse. That it's not just about whether they can start an IV — it's about being able to think critically about what's happening with their patient and respond accordingly. I think they are really starting to get that nursing is more than a collection of skills; it's a way of thinking and it's a way of problem-solving.

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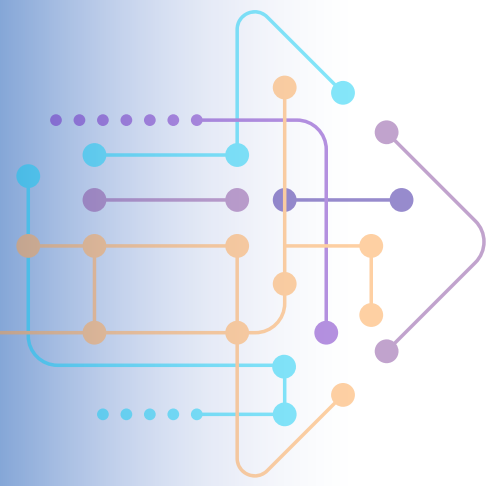
Schmidt: Yes, for the faculty. Because our program committee adopted this approach, we started using the language. Instead of talking about the "nursing process," we're talking about "clinical judgment," and we're using the wording that's associated with it. Students seem to be more engaged with that approach. I think that just by adopting the kind of language that is common across the program, that in itself is really facilitating the instruction because faculty have to think that way too now.

Have you noticed a change in pass rates since the launch of NGN?

Fry-Bowers: For our group that graduated in May, we actually did see an increase in the pass rate. I am not sure what to attribute that to. We are finally back to a more normal education process for our students. We did see a dip in our pass rates through the pandemic because our students weren't in the clinical setting, and so we're finally coming back. I don't know if it's attributable to that, or to a different type of exam, or to the changes faculty have made in the way they assess students. We really need more data, obviously, but I was very pleased.



Schmidt: We had very high first-time pass rates before the pandemic. Like nearly everybody else, we dipped a little in the pandemic, but we were still pleased with our pass rates. I would say it has been a pretty substantial increase since the NGN launch. We think it speaks to the quality of our program and preparing our students. We're actually close to our pre-pandemic pass rate levels.

Gonzalez: Our pass rates have gone up a lot. Our students felt like they went into this feeling super prepared. I got many comments about how our nursing program at the College of Southern Maryland taught and prepared them well. Many said there were no surprises going in.

Is there anything you'd like to share about your program's experiences with the NGN thus far? Any advice you'd give nursing faculty about preparing students for the NGN?

Schmidt: It's not a time for panic. If the faculty are stressed about the NGN approach, the students are going to notice it. It's best we recognize that, yes, it's a different way of assessing performance, but we need to think about what we've been doing all along that's been successful, and not get so stressed out over things like this. We have to share that with the students too. They need to be confident that they've received the quality education that's going to prepare them for a career as a professional nurse. We want them to be confident going in that they've been prepared well. I think faculty need to be confident that we've prepared students well, too.

> ... the intentionality of integrating a clinical judgment model was really important for our nursing program because when we used a clinical judgment model as our structure, we were able to align all the other pieces.
>
> – Lisa Gonzalez

Gonzalez: I am curious now how this translates to the new graduate world. There are two gaps that have been really concerning to educators. First, how do we teach our nursing students to think like nurses and get them through the Next Generation NCLEX? I really hope that educators don't stop here though because we have another gap, how do we get this to the new graduate population? How do we transition them through their first few years when they lack confidence, when there's a lot of stimulation in the real world, and when there are a lot more things to think about? We need to make sure we can help these new graduate nurses transition to practice effectively.

I would just say, the intentionality of integrating a clinical judgment model was really important for our nursing program because when we used a clinical judgment model as our structure, we were able to align all the other pieces. We have a curricular thread and a program outcome dedicated to clinical reasoning and clinical judgment. We also use a clinical judgment model in clinical education as part of our clinical evaluation tool that's

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grounded in Lasater's Clinical Judgment Rubric. So, for us, there were a lot of pieces to organize, and it really helped to have that consistent exposure to clinical judgment. It helped to get the faculty on the same page, to get the students exposed to some of these concepts early on in the program, and then to thread it throughout.

