

PLANTING SEEDS OF INNOVATION: A QUALITY IMPROVEMENT PROJECT TO ADVANCE NURSING INNOVATION

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Dr. Beaudet is the guest editor of IJPS Volume 10, issue 2, which explores and celebrates the relationship between partnership and innovation. See her [video overview](#) of this relationship.

Abstract

Background: Emerging needs of the 21st century, such as workforce shortages, increasing supply costs, and rising complexity related to chronic disease management, equitable care, and declining health outcomes have made it imperative for the health-care industry to form new business, operational, and care models. Many nurses struggle to see themselves as innovators or to find their professional skill sets being used to change the current health-care paradigm. The nursing profession can address the complexity within health care through innovative leadership across the continuum of care.

Method: The Planting Seeds of Innovation (PSI) model was created in 2015, by a Doctor of Nursing Practice student working in partnership with a School of Nursing and an academic health center located in the United States. The goal of the PSI model was to empower nurses to lead, develop, adopt innovation, and design principles as a part of their daily practice. A day-long PSI workshop introduced innovation and design principles to practicing hospital nurses with the intent of helping them to learn how to embed innovation into their practice so they can lead new solutions for health care. Evaluation of the PSI event used a mix of qualitative and quantitative methods. In-depth interviews were conducted before and after the event to determine baseline knowledge of innovation and the impact of the PSI event on their awareness and application of innovation principles. Before the PSI event, interview questions invited all participants to share their perceptions, experiences, learning needs, and expectations. After the event participants were asked to assess creativity, design, and innovation at the personal, team, leadership, and organizational levels. They were also asked to evaluate their organization's culture and observed partnership behaviors.

Results: Participants reported feeling empowered when they were given the skills necessary to create intrapreneurial and entrepreneurial solutions. The design of the PSI event which emphasized partnership-based health care and the importance of interdisciplinary teamwork improved participant learning. The

event shifted how participants felt about their personal ability to lead change and impact the future of professional nursing practice.

Discussion: At every level, health care needs to actualize the potential and ingenuity of every team member. Innovation and interprofessional partnerships are necessary components of nursing education and practice in this new era. Nurses are in an ideal position to design and innovate models of care to transform health care.

Key words: nursing, innovation, design thinking, partnership, interprofessional, cultural transformation theory, domination, health-care culture, health-care innovation, nursing leadership

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INTRODUCTION

Nurses are being called to be full partners in the redesign of the United States health-care system (Institute of Medicine [IOM], 2010). “By virtue of numbers and adaptive capacity, the nursing profession has the potential to effect wide-reaching changes in the health-care system ... poised to help bridge the gap between coverage and access to coordinate increasingly complex care for a wide range of patients” (IOM, 2016, p.3-4).

Planting Seeds of Innovation (PSI) is an education model to advance practicing nurses’ knowledge of innovation and their confidence to innovate change in the work environment. The first day-long Planting Seeds of Innovation workshop was held in 2015, and brought together unit nurses from an academic health center, faculty from a school of nursing, and innovation experts from a variety of disciplines.

PSI attendees were introduced to numerous topics including the science behind interdisciplinary teams; the maker and hacking movement within health care; human centered design, the design thinking process, and how to pitch your ideas; intellectual property, patent, and commercialization processes; and the critical reasons for nursing to continue to lead innovative health-care initiatives. Attendees also heard from a panel of nurses and other medical

professionals who had created new apps, medical devices, and emerging intrapreneurial and entrepreneurial business models.

Innovation and health care continually intersect at the point of service where solutions are needed to meet the needs of patients, families, communities, and clinicians. PSI is an educational model designed to build new skills and mental frameworks necessary to expand creativity and innovative behaviors across nursing practice.

Problem Description

The current Western health-care model prioritizes efficiency, standardization, and traditional care models that can diminish the experience of care for patients and for providers and can lead to stagnation of practice and fragmentation of the health-care system. Nurses often struggle to see how their individual roles and professional skills can be used to change the current paradigm.

