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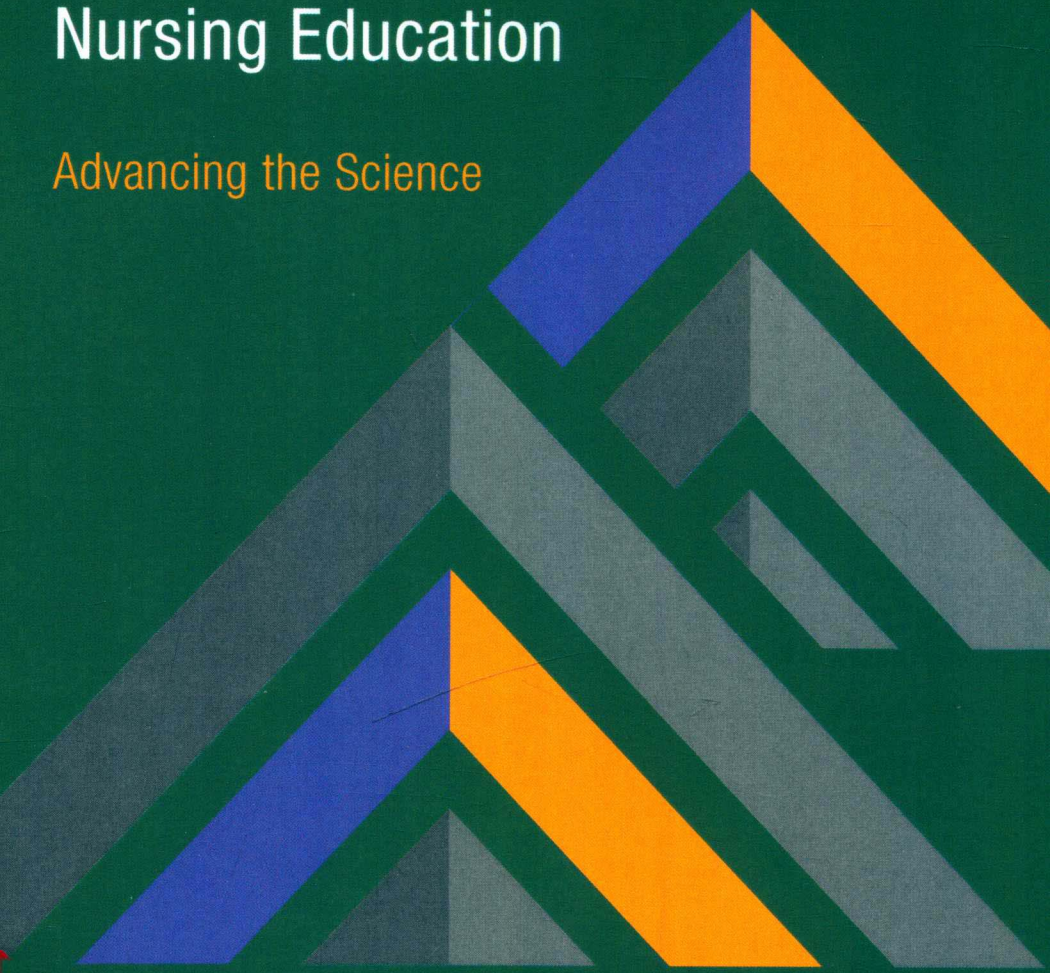
Scientific Inquiry in Nursing Education

Advancing the Science



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SCIENTIFIC INQUIRY IN NURSING EDUCATION

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Edited by:

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SCIENTIFIC INQUIRY IN NURSING EDUCATION

ADVANCING THE SCIENCE

About the Contributors

Lisa Day, PhD, RN, CNE is an associate clinical professor at Duke University School of Nursing in Durham, North Carolina, and has consulted on many nursing education–related projects, including the first phase of the Carnegie Foundation National Nursing Education Study, a project funded by the Robert Wood Johnson Foundation. She is a coauthor of the landmark publication *Educating Nurses: A Call for Radical Transformation* reporting the results of the Carnegie study and has provided faculty development workshops for schools of nursing in the United States and Canada. She is certified as a nurse educator by the National League for Nursing and was one of five faculty members from schools of nursing and medicine in the United States selected to participate in the Josiah Macy Jr. Foundation Faculty Scholar Program, 2013–2015. Dr. Day is working on a pilot study to test the feasibility of a learning innovation for CNA, LPN, and RN education.