Fry-Bowers: We are in a really interesting time in nursing education right now. We have this sort of confluence of events. Even before the pandemic, there was the effort to implement the NGN, the development of the clinical judgment measurement model, and the AACN Essentials Task Force looking to revise curriculum and move nursing into a competency-based education model. We have a lot of opportunities to learn from all the work that went into these various efforts, and the learnings that came out of the pandemic. It's a really exciting time to think about how we can leverage both the NGN and the Essentials to really move nursing education and nursing practice forward to ensure we are keeping up with the changes in health care, to make sure we are producing practice-ready graduates, that we are developing life-long learners, that we are really enhancing the professional character of the nursing workforce. We have a lot of tools we can use to leverage and that's what we're trying to do at USF. It's really given us a license to stop doing things the way we've always done them, it gives us an opportunity to be creative and to come up with new ways, so that we make sure that nursing education is nimble, agile and adaptable for the future.

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– Eileen Fry-Bowers

If you develop critical thinking skills, you can put all the pieces together, and then it doesn't matter if you work in home care, acute care or the public health setting — it's all the same way of thinking. It's much less about memorizing the signs and symptoms of something, and it's more about putting the pieces together with whatever you're seeing, bringing all your knowledge to bear. In that regard, it's really keeping up with the changes in health care, to make sure we are preparing nurses to not just work in those settings, but to be leaders in all of those settings. I think that's really important for the profession, too. ◆

Q & A

Q: Our program will have students completing their clinical experiences in states other than where the program is located. I know the requirements of those states, as well as the state where the program is located, must be met. What is the easiest way for me to find out what other states' requirements are?

A: At NCSBN we maintain an easy-to-use Distance Education webpage with host state requirements for nursing program clinical experiences. Host states are outside of the state where the program is located. For example, if the program is located in Michigan, but the student has clinical experiences in Illinois, then Illinois would be the host state. It is currently being updated as the requirements do change. If you click the link, you will find the requirements for prelicensure nursing programs and APRN nursing programs. ◆

NCSBN Welcomes New CEO Philip Dickison

On Oct. 1, 2023, Philip Dickison, PhD, RN, began his tenure as NCSBN's new CEO. Since 2017, Dickison served as NCSBN's chief operating officer (COO). Prior to that, he served as NCSBN chief officer, Examinations, for seven years.

Dickison has nearly four decades of experience in leadership, planning and not-for-profit business operations working with regulatory bodies, licensure testing and educational institutions. A prolific researcher, with a PhD in Quantitative Research, Evaluation and Measurement, he shepherded the launch of the groundbreaking Next Generation NCLEX Examinations. His knowledge and experience in testing have made him a renowned leader in the world of psychometrics and an in-demand speaker on the subject.

Dickison is a registered nurse with lifelong dedication to patient care. Prior to joining NCSBN in 2010, he was director of health professions testing at Elsevier, Inc. and associate director at the National Registry of Emergency Medical Technicians. He also served 11 years in the United States Air Force as an emergency medical technician, paramedic and a medical service specialist.

Leader To Leader spoke with Dickison to discuss his new role and NCSBN's future:

You're a psychometrician, and you led the NCSBN Examinations Department before assuming your previous role as COO. How did these positions prepare you for being NCSBN CEO?

I chose to come here 13 years ago because I believed in NCSBN's mission, passion and commitment to public safety. I knew that if I wanted to make a difference in regulatory excellence, the nursing profession and public safety, there was no other organization in the world that I wanted to be a part of.

> The longer I've worked at NCSBN, the more excited I've gotten about what we are doing and how I can help in other areas. I've learned and grown in these roles, I've built relationships with our members, and that has prepared me for this next step.
>
> – Philip Dickison

Working in these roles at NCSBN since 2010 has given me a perspective on how the work of the exam impacts nursing policy. My time leading the Examinations Department and working closely with former CEO David Benton taught me a lot about the challenges and complexities that exist. The longer I've worked at NCSBN, the more excited I've gotten about what we are doing and how I can help in other areas. I've learned and grown in these roles, I've built relationships with our members, and that has prepared me for this next step.