The DNP project director interviewed each of the 30 registered PSI attendees before the event. Interviews helped identify perceived barriers to innovation including lack of money or time to develop innovative projects or ideas; organizational focus on physician innovation or needing physician involvement to innovate; lack of administration and leadership support; attitudes of senior nursing leaders and peers on units related to change; and inability to connect staff with someone who could help move their ideas forward. Nurses are frequently asked to implement organizational changes, but beyond direct patient care, their ideas and voices may not be included in larger conversations about system-wide improvements.

AVAILABLE KNOWLEDGE

The literature pertaining to innovation in nursing and health care, best practices in promoting innovation and design thinking/processes, and innovation in nursing education was reviewed prior to this event. Numerous articles about innovation found in business journals cited using innovation or design principles to enhance technical processes and quality initiatives, and for performance improvement (Anthony et al., 2014; McCreary, 2010).

Current Research on Innovation in Nursing

Innovation happens at individual, team, leadership, and organizational levels. Individual nursing approaches have shown baseline characteristics that can determine a person's affinity for creativity and innovation, and leaders' ability to support innovation efforts and create innovative environments (Tsai et al., 2013). Implementation of innovation and the design thinking/processes are important business, organizational, and cultural initiatives to pursue (McCreary, 2010). Organizations have the ability to create processes to move innovation forward (Anthony et al., 2014). There is little research about innovation and design thinking within nursing; these skills have been taught to nurses working on process and quality improvement.

Human-centered design is currently being used at Kaiser Permanente, a large health care system in the United States, to innovate new nursing care practices (Chow et al., 2017). Other health systems are using innovation for organizational metrics such as employee satisfaction, cost reduction, and new pilot programs (McCreary, 2010). Health-care organizations can use decision matrices to help prioritize initiatives such as process improvements, business modeling, problem solving, and new technology (Dosenovic-Bonca & Tajnikar, 2015). Failing to align innovation with strategy keeps organizations from meeting their commitment to the overall health of the communities in which they provide care (Porter & Malloch, 2017). Partnership and multidisciplinary communication create opportunities for innovative solutions found within complex environments (Mo, 2016). Thakur and colleagues (2012) define health-care innovation as:

Adoption of those best demonstrated practices that have been proven successful and implementation of those practices while ensuring the safety and best outcomes for patients whose adoption might also affect the performance of the organization. In other words, innovation in healthcare is defined as those changes that help healthcare practitioners focus on the patients while helping healthcare practitioners work smarter, faster, better and more cost effectively. (Thakur et al., 2012, p. 564)

Innovation

The drive for innovation in health care has been supported by the IOM's statement, "Organizations should support and help nurses in taking the lead in developing and adopting innovative, patient-centered care models" (IOM p. 11). The National Academy of Medicine

(NAM) has also stressed the importance of innovation, idea generation, and capacity building within health care (NAM, 2016).

Innovation has been defined as:

- A new idea, device, or method; the act or process of introducing new ideas, devices or methods (Merriam-Webster.com, 2016).
- A process that identifies, defines, and solves new problems (Fagerberg et al., 2005).
- Something that disrupts or impacts a current market through the introduction of simple, convenient, accessible, and/or affordable outcomes that can redefine industries (Christensen, 2015).
- A conscious purposeful search for opportunities within an industry, market, social, and intellectual environments that impact demographics, perception, and complexity - understanding that innovation can lie in more than one area at a time (Drucker, 2013).

The variability among the definitions indicates a need for a solid body of interdisciplinary research around innovation.

We have entered an era of innovation in which the skills required to innovate parallel those of being a good citizen, including, “the ability to ask great questions, critically analyze information, form independent opinions, collaborate, and communicate effectively” (Wagner, 2015, pp. 31-32). Creative and innovative processes can be used to solve vexing societal and business needs, driving new economic engines. A major focus in the innovative process is to build *design* solutions for unmet needs.

