

**A MULTIDISCIPLINARY TEAM APPROACH TO FACULTY DEVELOPMENT IN
TECHNOLOGY**

by

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Abstract

National health initiatives and nursing accreditation expectations surrounding the need for nursing graduates to have skills in various technologies are placing increased demand on nursing programs to deliver a technologically competent workforce. The integration of technology into nursing curricula will require well-developed faculty development programs that provide the resources and support necessary for the successful adoption of technology across the curriculum. Diffusion theory and research on faculty adoption of technology suggest successful faculty development endeavors include aspects that address faculty needs and lead to increased confidence. This evidence-based project evaluated the use of a multidisciplinary support team to increase faculty adoption of the iPad in clinical and classroom teaching/learning. The results provide insight into the process, pitfalls, and lessons learned when implementing a new technology to nursing faculty and support the use of a multidisciplinary team approach.

Key words: technology implementation, multidisciplinary team, nursing education, faculty development, iPad, diffusion of innovation

A Multidisciplinary Team Approach to Faculty Development in Technology

Nursing faculty has the responsibility to produce graduates who are capable of working with technology to enhance patient care and improve health care delivery (American Association of Colleges of Nursing, 2008; Institute of Medicine, 2003). For faculty who have not developed the requisite knowledge and skills necessary to incorporate technology into their teaching repertoire, faculty development programs must focus on the specific needs of faculty that move them along the continuum of novice to expert.

The literature on faculty needs related to developing technology skills is vast; however, there is a paucity of empirical evidence that supports a specific faculty development process to address the variety of issues faculty encounter in developing the knowledge and skills to incorporate technology in the curricula. While the literature describes the use of communities of practice, peer mentoring, ongoing support and training as key elements for success in faculty adoption of technology, the reality is that the majority of faculty development programs rely on self-directed learning or limited workshops to prepare faculty in the area of technology use (Axley, 2008; Birz, 2005; Furco & Moely, 2012; Keengwe, Kidd, & Kyei-Blankson, 2009; Kopcha, 2010; Sahin & Thompson, 2007; Schneckenberg, 2010; Tabata & Johnsrud, 2008). Axley (2008) described faculty inexperience with technology as one of the major barriers to adoption of technology in the nursing curriculum. The majority of faculty members are considered to belong to the digital immigrant group (those who did not grow up in the digital age and have to adapt, at times with discomfort, to the ever-expanding digital world), while the majority of students are digital natives (those who relate naturally to technology and for whom technology is an expected component of learning/interacting; Axley, 2008). This provides a distinct challenge for faculty who are expected to adapt their teaching/learning strategies to provide students with the technological competencies expected of graduates today (Axley, 2008).

Medley and Horne (2005) supported the notion that faculty use of technology in nursing education requires a considerable amount of resources and support. In order to facilitate this high level of resources and support, Griffin-Sobel et al. (2010) described the use of a multidisciplinary approach to successfully increase faculty use of several technologies in a New York school of nursing. The multidisciplinary team included nursing faculty, the nursing lab manager, a technology specialist, and a nursing librarian. Methods employed in their program were found to be supported by literature, expert opinion, and research on faculty development, including the use of champion users, peer support, group learning, and multidisciplinary support teams (Axley, 2008; Gagnon et al., 2009; Hirsh, 2009; Kopcha, 2010; Sahin & Thompson, 2006;).

The gap between what was determined to be successful in faculty development and current practice of self-directed learning led to the question: For nursing faculty, does the use of a multidisciplinary support team increase faculty adoption of technology when compared to self-initiated learning? This project used a combination of research supported methods to improve faculty adoption and confidence with using the iPad for classroom/clinical teaching/learning, including a multidisciplinary team, 1:1 and small group hands-on learning, technical support, and champion users.

Theoretical Basis

The application of Roger's theory of diffusion of innovation is an appropriate theoretical approach to understanding the issues that impact faculty adoption of technology. Sanson-Fisher (2004) explained the use of this theory to elicit clinical change when he wrote

One theoretical approach to understanding how change may be achieved is Rogers' diffusion model. He argues that certain characteristics of the innovation itself may facilitate its adoption. Other factors influencing [sic] acceptance include promotion by

influential role models, the degree of complexity of the change, compatibility with existing values and needs, and the ability to test and modify the new procedure before adopting it. (p. 55)

Rogers' theory provides insights into the why, when, and how innovations are adopted by faculty and served to identify the key factors that may be barriers and motivators during the planning and implementation phase of this project. Sanson-Fischer (2004) described these elements of technology as those that positively or negatively impact the adoption. It is important to address the issues identified by each element for successful implementation (diffusion) of the new technology.

Relative Advantage

Relative advantage refers to how well the user perceives the innovation as being better than what is currently in place (Sanson-Fischer, 2004). Robinson (2009) also addressed this issue as a critical aspect of social change. If faculty and administrators do not see both the iPad and the use of a multidisciplinary team approach as better than no iPad and the current method of self-directing learning of technology, the innovation would not succeed.