How will artificial intelligence (AI) remote proctoring — the ability for a candidate to take the NCLEX anywhere — impact exam candidates and educators?

Remote proctoring is an immediate need — we hope to have it in place by January 2025. Why is it immediate? Because the pandemic taught us that we could get shut down again. If our test gets shut down, nurses don't go to work and they don't get licensed.

Remote proctoring benefits candidates because it removes the mystery and the fear of going to an unknown space to take a test. Fear is built-in error and we will get a better measurement if we can remove it. The test centers will still be available to candidates who prefer them, but candidates won't be compelled to travel to a Pearson site, go through building security, then go through the test security. That's uncomfortable for some candidates. With remote proctoring, the candidate can be in their space, on their computer. The only remaining unknowns are the questions themselves — what do they look like? And we're showing them those now with our test plans. By removing the fear and the unknown, we will better measure what a candidate knows in order to practice safely.

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– Philip Dickison

A lot of people have trouble wrapping their heads around AI. Remote proctoring is one facet of the breadth of AI. What are some others?

AI has so many possibilities, as long as we understand we are still in control of it. You have to put guardrails around it and supervise its learning. A human being must make the final decision. It's like training a child. You don't let small children drive or make all of their own decisions, but you do let them run around a defined space. They crawl, they chew on things and you let them do that. When they make mistakes, you correct them. Gradually, you increase the learning space. Through ever-increasing areas, you teach them. Eventually you give them all of the space.

So with AI, let's teach it to learn in the exam space, around security issues, such as facial and voice recognition. If we can do this in the exam space securely — the immediate need — then we can expand it into other areas like the business space and the regulatory space. Let's say we had a project where we wanted to know what each state's nurse licensure application looked like. Today we'd have to digitally capture and then manually compare them. AI could do that and provide us with a synopsis. AI could provide a board of nursing with business analytics, on a daily basis, of workflows or other data.

How would you describe your leadership style?

People who know me say I'm defined by my curiosity, passion for the new, calculated risk and heart for seeing success in others. I also believe in transparency. I tell the Board of Directors, "My job is to tell you the good, the bad and the ugly," because if all I'm going do is tell them the good stuff, then they probably don't need me.

These are the things that define me, not my job title or my academic degree. After I got out of the military, I was a coordinator at a testing room. That eventually led me to be a psychometrician. But I started as a coordinator. It taught me to remember where I came from. I believe no one gets to where they are on their own. As CEO, there are 153 people at NCSBN depending on me. My job is to lead out in the front because I think people will follow. If you get behind the string and push it, it'll bunch up. As a leader, you get out in front and pull. ◆

Why Pay Attention to Recruitment and Retention of Students with Disabilities

By Sarah H. Ailey, PhD, RN, FAAN, CNE, PHNA-BC, Professor, Department of Community, Systems and Mental Health Nursing, Rush University; and Marie Lusk, MBA, MSW, Director, Student Accessibility Services, Rush University

On Sept. 26, 2023, the National Institutes for Health (NIH) recognized people with disabilities as a population with health disparities (NIH, 2023). In the NIH announcement, it is noted that people with disabilities, who make up 27% of the adult population in the U.S. (Centers for Disease Control, 2013), have shorter life expectancies, worse health outcomes, poorer access to healthcare and poorer access to health promotion than people without disabilities.

> Were Florence Nightingale a student today, she would require accommodations. Would she feel welcome to disclose to her school based on the language utilized in technical standards?

In the *Future of Nursing* (2021), the National Academies of Sciences stress the need to recruit nurses and nurse educators who represent/mirror the nation's population as part of addressing disparities and leading transformation toward a system that is equitable for all. Recruiting and retaining students with disabilities is part of such efforts. Health professional students may choose not to disclose their disability out of fear of risk to their future (Shahaf-Oren et al., 2021). While students with disabilities make up 19% of the undergraduate population in the U.S. (Welding, 2023), reliable statistics on the percentage of nursing students with disabilities were not found.