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Bette Mariani, PhD, RN is an assistant professor of nursing at Villanova University College of Nursing. Her expertise and research is in the area of simulation development, research instrument development, and debriefing in all types of simulations. Her research is focused on exploring the outcomes of simulation as a teaching-learning strategy with standardized patients with disabilities, as well as in the area of medication and patient safety. Dr. Mariani's research also focuses on instrument development and psychometric testing for simulation. She is cochair of the International Nursing Association for Clinical Simulation and Learning (INACSL) Research Committee and contributed to the INACSL Standards on Simulation Design. She has published and presented in the area of simulation, leadership development through simulation, and instrument development and psychometric testing.

Foreword

I began teaching in the early 1970s. It was clear to me as a young educator that we did not have all the answers for how to best teach our students. I was frustrated by the extensive use of the written nursing care plan as the only means to teach clinical reasoning. I saw little relationship between what students wrote in the 2 a.m.–produced care plan and what the plan actually did for the patient the following day. It gave me little insight into how students actually thought about evolving clinical situations and gave me little guidance in how to coach them. I was doing what most young educators do—I taught as I was taught. But my frustrations led me back to school—this time in an educational psychology program, thinking that I might find new ways to help students learn how to think. I was lucky in choosing a program that would give me a good foundation in educational research and in theories that would be useful for guiding my research interests.

When I completed my PhD, I felt well prepared, having completed a rigorous program of study, steeped in cognitive science theories and educational research methods that would advance my program of research in clinical reasoning. I was ready to launch a research career. However, within a few years, the discipline turned its collective energy toward developing our clinical science, focused on patient care issues and concerns, and discouraging efforts in nursing education research. I made a few feeble efforts to shift my focus to clinical science, but my real passion and expertise lay in nursing education research. So I persisted in developing a program of research on clinical judgment that spanned over three decades of work.

I remember one of the arguments of the day: nursing education research could and should be done by educational researchers. Developing the science of learning and translating this science into educational interventions did not require nursing discipline-specific expertise. Despite this prevalent belief, institutional policies that often did not reward educational scholarship, and lack of funding for its support, scores of nursing education researchers persisted in developing a science for nursing education. The National League for Nursing (NLN) has been a stalwart proponent for nursing education scholarship, supporting the nascent Society for Research in Nursing Education in the mid-1980s and providing small grant funds and a frequently updated list of research priorities. The arguments against nursing investment in educational research have been laid to rest. As the Institute of Medicine (IOM) (2011) notes:

> At no time in recent history has there been a greater need for research on nursing education. As health care reform progresses, basic and advanced nursing practices are being defined by the new competencies, yet virtually no evidence exists to support teaching approaches used in nursing education. Additionally, little research has focused on clinical education models or clinical experiences that can help student achieve these competencies even though clinical education constitutes the largest portion of nurses' education costs. (p. 198)

The research priorities identified by both the NLN and the IOM clearly point to the need for discipline-specific research, not simply the application of general learning

Preface

Stevens and Cassidy (1999), almost two decades ago, defined *evidence-based teaching* as "the conscientious, explicit, and judicious use of current best evidence in making decisions about the education of professional nurses" (p. 3). This book focuses on the crucial components of generating the best evidence through empirical inquiry. There has been tremendous growth in the body of research evidence in some areas of teaching and learning in nursing, whereas in other areas the evidence remains limited. It is important to note that this emphasis on research evidence in no way discounts other sources of evidence, such as faculty anecdotal accounts of their teaching practice. The intent of this book is not to elaborate, dispute, or challenge what constitutes the scholarship of teaching and learning or what is meant by scholarly teaching but rather to focus on one aspect—the generation, dissemination, and translation of robust-quality research evidence for implementation in teaching practice.

The increasingly complex and continually evolving health care environment coupled with the growth in the science of learning requires nurse faculty to rethink how they are teaching. How we teach and what we teach is being questioned by multiple stakeholders in higher education, including the public at large. Given these forces, a major impetus for this book was a concern for the quality of the scholarship and research evidence being generated on which nursing faculty were basing their teaching practices. Through multiple dialogues with the book contributors and other colleagues, in addition to the review of research proposals, grants, and publications over many years, the need to strengthen the research being conducted seemed critical.

Research is nursing education is challenging but also rewarding. Triggered through our work with PhD students for more than a decade, we recognized that our students were knowledgeable about the role of the nurse educator, had a strong nursing science foundation, acquired knowledge about teaching and learning theories, and were prepared to conduct research. It was the merging of these areas into a robust meaningful research proposal that was the challenge for us as their doctoral faculty. Many of our students conduct pedagogical research for their dissertations. Guiding them in designing theoretically based, quality studies that would have an impact on nursing education and the science was the goal.