Compatibility

Potential adopters of an innovation need to feel that the innovation will be compatible with their personal realm of use and experience (Sanson-Fisher, 2004). Each category of adopters describes potential needs related to adopting the innovation, which is a critical element to ensure success of the diffusion of the innovation. In the case of the iPad, the school of nursing must value the inclusion of technology in the nursing curriculum and the faculty must perceive that their learning needs will be met.

Complexity

The level of difficulty in learning to use an innovation lends to how complex potential adopters view the innovation (Sanson-Fischer, 2004). It stands to reason that if a new technology, or approach to faculty development for that matter, is perceived as difficult, the motivation to adopt will be negatively impacted. As part of the change process, the various needs of users must be addressed (Robinson, 2009; Sahin & Thompson, 2007; Tabata & Johnsrud, 2008). One of the goals of this project was to use a multidisciplinary support team to positively impact faculty's perception of the iPad as they see that there is a strong support system in place to help them along the continuum of learning.

Trialability

Trialability is the degree to which the technology may be trialed before a commitment to fully adopt the technology is made (Sanson-Fisher, 2004). To address this aspect, the multidisciplinary team developed a hands-on learning approach to allow faculty to identify concerns or issues early on. This approach was intended to tease out problems before faculty attempt to use the iPad in the classroom or clinical and gain buy-in from the faculty as a whole. Robinson (2009) also discussed this aspect in relation to change, highlighting the need for adopters to have peer interaction and support while learning.

Observability

Observability refers to the ability of the faculty to witness how the iPad works, how the faculty development program is designed, and the potential impact this innovation can have on teaching and learning. A faculty development agenda provided to the faculty served to enlighten faculty on the methods they were offered for learning the technology, with the intent of increasing their motivation and willingness to participate. The use of small group and 1:1 hands-

on trainings allowed faculty to see the iPad in action and address their need to observe the innovation.

Levels of Adoption

Faculty were categorized based on their level of adoption of technology: innovators, early adopters, early majority, late majority, and laggards (Robinson, 2009). The ability to categorize faculty based on their level of adoption of technology allowed for the development of a conceptual meaning of each category and identify strategies indicated in the literature that should have been effective for each category. According to the literature, the largest percentage fall in the categories of early and late majority adopters (Robinson, 2009). This group is less prone to self-directed learning of new technologies, and thus would benefit from the use of a faculty development approach that addresses their unique needs.

Method

An upper Midwest School of Nursing (SON) procured iPads for nursing faculty through an internal grant as a result of faculty requests to have more mobile technology to use during class and clinical instruction. There was no formal training provided by the SON or the university on how to utilize the iPad for teaching/learning, thus leaving faculty to self-direct their learning. The lack of faculty use in the classroom and clinical settings was evident through faculty comments at department meetings. With a goal of increasing the use of technology in the SON, a faculty development project using an evidence-based approach and expert opinion was implemented. Institutional Review Board (IRB) approval for conducting this evidence-based practice change project was obtained through an expedited review from both Capella University and the project site's IRB.

The Faculty Technology Survey (FTS) was adapted with consent from the University of Minnesota and a Post-Project Survey (PPS) was developed specifically for this project in order to

elicit feedback on faculty confidence, satisfaction with the methods, and future recommendations. The FTS, PPS, and questionnaires were field tested and face validity was confirmed by external reviewers. Informed consent was obtained from faculty participants through disseminating the form electronically with the link to FTS and PPS conducted via Survey Monkey. As a means to measure increased confidence with each topic, which is a critical component of sustained adoption (Sanson-Fisher, 2004; Tabata & Johnsrud, 2008), pre- and post-session questionnaires were used. The questionnaires utilized a Likert scale for participants to rank their confidence from 1 to 10 in using the iPad for the various topics with 1 = *no confidence* and 10 = *highly confident*. The questionnaires were developed, field tested and found to have face validity by external reviewers. These questionnaires were provided to participants at the beginning and end of each training session and responses were anonymous.

Faculty Technology Survey

At the onset of the evidence-based project, the FTS was distributed to all eligible faculty (N = 13) to gain insight into their desires and needs for faculty development with technology, particularly the iPad. The survey asked respondents to self-identify as one of Roger's adopter categories (innovator, early adopter, early majority, late majority, or laggard). Of the 12 respondents, 67% ($n = 8$) identified as early adopters and 33% ($n = 4$) as early majority. This response was interesting, considering of those 12, only 25% ($n = 3$) responded that they have used the iPad for teaching/learning. In addition, respondents were asked what factor is the most influential in determining their adoption of technology. How well the technology may work to enhance teaching/learning was a factor for adoption for 92% ($n = 11$) of respondents. The quality of support offered for learning/sustaining the use of the technology was a factor for 58% ($n = 7$). A motivating factor for adoption for 50% ($n = 6$) of the respondents was how difficult the technology is to learn/gain proficiency with. Only 33% ($n = 4$) responded that encouragement

from top administration and allocation of adequate resources to support adoption and learning of the technology impacted their determination to adopt a technology. The responses supported the theory that faculty desire support for learning new technologies and that a multidisciplinary team approach may be the key to increased adoption of the iPad.