Design Thinking

There are numerous parallels between the work done by nurses and that done by designers. *Design thinking* is a process of balancing the needs of humans with available technology and business requirements, focusing on future solutions (Brown, 2009). Key aspects of design thinking include empathy for the user, prototyping, and comfort with failure (Kolko, 2015). The design thinking process is “human centric and incorporates all of the aspects of innovation through a series of steps which include, inspiration (something needing improvement), ideation (a possible solution) and implementation (creating a prototype or trialing a solution)” (Brown,

2008, pp. 88-89). Health professionals have a wealth of knowledge to contribute to the area of design within the health-care industry.

A major application of design thinking in health care is medical devices. “Health care organizations should engage nurses and other front-line staff with developers and manufacturers in the research, design, development, purchase, implementation, and evaluation of medical and health devices and ... products” (IOM, 2010, p.11). Design thinking is a methodology that allows for complex problems to be solved with logic, imagination, and intuition to create and build desired outcomes (Naiman, 2016). Many nurses and other health-care providers are entrepreneurial, ‘designing’ solutions and solving problems for patients, families, and their organizations daily.

Rationale

The use of the word innovation has become mainstream because we are all trying to solve problems to meet the changing needs for improved systems and outcomes. The health-care industry is under pressure to improve quality outcomes, decrease costs, and enhance the experience of health care for patients, families, and clinicians.

The Planting Seeds of Innovation event, created to encourage nursing innovation, was an effort that required a series of relationships and agreements between numerous partnering individuals and organizations. As this work addressed how innovation could be used as a fulcrum to address organizational cultures, behaviors, and practices that include partnership and domination, as well as individual behaviors and professional practice, the frameworks were Riane Eisler’s cultural transformation theory (1987) and partnership-based health-care models. “By using a partnership approach, interprofessional practice will be able to reach its full potential as the new norm for health care delivery” (Potter & Eisler, 2014, p. 42). Partnership creates the best framework to support a “culture of innovation” through employee engagement (Porter-O’Grady & Malloch, 2011). These frameworks were paired with a broad overview of the current health-care ecosystem, the role of nurses and clinicians within these environments, and business principles including creativity, design, and tools to support and enhance innovative endeavors. The commitment of health-care organizations to creating and supporting opportunities for innovation and design education for nurses and other health-care workers is an investment in engagement, quality outcomes, and organizational and strategic priorities.

Specific Aims

The PSI workshop was developed to engage, inspire, and foster attendees' innovation and creativity, was designed to empower nurses to lead, develop, and adopt innovation and design as a part of their daily practice and workflow, as well as their process improvement and quality initiatives. By bringing innovation into practice and designing innovative solutions, the future of health care will be created through positive disruption of traditional educational and operational models of care.

METHOD

Context

A large midwestern health-care system and a University School of Nursing were the partners for this project. The PSI event was an innovation endeavor for practicing nurses, nursing students (baccalaureate, Master of Science in Nursing, and Doctor of Nursing Practice) and nursing professors. The event was created to intentionally embed innovation and design education into learning for health-care professionals, as a driver for engagement.

Ethical Considerations

The DNP project plan was presented to the university's institutional review board (IRB). The research plan submitted did not meet the regulatory definition of human subject research. There was no further review of PSI research required by the IRB.

PSI Pre-Event Planning

The first nurse-led Planting Seeds of Innovation workshop was designed and presented by the DNP student and the University's Medical Device Center (MDC). The MDC, which promotes innovative ideas of university faculty and students, was excited by the topic of nurse-led innovation. The PSI workshop proposal quickly became a shared strategic initiative of both the health system and the school of nursing.