This book hopes to fill a gap in the area of nursing research. It offers a perspective that focuses scientific inquiry directly on our teaching practice. The audience for this book is those scholars interested in conducting and using pedagogical research. There are multiple audiences for this work. Doctoral students, both PhD and DNP, will find the information instrumental in their research, as there is a need to both generate and translate and implement the research. Additionally, novice, experienced, and seasoned nurse faculty who want to conduct research in nursing education, whether at the beginning of their academic careers or at a transition point in their research trajectory, will benefit from the guidance provided in these chapters.

"development and testing of instruments for nursing education research to measure learning outcomes and linkages to patient care" (p. 2), Chapter 4 includes practical guidance in the rigorous measurement of education concepts in nursing education. There is a discussion of measurement theory, principles for selecting measures, the process of instrument development, and some key considerations in the development of a robust scientific inquiry.

The importance of design in the development of educational intervention is the focus of Chapter 5. Theory is critical to the design of interventions, as it provides the framework for replication of studies and the advancement of knowledge. Design-based educational research recognizes the contextual variables that may affect the outcomes of an intervention. Refinement of interventions through empirical testing can provide the evidence to support best practices for teaching and learning, which speaks directly to the NLN (2016) call for the "translation of research outcomes into evidence-informed educational practices" (p. 2).

Chapter 6 focuses on the ethical conduct of research in the educational setting. There is a discussion of the challenges and key issues to consider when applying the principles of respect, beneficence, and justice in conducting research with students. Although students may be the best to inform the teaching-learning process, they may be vulnerable when used as research participants. With an increasing concern for scientific misconduct and research integrity, nurse scientists must be cognizant of best practices in human subjects research conducted in the educational context.

The data are collected, and the steps of analyzing and interpreting the data are the next challenge. Implementing best practices to manage, analyze, and interpret data are highlighted in Chapter 7. To address relevant research questions in nursing education, investigators must be knowledgeable of the potential pitfalls and issues that may surface in this phase of a research project. What constitutes the data and the strategies to manage the data need to be considered prior to collection of the data. With quantitative analysis, inviting a statistician to join the research team can provide valuable input to enhance the knowledge contribution. These considerations are critical to building the science of nursing education, as emphasized by the NLN (2016) call for the "creation of robust multi-site, multi-method research designs that address critical education issues" (p. 2). In addition, there is a discussion of Big Data and its role in generating knowledge.

Dissemination of the evidence is the emphasis of Chapter 8. To change educational culture, the processes of presenting and publishing are critical. There is consideration of the importance of translating and integrating empirical evidence into one's teaching practice and the challenges that may be encountered. Steps to promote this phase of the research process within an educational context are offered. As the body of evidence in nursing education grows, there is a need for more integrative and systematic reviews, meta-analysis and metasynthesis studies as noted in the NLN (2016) call for "meta-analysis and meta-synthesis informing the state of the science" (p. 2). The advancement of knowledge in nursing education and educational policy development depends on these next steps.

The last two chapters of the book include presentations of the challenges and key issues in conducting and generating evidence in simulation (Chapter 9) and distance education (Chapter 10). Chapter 9 highlights the research priorities for simulation

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Barbara J. Patterson & Anne M. Krouse
April 2016

About the Editors

Barbara J. Patterson, PhD, RN, ANEF is a distinguished professor and director of the doctoral program in the School of Nursing, associate dean for scholarship and inquiry, and chair of the Institutional Review Board at Widener University in Chester, Pennsylvania. She received a diploma in nursing from Millard Fillmore Hospital School of Nursing, bachelor of science in nursing from D'Youville College, master of science in nursing from the University of Southern Maine, and a doctoral degree from the University of Rhode Island. She has teaching experience with prelicensure nursing students in advanced medical-surgical nursing, gerontology, and research and with doctoral students in qualitative research, nursing science and theory, leadership, and dissertation advisement. She has chaired more than 40 doctoral dissertations, many of which investigated nursing education topics. Dr. Patterson has presented and published extensively in nursing education. Her research and publications are in the areas of social support and aging, evidence-based teaching, veterans care, and leadership in nursing education. She is faculty for the Nurse Faculty Leadership Academy of Sigma Theta Tau International, where she works with novice nurse educators and individual leadership development. Dr. Patterson was chair of the Research Review Panel for the National League for Nursing (NLN) from 2012 to 2015, which reviews research grants for nursing education. She has been active on several task groups at the NLN, specific to educational preparation of nurse educators and nursing education research priorities. Dr. Patterson is also the Research Briefs editor for *Nursing Education Perspectives*.

