Getting Serious About Building Nursing Education Science

Over the past decade, calls for advancing nursing education science have become commonplace (Broome, 2009; Diekelmann & Ironside, 2002; Valiga & Ironside, 2012). Authors who share a commitment to this work call for better faculty preparation for conducting research in nursing education (Broome, Ironside, & McNelis, 2012; Ironside, 2006), better measurement (Tanner, 2011), better methodological quality (St. Pierre Schneider, Nicolas, & Kurrus, 2013; Valiga & Ironside, 2012), and better funding (Broome et al., 2012; Valiga & Ironside, 2012). Although each of these issues requires continued attention, there are many signs of progress! For instance, since 2009, there have been major, field-shaping studies of nursing education conducted and published (e.g., Benner, Sutphen, Leonard, & Day, 2010; Diekelmann & Diekelmann, 2009; Hayden, Smiley, Alexander, Kardong-Edgren, Jeffries, 2014), despite the overall paucity of funding. More doctoral programs exist than ever before that prepare students to conduct research in nursing education, and faculty members specializing in pedagogical research are being promoted and awarded tenure. More journals are publishing studies of nursing education phenomena while nursing’s participation in interdisciplinary education studies continues to grow.

Yet, there is much work to be done. If we are committed to building a science to inform the preparation of nurses throughout the academy and into practice, the quality of our research must continue to improve. It must become more robust and rigorous, and it must address the most compelling questions we face, not just the easiest questions to study. We must take building the science seriously—seeking ways to improve and taking action to strengthen the quality of the literature that informs our pedagogical decisions—whether we are investigators, advisors, funders, reviewers, or editors.

As the body of research in nursing education develops, we need to consistently raise our expectations for quality. In some cases, the quality of the literature can be improved simply by attending to the detail with which the study design and interventions are described. It is rare for nursing education researchers to describe the process by which they ensured adequate power or intervention fidelity, although consistently addressing these aspects of conducting research would be a significant contribution. Of course, there are many issues of quality we could improve simply by attending to the detail with which the study design and interventions are described. It is rare for nursing education researchers to describe the process by which they ensured adequate power or intervention fidelity, although consistently addressing these aspects of conducting research would be a significant contribution. Of course, there are many issues of quality we could address here, but we highlight the following issues in this article with the hope of sparking more disciplinary conversation as we get serious about making rapid improvements in our science.

Getting Serious About Outcomes

The term outcome implies a cause-and-effect relationship: an outcome is produced in response to a causative event or activity. Clearly, nursing faculty are concerned about learning as an outcome of the work we do. But, too often in our research, we rely on proxy outcomes (e.g., satisfaction or confidence), when more direct indicators could be used. For example, when studying the effect of frequent testing and quizzing on student learning, student satisfaction with the change is not a valid primary outcome measure! The primary outcome we aim to impact is learning, so some measure of learning must be examined. In addition, if the outcome we examine is learning, we cannot use our findings to make claims about the effects of our intervention on students’ practice without testing that outcome. The relationship between improvements in learning and improvements in practice cannot be assumed! Each of these outcomes (learning and practice) requires specific measurement.

Not all outcomes are equal, interesting, or important to the field. Moving nursing education science forward will require investigators to think clearly about the outcomes they choose to study. Investigators, advisors, and reviewers should consider questions such as: “Why should the field care about a particular outcome?” “Why do we expect a particular educational intervention to result in the identified outcome(s)?” and, perhaps most importantly, “What is the relationship between the selected outcomes and students’ learning and/or practice?” These questions about importance, theory, and translation should motivate us to select outcomes that are clearly defined, theory driven, applicable beyond the local study context, and, in the case of intervention research, are sensitive (hypothetically at least) to the study intervention.