Implementation

Using the multidisciplinary approach, a team was assembled in order to provide faculty with experienced users and necessary supports. The multidisciplinary team consisted of three faculty with experience using the iPad in the classroom or clinical setting, a support person from the university's learning management system (Desire2Learn), and an information technology support person. Each member self-identified areas of expertise in which to lead various small group training sessions. The project lead sought out the best times to offer trainings based on the highest percentage of faculty on-campus office hours.

To generate interest in learning to use the iPad, the development trainings were titled *iFaculty: Join the Movement!* The multidisciplinary team identified topics of interest to cover, including iPad basics: Getting Started, Desire2Learn Assignment Grader application, Socrative Quizzes using iPad, Air Server, and Desire2Learn Rubrics for iPad: Grading on the go. E-mail invitations were sent out to faculty one week prior to each session and notices were posted in the faculty office area. A total of ten sessions were held in the faculty conference area to increase access. The multidisciplinary team demonstrated the use of the various applications with the iPad and provided group and 1:1 assistance to faculty participants. Participants were also encouraged to share knowledge regarding using the iPad with one another. To elicit formative feedback and collect data on changes in faculty confidence with using the iPad for each topic, pre- and post-training questionnaires were given to attendees at the beginning and end of each training session.

Results

The pre- and post-training questionnaires were analyzed to determine if there was a significant statistical difference in faculty confidence with using the iPad after each session topic. A total of 20 pre- and post-questionnaires were completed. Due to the small sample size ($N = 20$), the Wilcoxon Matches Pairs Rank Test was used to test for statistical significance in the data. Results indicated a positive rank of 20, meaning that all participants reported an increase in confidence following the training sessions (z value -3.937). To further support the validity of these findings, the p value was 0.000.

A post-project survey was sent out to all current faculty in the school of nursing, and responses were encouraged despite whether or not they attended any training session. Of the 11 responses obtained, faculty participants rated the small group sessions and 1:1 assistance from the multidisciplinary team ($n = 5$; $n = 6$) as the most beneficial part of the training sessions. There was also a noted increase in the use of the iPad by faculty with 55 % ($n = 6$) reporting having used the iPad for classroom or clinical several times, compared to 25% ($n = 3$) at the onset of the project. All respondents ($n = 11$) reported that the timing of the trainings was the primary reason for low/no attendance.

Lessons Learned

There were inevitably some barriers to implementing this project and gaining full faculty participation. Unforeseen barriers included numerous faculty sabbaticals and/or medical leave and changes in positions. This left existing faculty teaching overload, making the additional tasks of learning a new technology a low priority. As a result, there was a low attendance rate for the training sessions, with an average of two attendees at each session. Another barrier noted was timing trainings at the start or end of an academic semester. This time appeared to be the least desirable by faculty who were busy attending to course development and grading. It should

also be noted that the multidisciplinary team recommended limiting the number of new technologies introduced to faculty at any given time. Faculty workloads and demands on their time may impede adoption of important technologies, particularly if bombarded by numerous innovations to consider.

Conclusion

The technology-driven health care system requires nurses who are capable of using technology to improve the delivery of patient care as well as add to nursing knowledge (American Association of Colleges of Nursing, 2008; Institute of Medicine, 2003). Nursing faculty cannot ignore the importance of including the technologies used in health care in nursing curricula as well as modeling the use of technology through inclusion in the teaching/learning process. The problem arises when faculty are expected to incorporate technologies that they are unfamiliar with into their teaching/learning repertoire. Resistance is met when there is a perceived (or actual) lack of administrative support, technical support, and time to learn the technology. Faculty are often faced with multiple demands on time and have been noted to be the major barrier in adopting new technology into a curriculum (Axley, 2008). Faculty adoption of new technologies requires well planned and well timed development strategies that incorporate evidence-based approaches.

This evidence-based project sought to determine if the use of a multidisciplinary team approach would increase faculty adoption of technology, versus the current practice of self-directed learning. A multidisciplinary team approach that incorporated small group sessions with hands-on learning and 1:1 assistance was successful in increasing faculty use of the iPad in an upper Midwest school of nursing. This evidence-based approach was well received with faculty and should be considered vital in faculty technology development. The results of this evidence-based project can serve to inform future faculty development programs, particularly

with learning new technologies. This project demonstrated that if successfully timed, faculty have an interest in technology training through the use of a multidisciplinary team approach.

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Tara Pierce, May, 2016

Mentor name
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