Planning began immediately for the December 9, 2015, PSI event. One of the first steps was to advance School of Nursing and health system nursing leaders' knowledge about innovation. This

was done by sharing a large body of resources and information in the form of literature, research, books, and personal presentations by the DNP student around innovation. Regular meetings were scheduled with School and health care system leaders to facilitate further education about innovation, and logistical planning and coordination of the event.

The event was designed by and for nurses but had numerous interprofessional and interdisciplinary partners supported the event including engineers and fellows who represented the MDC, the health system's physicians' group, a local design firm, community leaders in innovation, product and business development, and an innovation speaker/consultant (keynote speaker). The partners demonstrated academic and industry collaboration, which "helps advance technology, business, and research, creating a fountain for creating sustainable ... futures" (Tanikella, 2016).

Event setting

The event was held at the MDC within an urban-based academic health campus. This space allowed attendees to use a training room without charge. The space also had additional rooms for small break-out and design sessions to be held as part of the event.

The venue was arranged in small-group seating arrangements with the goal of creating diverse knowledge sets within each group. Seatings were based on the attendees' interests and expectations that were revealed in the pre-workshop qualitative interviews. The tables consisted of five nurses and one MDC fellow who contributed an interdisciplinary focus, design training and engineering expertise to each of the small groups. The National Academy of Medicine (2015) states, "No single profession, working alone, can meet the complex needs of patients and communities. Nurses should continue to develop skills and competencies in leadership and innovation and collaborate with other professionals in health care delivery and health system redesign" (p. 3). The diversity within these groups allowed them to find commonality in the shared creative space at the event.

Pre-Event Data Collection

All 30 attendees participated in a 30+ minute pre-event phone call with the DNP project director to gather demographic information; assess beliefs and practices around innovation and/or creativity (personal, team, leadership, and organization); determine levels of

experience with design thinking; and record pre-intervention assessment of workplace culture, including perceptions and relationships with organizational leaders, and current level of innovative behaviors and practices. A 13-point partnership-based health care survey was also completed by participants at the start of the workshop on the day of the event. The partnership-based health-care survey (Potter, 2015) assessed inclusion, leadership, interprofessional and collaborative practice, personal assessment of self-care, energy levels and career enjoyment, professional development, skills and evidenced based practice, the work environment, and the role of the patient within health-care settings. The goal of this survey and data collection was to understand how partnership-based health care and cultural transformation theory can shift the values, beliefs, and practices of health-care providers, care delivery, and organizational culture related to innovation.

Post-Event Data Collection

Post-event qualitative interview questions specifically asked if attendee perceptions or practices had changed after the workshop in relation to the topics covered at the event. One indicator used to measure the success of the innovation event was whether nurses who participated wanted to continue receiving more information about innovation, design, and medical device creation after the event.

RESULTS

The aim of this effort was to nurture a culture of nursing innovation, and to support and foster the ability of nurses to explore and drive much needed solutions across health care. Overwhelmingly, the attendees at this event were encouraged and excited by their ability to bring innovation and design thinking into their practice.

The key findings from the PSI Conference were that participants were excited and encouraged by innovation and design education: the format of the event exceeded their learning needs (96%); the event met their learning expectations (89%); the instructional method was positively received (93%); the written materials were appropriate (94%); they wanted to receive more opportunities for design and innovation education (86%); and education similar to this event could positively impact the nursing profession (75%).

Organizational culture and leadership behaviors that mirrored partnership and domination behaviors impacted the attendees' perceptions of their ability to drive change and/or innovate. Some participants shared their frustration with lack of support from leaders and/or lack of interest in their ideas around improving the care and/or work environment, which led some attendees to think about seeking employment outside of their department or organization. Post-PSI event interviews highlighted a significant shift in participants' belief around their ability to individually drive proactive change working with current leaders and current environments. Nurses who stated that they were contemplating leaving their department or organization prior to the PSI workshop, made the decision to stay, and push for positive change and broader innovations in their existing work environments and organizations.

