The Call for a Team Approach  Health professionals must be information literate and use technology in order to function effectively within their work environments. Evaluating and quantifying outcomes from electronic documentation, accessing evidence-based literature and drug reference materials, and communicating with others at the bedside by means of a personal digital assistant (PDA) are some of the expected competencies of a graduate nurse. Nurses must emerge from educational programs competent in the documentation of patient care using electronic health records and knowledgeable about privacy and confidentiality safeguards within information systems. Faculty and students, along with the clinical agencies partnered with the school, share responsibility for creating a climate that inspires a commitment to lifelong learning in response to the rapid changes in nursing and health care.

In today’s increasingly complex health care system, one of the most significant challenges facing nurse educators is the expectation that graduate nurses have the ability to access and synthesize knowledge and use clinical information and decision support systems. Current educational programs and pedagogical approaches are not sufficient in preparing nurses for the future. With the amount of content growing exponentially, educators are struggling to determine the most essential materials to include in the nursing curricula.

Technologies such as simulation provide realistic situations for teaching problem solving and clinical reasoning skills in a controlled environment (Jeffries, 2005). Although faculty may be committed to the use of simulation, the learning curve is steep and often unrewarded. Jeffries argues that an effective strategy for the successful adoption of simulation is to groom key faculty as “champions,” a process dependent on administrative support. Faculty champions must be free to attend conferences and often require release time to work on curriculum revision and develop and implement simulation scenarios (Jeffries, 2008).

**Abstract**  The purpose of this article is to describe the creation of a transdisciplinary group, consisting of nurse educators, a medical librarian, lab technologists, and a technology expert, to lead the integration of electronic health technology, including high-fidelity simulation, handheld technology, and electronic health records, within a school of nursing. The use of innovative educational tools by nursing faculty can be daunting because of the steep learning curve. The model described here is effective in developing faculty to use simulation and other technologies as teaching-learning strategies.
Technology Integration in a Public University System  The authors’ school of nursing is part of a public university system in New York City. The student population, consisting of 200 undergraduates, 200 baccalaureate completion students, and 150 graduate students, is notable for its diversity. The majority of students are the first in their families to attend college. There are 27 full-time faculty members, predominantly doctorally prepared, and 60 adjunct clinical faculty. Only two faculty had experience teaching with technological learning strategies prior to this project.

The director of the undergraduate program invited two nurse faculty with a variety of clinical expertise to plan for the integration of technology in the school of nursing. A medical librarian, a lab manager, and a technology expert in video and computer instructional methods worked with them as part of the team. The functions of the group were as follows:

- Develop expertise in the use of simulation and other electronic health tools.
- Assess areas of the curriculum where the use of technology, such as simulation, would be effective as a teaching-learning strategy.
- Plan and implement the initial simulation activities.
- Develop a plan for evaluation of effectiveness.
- Plan and conduct faculty development activities.

Group Roles and Process  The most complex barrier to the use of simulation and other technologies is faculty buy-in and adoption. Best outcomes occur when simulations are seamlessly integrated across the curriculum, but some faculty are fearful of technology (Starkweather & Kardong-Edgren, 2008) and find it challenging to merge technological skills seamlessly into an overflowing curriculum. Most faculty do not possess the knowledge or technical skills to select appropriate hardware and software.

The team approach developed at the authors’ school of nursing embraced the integration of electronic health technology, simulation, and evidence-based education throughout the curriculum at both the undergraduate and graduate levels. The process was non-hierarchical and involved sharing of information from relevant publications and conferences, brainstorming, making site visits, and encouraging one another. Each group member brought specific knowledge and skills to planning simulation activities, and all were committed to a transdisciplinary partnership among colleagues within the academic community. The intellectual excitement that resulted empowered members of the group and led to creativity throughout the school of nursing.

Project Coordinator  The director of the undergraduate program formed the group and invited the other participants to join in the challenge of introducing innovation in the form of instructional technology to the school of nursing. The coordinator facilitated the formulation of research proposals and grants within the group and arranged site visits to schools with excellent simulation centers. With an administrator leading this effort, faculty were able to have release time to develop their simulation expertise.

Nurse Faculty  The full-time nurse faculty in the group have gained considerable expertise, acting as champions to involve others in the nursing faculty. All are involved in applying for grants, presenting information within the professional community, and publications. As the group progressed in expertise, faculty have taken on additional roles. They are now teaching adjunct and clinical faculty in the use of specific technologies.

Lab Manager  The lab manager is responsible for daily operations and scheduling for the Nursing Laboratory, which consists of two health assessment rooms, a clinical skills lab or hospital unit, and classrooms. She provides an instructional environment for student learning and faculty use and orients all users regarding laboratory procedures and the use of equipment. The manager works collaboratively with faculty in identifying educational needs and developing creative learning environments. In addition to coordinating all simulation activity in the lab, she stages equipment and supplies based on course objectives and desired outcomes, ensuring that all required equipment is made available. She also provides supplemental support to students outside scheduled lab hours. The lab manager is a college graduate with many years experience as a lab manager; she is not a nurse.