Florence Nightingale, considered the mother of modern nursing, had disabilities. Bipolar disorder and chronic brucellosis are considered as possible causes of her disabilities (Washington Times, 2003). Were Florence Nightingale a student today, she would require accommodations. Would she feel welcome to disclose to her school based on the language utilized in technical standards? Would she have been turned away or discouraged to choose another field as this field is known to be tough on their own?

To make sure we would admit Florence Nightingale as a student today, evaluation of technical standards is necessary. Technical standards for admission refer to the non-academic skills a student must be able to complete with or without accommodations (Marks & Ailey, 2014). Current strategies across health science institutions are to address the "what" rather than the "how." The "what" refers to issues such as ability to communicate being able to be taught assessment rather than how. Addressing the "what" makes language more inclusive. Technical standards that do not reflect current accommodation use may leave an institution open to lawsuits (see Recent Court Cases, p. 11).

Rush University (2021), a private health science institution in Chicago, rewrote technical standards for all programs at Rush. The process facilitated discussion amongst faculty, administrators, and their accessibility office. The result is that inclusive language is posted on each admission page for students to review with welcoming language and referrals on how to seek out accommodations upon reviewing the technical standards. The message is that the university values all students and their unique needs. Common accommodations are flexibility in attendance, leave for medical appointments, health breaks as needed and/or release from evening and overnight calls and elimination of issues such as lifting

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restrictions. While an employer may have lifting requirements for a posted position, this is not a reasonable expectation for a student. A student who may be an amputee, have significant back problems or utilizes a wheelchair may not be able to "lift 40 pounds," but can be part of a team that takes on learning the skill of assessing a patient.

Recent court cases: Palmer College of Chiropractic v Davenport Civil Rights Commission, (2014) and Parrot-Copus vs. Terra State Community College (2015) outline cases brought against higher educational institutions regarding exclusionary language in technical standards or requiring a specific skill be performed without accommodation. In the Palmer case, a prospective student who is blind was denied admission based on a technical standard stating "sufficient use of vision for review of radiographs" as a requirement of the program. When this was explored, it was found that Chiropractors do not necessarily perform "reviews of radiographs" and the school was required to modify this discriminatory language. Terra State Community College issued an ultimatum to a LPN-RN student who is deaf, "to prove she could hear, or she would be removed from the program". The school refused to allow the student the use of auxiliary aids to communicate. This case ended in a financial settlement in favor of the student. These two cases (there are many more) highlight dated and discriminatory language that may deter individuals with disabilities from applying for health science programs.

Colleges and Universities in the United States that accept federal funding must provide equal access to all areas of the educational experience to students with disabilities (ADA.gov, 2016). The two cases discussed at left highlight dated and discriminatory language that may deter individuals with disabilities from applying for health science programs and that may have legal implications for programs. The question should be: How do we embrace and train our students with disabilities to ensure that disability is seen as a part of diversity and inclusion, so our students can be part of providing high quality care to our patients and improving health equity? To be serious about our efforts to recruit and educate diverse students who reflect the nation's population and about following legal obligations, it is time to adopt inclusive technical standards that reflect advancement in accommodations and that will improve the diversity of our students. ◆

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(ADA.gov, 2016)

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Engaging Today's Learners: Innovative Strategies for Teaching Nursing Students

By Beth Cusatis Phillips, PhD, RN, CNE, CHSE; and Patty Knecht, PhD, RN, ANEF

Major changes in health care in the last several years require profound changes in nursing education and how we teach our students. Technology, patient acuity and students themselves are vastly different from just a generation ago. With educators retiring at a record level (Fang, 2020; Smiley, et al., 2021), there is an opportunity to transform our approaches in the classroom, health care setting and beyond. To help our students succeed in today's health care environment and in the future, nurse educators must embrace new technologies and learn to teach differently than the way they were taught.

Most students entering nursing school today have had access to computers, smartphones and the internet for most — if not all — of their school-age lives. That factor alone has a large effect on the way students learn and absorb information. Firth and colleagues (2019) examined the effects of the internet on the brain — specifically, the brain's structure, function and cognitive development. They found that the internet can alter attention, memory and knowledge and social cognition, both in the short term and in the long term. All three of these areas affect learning.