Getting Serious About Instruments

We, and others (for example, see Tanner, 2011), recognize that our field continues to be in dire need of well-
developed and thoroughly tested instruments. Too often, the literature reflects a reliance on poorly tested instruments or methods that rely on participant self-reports. The use of self-reports, although prevalent in nursing education, has been widely criticized in other fields. In a recent metasynthesis of 22 meta-analyses (data from 357,547 subjects) of correlational research on self-evaluated abilities, such as academic performance, clinical skills, and language competence, Zell and Krizan (2014) found that the correlation between self-reported measures and objective measures (such as test scores and objective observation) was $r = 0.29 \pm 0.11$. Thus, self-report measures explained only 8% of the variance in objectively measured traits or abilities. This suggests that we are building into our studies profound measurement error when we treat self-reports as objective measures. They are not equivalent!

Building nursing education science requires the development and testing of empirically sound instruments. New and existing instruments must be tested for evidence of validity and reliability with samples large and diverse enough to support their intended uses. Testing must also demonstrate that the instruments are sensitive enough to detect the often nuanced changes that result from our educational interventions (Tanner, 2011). Instrument development work is long and laborious. Instrument development and testing is an ongoing process, where validity and reliability evidence is accumulated, not accomplished! The unavailability of empirically sound instruments could be the most important rate-limiting factor in improving the quality of nursing education research. It is easy for potential funders and reviewers to overlook the importance of this work and the long-term payoff of making investments in developing good instruments. Addressing this issue must become a disciplinary priority!

**Getting Serious About Programs of Research in Nursing Education**

Too often, the literature suggests that investigators (and funders) see their research as a series of independent, isolated studies. Although the importance of teachers systematically gathering and analyzing data about the impact of their teaching practices cannot be overstated, when disseminated, these studies rarely have the control, power, comparison groups, or methodological sophistication required for generalizability. This limits the application of findings outside of the study site and does little to build nursing education science. Developing any area of science requires a continuous commitment to systematic inquiry, with a focus on the ultimate purpose of building knowledge within the field.

Conceptualizing smaller studies as steps toward a multisite experimental study of an educational phenomenon would go a long way in advancing the science of nursing education. For instance, suppose an investigator seeks to test a new instructional strategy. A pilot study could provide insight on the feasibility of the proposed methods. In a single-site (but well-powered) study, the investigator could examine whether the intervention produced the expected effects. In a follow-up study that adds another study site, the investigator could examine how much of the intervention (dose) is needed to achieve the desired result and how long the effects last (durability). Promising findings from these smaller studies can then support a larger study investigating the extent to which findings obtained in one or two settings transfer to multiple settings (replication and generalizability).

Carefully designed programs of research, carried out over adequate periods of time, will build nursing education science much faster than conducting a variety of interesting but ultimately unimportant projects that have little impact on the field. As investigators, funders, reviewers, and editors, we must overcome our attraction to single studies of novel, trendy, and flashy strategies that can inadvertently usurp our attention and limited funds from the sustained effort needed to systematically build knowledge over time.

**Getting Serious About Working Together**

As the discipline continues current efforts to obtain significant funding for research in nursing education, working together to pool our limited resources, is one way to move forward. Routinely gathering small groups of researchers with diverse methodological and experiential expertise who are passionate about research in nursing education within a school or across several schools can build momentum and productivity (Maas, Conn, Buckwalter, Herr, & Tripp-Reimer, 2009). Ongoing discussions among group members can provide important opportunities for mentoring new or inexperienced investigators; sharing ideas for potential funding sources; exploring ideas for grants, manuscripts, and presentations; and (perhaps most importantly) critiquing scholarly work as it develops. Investigators from different schools can pool small internal, local, or other pilot study grants to support the development and conduct of larger studies and can speed the development and coordination of new sites for data collection. We have found that the willingness of our colleagues at different schools across the country to readily and enthusiastically agree to collaborate with us on a study, to champion the needed approvals at their site, to recruit participants, and to assist with data collection, are all critical to conducting multisite studies with limited funds.

The challenges we now face are beyond the ability of any one individual or group of individuals to overcome, no matter how passionate or committed. Building nursing education science is a disciplinary issue that requires our ongoing attention. It demands that we think differently about the need for this research, how to prepare the next generation of researchers to study it, how to support those taking on this important work, and how to continue to increase the sophistication, rigor, and contribution of the studies conducted. Just conducting more studies isn’t enough! We must get serious about continuing to build and improve our science, working together and making the most out of the resources we have.

**References**


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