Anne M. Krouse, PhD, MBA, RN-BC is a professor in the School of Nursing at Widener University in Chester, Pennsylvania, where she also holds the position of associate provost for learning spaces and strategic initiatives. Dr. Krouse is also the coordinator of the Executive Nurse Leadership program. Her teaching experience is in the areas of maternal-child health, nursing education, leadership, informatics, and health policy. She was awarded the Fitz Dixon Innovation in Teaching Award in 2012 for her work in teaching health policy. Her research and publications primarily have been in the areas of nursing education, leadership, and maternal-child health. Dr. Krouse is a member of the National League for Nursing Public Policy Committee.

Karen H. Morin, PhD, RN, FAAN, ANEF is a professor emerita of the University of Wisconsin at Milwaukee. She has extensive experience in nursing education and expertise in doctoral education (PhD and DNP), leadership, curriculum development, and program evaluation. She received the Excellence in Teaching Award from the National League for Nursing in 2003 and the Excellence in Nursing Education Award from the Association of Women's Health, Obstetric, and Neonatal Nurses in 1999. Dr. Morin also is the director of the Center for Nursing Inquiry at Bronson Methodist Hospital in Kalamazoo, Michigan, where she assists staff nurses with the development and implementation of quality improvement projects and research. She also serves as an associate editor for the *Journal of Nursing Education*.

Teresa Shellenbarger, PhD, RN, CNE, ANEF is a professor in the Department of Nursing and Allied Health Professions at Indiana University of Pennsylvania in Indiana, Pennsylvania. She has been a nurse educator for more than 25 years and has taught in multiple levels of nursing education. An accomplished author, researcher, and nursing leader, Dr. Shellenbarger has expertise in program development, assessment and evaluation, nursing education research, and faculty role development. She is a National League for Nursing (NLN) certified nurse educator and was inducted as an inaugural fellow in the NLN Academy of Nursing Education.

Darrell Spurlock, Jr., PhD, RN, NEA-BC, ANEF is a nursing education researcher and Associate Professor of Nursing at Widener University in Chester, PA. With an academic background in both psychology and nursing, Dr. Spurlock's research on high-stakes testing in nursing education is widely quoted in scholarly papers and textbooks, cited in regulatory and legal opinions and guidelines, and has stimulated numerous lines of inquiry by other nursing education researchers. Dr. Spurlock's primary interest is in building the science of nursing education through original research, instrument development, and promotion of evidence-based nursing education practices.

science to the education of nursing students. For example, both the IOM and NLN place high priority on the "development and testing of instruments to measure learning outcomes" (National League for Nursing, 2016) and "identification or development of an assessment tool to ensure that nurses have acquired the full range of competence required to practice nursing." Developing research-based pedagogies for teaching specific aspects of nursing practice clearly requires discipline-specific knowledge. Although there is a fairly robust body of knowledge related to clinical reasoning in nursing, as the NLN (2016) points out, much work is needed in "identification of innovative approaches to learning that improve clinical reasoning and judgment applied to patient care" (p. 3).

This textbook comes at an ideal time in our development. Each of the topics explored in each of the chapters could take up a full text, and some have. But the contributors have carefully selected content particularly relevant to the beginning researcher in nursing education. This text will be the gateway for the next generation of nursing education scientists.

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Nurse scientists hold roles and function in a wide variety of contexts, including health care, higher education, or proprietary or community-based organizations. The mission for all nurses is improving the health of the nation and the world. As a practice discipline, we need a culture that supports a community of inquiry—a culture of academics and clinicians working respectfully together through collaborative efforts to move beyond the silos of clinical versus pedagogical research. Quality research is quality research, no matter the context. Faculty teaching practice informs the clinical practice of the students we prepare. Nurse scholars need to be designing and conducting research that connects how students learn, how faculty teach, and patient care outcomes. Clinical and academic nurse scientists, working collaboratively, are in the optimal position to generate this body of knowledge. As a leader in nursing education, the National League for Nursing (NLN) has recognized the importance of this focus in its *Research Priorities in Nursing Education* report (National League for Nursing [NLN], 2016). The research priorities were designed to intentionally link nursing education and practice through the incorporation of the key themes from the National Institute of Nursing Research (NINR) strategic plan to advance the science of health (National Institute of Nursing Research, 2016).