Director of Technology  Faculty need both pedagogical and technical support to use technology effectively. This specialist empowered instructional staff to harness the power of technology integration for student learning, assisted in grant writing, ensured that all tools were properly installed and operational, and helped design effective video and digital feedback processes. The director of technology is a master’s-prepared expert in computer-aided learning and technology.

Librarian  The medical librarian worked with the group to support the successful integration of simulation learning into the nursing curriculum. The library’s partnership with the nursing faculty, labs, and media centers created a unique, state-of-the-art, transdisciplinary simulation laboratory, supporting the National League for Nursing (NLN) notion of the “collaborative learning experience” (Jeffries, 2007). The librarian enhanced student learning by selecting and providing access to research-based tools and supporting the development of information literacy and informatics skills essential to finding evidence-based data. This model adheres to the NLN’s suggested laboratory setup, which includes the integration of information technology and access to the institution’s educational simulation resources and research tools (Jeffries, 2007).

To assist with the successful integration of simulation technology in the nursing curriculum, the librarian performed literature searches for the transdisciplinary interest group. Using an account in RefWorks, a web-based citation management tool, she created a database of useful articles that is updated regularly. A resource area for students established through course management software provides students with ready access to a number of clinical tools that support evidence-based decision-making in the simulated patient care environment. These tools are all downloadable into the students’ PDAs.

A key aspect of the librarian’s ongoing role is to work closely with nurse faculty to ensure that students have the information literacy...
skills required for practice. Students are taught the skills needed to become competent searchers in MEDLINE, the Cumulative Index to Nursing and Allied Health Literature (CINAHL), the Cochrane Library, and the National Guidelines Clearinghouse. Heavy emphasis is placed on the evidence-based filters unique to each research tool. Sessions with the librarians are part of most courses in the school of nursing, with skills increasing in complexity.

The Process of Change  Within academic environments, the process of change can be difficult. Successful change models require full faculty and leadership support (Lange, Ingersoll, & Novotny, 2008). Using a small-group approach, with academic release time, was an effective method for learning best practices in teaching with technology tools. Members met regularly to brainstorm, share literature and ideas, develop protocols, and select learning experiences that would benefit from the use of simulation or other innovative learning tools. Site visits to other schools helped group members become more acquainted with one another, which was helpful to the group process.

The group devised a plan to develop faculty skills in teaching with technology that included the use of consultants. Over time, the faculty at large has become interested in the use of simulation because of the enthusiasm of the group members. The group continues to meet regularly to plan faculty development opportunities, to create additional learning strategies for the undergraduate and graduate curricula, to design research studies, and to engage in more training in the use of innovative tools. The librarian continues to play an essential role in locating resources to support changes in the curriculum.

What Worked  One of the distinct benefits of the group approach to faculty development was the significant interaction among group members. The process of learning to teach with new technologies was daunting, and being able to work with librarians and technical staff helped reduce anxiety among faculty members.

The integration of simulation, PDA resources, and electronic health record technologies into the curriculum is an ongoing process. Using any new teaching-learning tool requires faculty dedicated to the pursuit of educational excellence, and having the time to learn, discuss, and experiment is key. Administrative support, in the form of release time from instructional duties, has been essential.

Funds to support attendance at conferences and to make site visits were secured through internal grants. The visits to other academic simulation centers demonstrated to group members that the feelings they were experiencing were not at all unique, and were, in fact, typical of the learning curve when working with technology. Two group members were selected as Health Information Technology Scholars (HITS) by the NLN, and participation in this mentored project has facilitated major gains in the integration of simulation into the undergraduate curriculum. For example, an obstetrical nursing immersion, with multiple maternal-child scenarios, was designed as an integral component of the clinical practice.

Clinical agencies within the geographic area, and medical schools, have been excited to learn about the success of the group and have requested collaboration. Research studies are under way to examine best practices in teaching various skills using simulation.

Evaluation of the work to date is promising. Ninety-eight percent of students have reported being “highly satisfied” with the simulation scenarios to which they have been exposed. Outcomes being evaluated include the sustained integration of technologies in nursing courses; the satisfaction of faculty, including adjunct/clinical faculty, with their training; group satisfaction; changes in NCLEX-RN pass rates; and the use of electronic tools. Today, simulation is being used as a teaching-learning strategy in all major nursing courses in the undergraduate curriculum, and use of additional electronic health tools is included in all undergraduate clinical course work. All adjunct and clinical faculty have had time to learn and experience teaching with high-fidelity simulation, with positive feedback.

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References