When asked how the nursing profession would be impacted if all nurses were able to attend a PSI event, attendees shared the following responses:

“It would improve nursing, the nature of nurses is to be creative and innovative.”

“If nurses saw themselves this way there would be more patient related innovation. Nurses know the needs, wants, and desires of the patients. The more nurses are involved in this work the more truly centered our care will be.”

“We’d wake up some sleeping giants and open some eyes. Nurses may come forward to pursue their hopes and dreams.”

Innovation and design education should be aligned to an organization's employee engagement, performance improvement, quality metrics, and organizational culture.

Limitations

Nurses who attended the conference were most likely early innovation adopters because they sought out this event; this initial group highlighted the untapped potential, humor, heart, and genius within the nursing profession. Participants were invited from select areas within the health system and all levels of the university nursing program, providing diversity within the participant group but also limiting the ability to assess innovation occurring in specific care areas more deeply.

DISCUSSION

Partnership Theory and Cultural Transformation Theory

Innovation requires a mentality that encourages people to try often and fail forward. “To build a partnership culture we need to reexamine beliefs, myths, and stories - strengthening those that promote partnership and discarding those that do not” (Eisler, 2002, p. 219). The ability to explore and try new solutions for the pressing needs within health care requires environments that support entrepreneurial thinking and solution finding, without fear of judgment or reprisal. Partnership-based health care is a model that expands the view of medicine, highlights the unique aspects and contributions of nursing, and promotes interprofessional practice and fully actualized health professionals at all levels (Eisler & Potter, 2014). The best theoretical framework for innovation initiatives is Eisler’s (1987) cultural transformation theory, and the best framework for health care is partnership-based health care (Eisler & Potter, 2014).

The initial PSI workshop in 2015, focused on innovation of medical devices or technology done in partnership with experts from engineering and design. The results were so impressive that the school of nursing and the health care organization decided to dedicate resources to host future PSI events at the university.

The second PSI event was held in December 2016, and focused on innovating and designing solutions related to the patient experience. More than 100 people attended including nursing students and professional nurses from numerous health systems, and attendees from academia and community business. The third PSI event, in 2017, focused on innovation around intrapreneurial and entrepreneurial business models. Attendees included nursing students, professional nurses from care settings, interprofessional partners; the event was also open to patients, families, and the community. Continuation of this project at the University school of nursing and the academic health care system indicates that the PSI model is sustainable at the systems level. Restructuring of the health-care system and the global pandemic put a pause on PSI for 2018-2023. A PSI event will be being offered in the spring of 2024.

Innovation and design thinking within nursing is an emerging area of science for the nursing profession. The positive findings from the use of design thinking and innovation in smaller quality and process improvement projects in health care should not be underestimated.

CONCLUSION

Historically, innovation has been at the foundation of nursing even if nurses do not recognize themselves as innovators. The PSI event encourages and revitalizes the role of nurses as health-care innovators. Globally, nurses are in a unique position to transform the state of health care. The pace of technological advances and globalization are swiftly impacting health care. Innovation within health care is most likely to come from the people who work directly with patients, as they see the interconnections between need, quality, and cost, allowing them to pioneer diffusions of innovation (Bradley & Taylor, 2013). Embedding innovation and design thinking education into the skill set of nurses and of health-care environments can be an effective approach to transform the health-care industry. Education, communication, and open dialogue among a collective partnership of health educators and students, nurses and other health-care staff, and the communities we serve will play a significant role in this new era of nursing and health care.

The ability to design and create innovative intrapreneurial, entrepreneurial, and interprofessional solutions to meet the needs across health care and our society are desperately needed. It is important to teach all health-care providers to see beyond the tasks at hand and empower them to create the change they want to see. Education in innovation and design thinking can be embedded in any project at the unit, department, and system level, and within nursing education. The world is changing at an exponential pace, and the future of health care will rely on fully actualized health-care professionals who can lead innovative change.

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