This book is not a traditional book on research methodologies. Many books on research design and statistics exist. The focus of this book is on those elements crucial to designing quality pedagogical studies that support or challenge our current teaching practices, providing methodological support for the 2016–2019 NLN first research priority: "Build the science of nursing education through the discovery and translation of innovative evidence-based strategies" (NLN, 2016, p. 2). The authors who contributed to this book are passionate about research in nursing education and have shared their knowledge and visions for advancement of the science of nursing education through their areas of expertise.

Defining research in nursing education to build a science is the focus of Chapter 1 of the book. It includes a discussion of why it is important to study how we teach and whom we teach, in addition to the impact of these findings. As research scientists, nurse faculty conceptualize, design, and disseminate empirical studies to provide knowledge to support the teaching and learning of students. The evidence that is generated is the foundation for teaching practice.

The connection between theory and research is often a challenging one for nurse scientists. Chapter 2 examines the possibilities for theory use in research in nursing education. Theory is the adhesive that logically joins all of the pieces of a research study together. Whether theory informs the research question or provides structure for an intervention, the role of theory to advance knowledge is foundational.

Finding a focus as to where to start a research study is often the challenge for research scientists. Although there are many potential areas for investigation that contribute to the science, the impact of a focused program of research is greater. Chapter 3 guides researchers from finding a topic to identifying outcome measures. Searching for funding sources and writing the grant proposal can be an intimidating but necessary task if we seek to advance the science beyond single-site descriptive studies. Grant preparation strategies are explored in this chapter.

Measurement of constructs in nursing education is a fundamental requirement for knowledge development. The constructs that are often measured in education include knowledge, attitudes, beliefs, and abilities. Addressing the NLN (2016) call for the

available from national organizations to guide investigators in moving the science of simulation practice forward. The foundation for a robust simulation study hinges on engaging and collaborating with stakeholders, a theoretical framework, and a strategic plan. Educational outcomes depend on the rigor that is employed in all phases of the study. Chapter 10 focuses on the need for common language and definitions in research on distance education to generate a sound body of evidence to support teaching practices. Methodological considerations in the conduct of research in this area include the use of a theoretical framework to guide the study, the need for a robust multisite study design, and the consideration of research priorities that will advance the science.

This book fills a void in the area of nursing education and research books. It addresses the need for rigorous study designs that are theoretically based using reliable and valid measures that will move the discipline forward. The book is designed for those who want to be at the forefront of research in nursing education to advance the science to effectively teach and prepare nursing students as competent practitioners, no matter the level of their education.

Barbara J. Patterson, PhD, RN, ANEF
Anne M. Krouse, PhD, MBA, RN-BC

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Researching Nursing Education

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As the health care environment becomes increasingly complex, and nurses must be prepared to assume greater responsibility and accountability for the health of individuals, families, and communities in the United States and globally, nurse faculty are challenged to prepare nurses who are ready to meet the demands of this environment. In 2011, the Institute of Medicine (IOM, 2011) called for "nurses to achieve higher levels of education and suggests that they be educated in new ways that better prepare them to meet the needs of the population" (p. 2). Furthermore, the committee called for new models and approaches to nursing education to better prepare students for practice. The challenge, therefore, is to build science of nursing education using rigorous inquiry that advances knowledge and provides evidence to support the design and delivery of education.

BUILDING A SCIENCE OF NURSING EDUCATION

There have been many calls to build the science of nursing education (Broome, 2009; Diekelmann, 2005; Ironside & Spurlock, 2014; Valiga & Ironside, 2012), yet development of a rigorous body of knowledge has been slow because of a lack of funding, a lack of institutional support for faculty research in this area, and the challenges of implementing a robust design for scientific inquiry in educational environments (Broome, 2009; Broome, Ironside, & McNelis, 2012; Ironside & Spurlock, 2014; Valiga & Ironside, 2012). To be able to build the science of nursing education, it is imperative that there is a shared understanding of how it is defined. The following definition emanated from the work of the National League for Nursing (NLN) Task Force on Teaching and Learning (2003):

> The science of nursing education refers to an integrated, comprehensive body of knowledge about how individuals learn to be a nurse or specialist in some area of nursing, how teachers best enhance that learning, how curriculum design and implementation affect learning, how learning and outcomes of the educational enterprise are managed and what skills nurse educators need to prepare graduates for the ambiguous, uncertain, unpredictable, constantly changing world in which they will live and practice nursing. (Gresley, 2009, p. 8)