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Obviously, the internet is not going away. Thus, paying attention to these findings is crucial. It underscores educators' need to:

- **Recognize why change must happen;**
- **Understand where their students are; and**
- **Create environments where students can learn and flourish.**

Active learning has been part of nursing education for years. In fact, the concept goes all the way back to Vygotsky in the 1800s (Cambridge, nd). However, many educators in schools of nursing continue to teach the way they were taught:

- **Lecture;**
- **Assign student reading; and**
- **Assess knowledge via testing.**

Around 2000, the concept of the flipped classroom (Ağırman, & Ercoşkun, 2022) was introduced. This is a technique that requires educators to think and teach differently (Jarvis, 2020). This concept includes assigning students prework to complete *before* class to give them content and context *in* class. In doing so, students become truly engaged in classroom activities, using the knowledge they gained from the prework to solidify their learning.

Despite the success of this technique, many educators have not fully embraced it. Instead, they continue to record classroom lectures and then expect students to come to class prepared. As a result, many classrooms have not met the mark as far as fully engaging today's learners.

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Another challenge for educators is that changing the teaching environment does require students to understand *how* to learn in new ways. In the flipped-classroom environment, nontraditional learners can be at a disadvantage because they may need more help than simply being assigned prework to be ready to participate in class fully. That means considering other ways to better educate our students, including concepts that support increased student engagement and interactive learning, as both are essential to today's learners.

> Engagement with educators and fellow students is also critical. Consider the concept of collaborative learning.
> (Gerlach, 1994)

Educating students does not only include a *transfer* of knowledge but also the *assimilation* of that knowledge (Vogt & Mazur, 2005). Using active learning techniques can support this objective. Educators should help students understand the concepts being taught and, most importantly, show them how to use that information when caring for clients.

Engagement with educators and fellow students is also critical. Consider the concept of collaborative learning (Gerlach, 1994). This technique takes into account others' learning preferences, strengths, and weaknesses and creates a safe, social learning space. What one student may understand well, another may struggle with. Thus, by learning collaboratively, they both benefit.

With online interactive learning tools becoming more widespread in today's world, educators should take advantage of them to aid in developing this collaboration. Students benefit by using tools such as these to enhance their learning and remediate when they miss a concept. For example, students may complete a virtual application that includes branching logic, forcing them to make clinical decisions. If students go down the wrong path, they encounter the consequences of their decisions, such as the patient developing an infection. One of the major benefits to participating in this online environment is that students learn along the way as they take each step in the clinical judgment process instead of waiting until they take a unit exam and only then realizing they did not grasp the content.

To enhance their teaching, educators could embrace the use of these technological resources and adapt their teaching. Microlearning (Mohammed, 2018) is one technique that allows students to learn, reflect, assimilate, update, reinforce and remediate. In microlearning, both content and instruction are shared in smaller, bite size, yet ordered sequences (Zarshenas, et al., 2022). When content is chunked with other interactive solutions — images, diagrams, gaming, simulation, video clips — students can solidify their learning in small bites. After all, much of nursing education is more than pure memorization. During reflection and reinforcement, educators can help students connect their learning across settings, clients and health issues. Consider how memorable it was the first time you heard wheezing in a client with asthma. Students will not easily forget that sound. However, hearing wheezes and knowing what to do for a client with pneumonia or ARDS differs greatly from the steps you take on a client with asthma. Those are the connections educators can make for their students.

The rise of online interactive educational programs has created a new mode of just-in-time learning for today's students. Research suggests that online interactive education programs may be just as effective as traditional textbooks at supporting nursing school

continued

students throughout their academic careers, as well as on the NCLEX (Phillips, et al., 2023). Moreover, computerized curricular assistive tools have been shown to help nursing students succeed (Schofield, 2023). These new solutions require educators to think differently about how they teach.

As nurses, we are called upon daily to creatively problem solve our patients' most pressing issues. This requires a deep understanding of the people we care for, including what brought them to us and what factors might impact them after they leave our care. Nurse educators must take a similar approach in the classroom as well. We must understand how our students utilize technology, determine how to motivate them best, and leverage solutions to enhance and strengthen learning. All of this will increase student engagement and, more importantly, it will fulfill their inherent need to use technology while being better prepared for nursing practice. By adapting to these fundamental changes, we can empower our students to grow and succeed as professional nurses. ◆

We must understand how our students utilize technology, determine how to motivate them best, and leverage solutions to enhance and strengthen learning.

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Improving Student and Clinical Outcomes in Math, Dosage Calculations and Medication Safety Using Interactive Online Software Program

By Anthony Ramos, CEO, Prac+Safe; Youssef Ajineh, Marketing Director, Prac+Safe; and Josephine Silvestre, MSN, RN, Senior Associate, NCSBN

Medication Errors

The administration of medication forms the backbone of treatment in the overwhelming majority of patients who are admitted to hospitals.

Unsafe medication practices and medication errors are a leading cause of injury and avoidable harm in health care systems across the world. The global cost associated with medication errors has been estimated at $42 billion annually (WHO, 2022). Medication errors can occur due to systemic issues and/or human factors such as fatigue, poor environmental conditions or staff shortages which affect ordering, prescribing, transcribing, dispensing, preparation, administration and monitoring practices. These errors can result in severe harm, disability and even death (WHO, 2022). Medication errors cause at least one death every day and injure approximately 1.3 million people annually in the U.S. alone (WHO, 2017), but all medication errors are potentially avoidable. Preventing errors and the harm that results require putting systems and procedures in place to ensure the right patient receives the right medication at the right dose via the right route at the right time (WHO, 2017).

In 2017, the World Health Organization (WHO) launched the third Global Patient Safety Challenge with the theme of medication without harm. It aimed to reduce severe and avoidable medication-related harm by 50% over a five-year period (WHO, 2017).

> Education has been cited as an example of a key intervention that can support health care professionals in primary care in reducing medication errors and improving patient safety.
> (WHO, 2016)

Minimizing Medication Errors

Reducing medication errors and improving medication safety requires a systems approach. Education has been cited as an example of a key intervention that can support health care professionals in primary care in reducing medication errors and improving patient safety (WHO, 2016).

In 2023, a study conducted by Silvestre and Spector, which included more than 200 participating prelicensure nursing programs and collected 1,042 errors and near misses, found that collecting data on nursing students' errors and near misses can help nursing programs identify system issues, promote transparency and make quality improvements. The majority of the medication errors submitted as part of this study were due to wrong dose, which can be associated with problems with calculations. Mathematical skill and proficiency are prerequisites to accurate medication calculation, as the preparation of some medications may require several sequential and complex calculations (Roughead et al., 2013).

continued

Software-assisted Medication Administration to Improve Student Outcomes and Confidence

An Australian-based university, University of Wollongong (UOW), conducted a research study using an online software program, which was designed by clinicians for clinicians and nursing students. This software provides users with a two-dimensional simulated clinical environment to practice and develop medication administration skills in a highly interactive and realistic manner. Users can interact with medication administration records (MARs), virtual syringes, vials, ampules, IV tubing, etc. during simulated clinical scenarios and cases. Users can also complete summative assessments and receive certificates along with continuing education credits once they have demonstrated mastery.

In math and basic numeracy, users are provided learning resources and practice sessions involving conversions, fractions, ratios, percentages and decimals.

The software platform allows users to review and assess their knowledge in math and basic numeracy, dosage calculations, and the rights of medication administration. In math and basic numeracy, users are provided learning resources and practice sessions involving conversions, fractions, ratios, percentages and decimals. Users can practice using dosage calculation scenarios involving a variety of medication preparations such as tablets/capsules, oral liquids, injections (e.g., IV, IM, SC), infusions (e.g., mL/hour, drops/minute, mcg/kg/min), weight-based dosages (e.g., pediatric dosing), reconstituted medications and inhalers. Many of the case studies are based on actual medication errors that have been observed in clinical practice. They have a focus on the broader scope of medication errors such as omissions, non-therapeutic doses, contraindications, allergies, documentation and reporting. These clinical case studies are an excellent resource that assist in developing critical thinking skills and clinical judgment.

The University of Wollongong piloted the software program in two final year nursing courses, which are taught concurrently, with 421 nursing students. All students took a 10-question numeracy exam with a first-time pass rate of 92% (Roughead et al., 2016). Only one student failed, underwent remediation, and was supported through the academic consideration process. In previous years at this institution, the first-time pass rate for a similar 10-question exam was 60% (average across years).

A total of 201 students (47.7% response rate) participated in the evaluation survey that evaluated satisfaction, learning experience, confidence, interest and engagement, and other parameters. More than 93% of respondents Agreed or Strongly Agreed that the software program helped improve understanding of both numeracy in general, medication calculation and medication administration. More than 90% Agreed or Strongly Agreed that the online modules were engaging, accurately measured what they were learning, and

continued

88.6% found the modules to be authentic and similar to the real world. More than 88% of respondents Agreed or Strongly Agreed that the modules stimulated critical thinking, stimulated their interest in medication administration, were easy to navigate, suited their learning style, and enabled them to create a customized learner pathway using the activities and program sections. Respondents Strongly Agreed (41.3%) or Agreed (49.8%) that they felt more prepared for workplace experience through engaging in the software program and over 94% felt more confident about medication administration (Roughead, 2016).

Nursing education programs have a responsibility to ensure that student nurses entering the clinical environment are provided with the best possible resources and education to administer medications safely.

Medication administration errors are a recognized patient safety issue with an associated cost burden to the health care system. Nursing education programs have a responsibility to ensure that student nurses entering the clinical environment are provided with the best possible resources and education to administer medications safely. The interactive software program discussed in this article provides students with a customized approach to learning medication calculation and administration and provides foundational knowledge of applied numeracy skills. ◆

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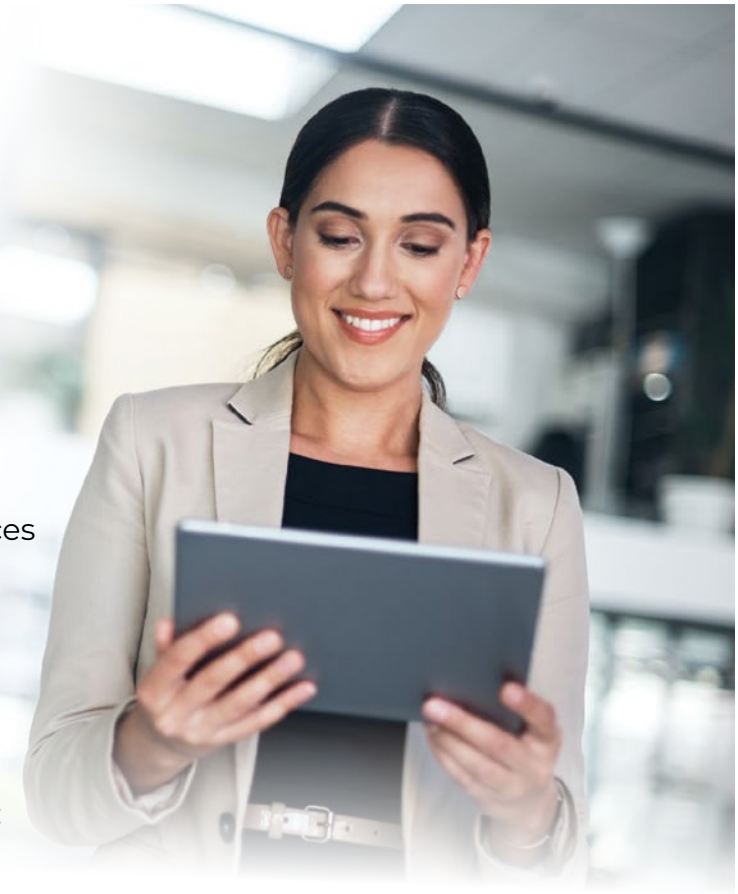

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