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E-Learning in Nursing: The Effectiveness of Interactivity

Erica A. Nicholson
St. Catherine University, eanicholson@stkate.edu

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St. Catherine University

Abstract

As advances in technology shape education in all disciplines, incorporating e-learning into nursing curriculum is desirable. The goal of this research was to determine if e-learning is beneficial in enhancing nursing skills in nursing students. This paper will not only look at the research on e-learning, but will examine whether this helps nursing students at St. Catherine University practice their nursing skills in a new way. Participants were female nursing students from St. Catherine University. A nursing stimulation game was developed. Participants took a survey before and after they played the stimulation. Results showed that a majority of participants found the game beneficial and indicated that utilizing this type of e-learning is desired.

Keywords: e-learning, nursing, nursing students, curriculum, St. Catherine University

E-Learning in Nursing

The Effectiveness of Interactivity

With new technologies being developed every day, the way we live our lives changes. Where we once relied solely on mail, we now have new technologies, such as text messaging, emails, and instant messaging. Just as this interaction has changed, so does the way we learn. Classrooms that were once lectures only are now filled with technology aides, such as computerized, projected slides. E-learning simulations are the next step in incorporating new technologies into the class, as they provide safe learning environments for students to explore and practice.

In all aspects of life, especially in educational experiences, it is important to realize there are many types of learners. The three main types of learners are visual, auditory, and kinesthetic (James, 2009). Visual learners take in information by viewing illustrations and watching demonstrations. Auditory learners have the ability to gain knowledge even without viewing the speaker; they also tend to verbalize lessons to themselves. Kinesthetic learners retain information by being an active participant in demonstrations (James, 2009). These three types of learners will be focused on in this paper.

These types of learning can be seen in different teaching methods. The following examples are from personal experiences as a student in St. Catherine University's nursing classes. Typical lectures seemed to be directed towards auditory learners since they involve an individual speaking to a group of students. The increasing use of computerized, projected slides and videos in lectures help involve visual learners. Lastly, kinesthetic learners are sometimes left

out due the limited amount of hands on experiences students encounter in a typical classroom setting.

It is also important to keep in mind the changes in learning. The current population of students enrolled in universities is the first of the "Net Generation" (McGonigle & Mastrian, 2009, p. 348). This generation has grown up in a world of instant access through text messaging and the internet. The "Net Generation" works well in peer-to-peer situations, as it is a common learning mode; they are also skilled multitaskers (McGonigle & Mastrian, 2009, p. 348). Educators are now faced with adapting their teaching styles to accommodate this new generation of learners (Skiba & Barton, 2006). Educators are beginning to realize that traditional teaching styles are no longer effective with these students (Skiba & Barton, 2006). With the knowledge of these different types of learners, it is important to find ways to meet each learner's needs.

E-learning is not only one effective way to meet the needs of different learners, but it also incorporates a new style of education through technology for the up-and-coming generation of learners. By definition, e-learning is using technology to enhance teachings in the classroom and for learners outside the traditional classroom (O'Neil, Fisher, & Newbold, 2009, p. 1). It could be the replacement, or at the very least, a helpful aide in education in the future. Even though a lecture may be well-written and well-delivered, it may pass from the ear to the hand, leaving the information unprocessed (O'Neil, Fisher, & Newbold, 2009, p. 28). E-learning, an active learning process, places responsibility on the learners themselves. It also reaches different learning styles (O'Neil, Fisher, & Newbold, 2009, p. 28). E-learning is a way to incorporate technology to better reach a variety of learners.

As stated previously, e-learning is an active learning process. This means that technology supports learning through real-world simulations based on case studies (O'Neil, Fisher, & Newbold, 2009, p. 30). In nursing, technology provides an opportunity for students to learn from the scenarios in a safe environment (O'Neil, Fisher, & Newbold, 2009, p. 30). Technology also facilitates basic skills and high-order critical thinking skills which provides more creative and flexing teaching and learning (O'Neil, Fisher, & Newbold, 2009, p. 168). E-learning is a form of technology that can create safe, creative opportunities for learning.

These safe, creative opportunities are a great way to enhance learning. A simulation is a replica of a real world situation that allows the student to be a working member of a system, set goals, and analyze information (Heitzmann, 1983, p. 8). Computer-based simulations of healthcare allow students to be immersed in the experience (McGonigle & Mastrian, 2009, p. 351). A computerized simulation allows students to be safely immersed in realistic situations.

Another benefit of e-learning simulations is the game-like experience. This experience creates a motivational value (Heitzmann, 1983, p. 17). Students enjoy this because it requires them to actively participate (Heitzmann, 1983, p. 18). This form of play refers to exploration and experimentation (Willoughby & Wood, 2008, p. 34). Exploration and experimentation in well-designed stimulations helps one better understand the learning objectives and prepares the student for action in the real world (Willoughby & Wood, 2008, p. 41). These well-designed stimulations elicit complex thinking and demonstrate skills relevant to tasks the learner may face in a realistic situation (Willoughby & Wood, 2008, p. 158). The game-like qualities of e-learning stimulations create motivation value to safe, but realistic situations.

E-learning stimulations can be a beneficial tool in nursing. In 2010, the America Nurses Association (ANA) recognized e-learning's benefit:

> As the nurse of the future evolves, so must nursing educations. Curricula must be designed to adequately prepare competent entry-level nurses. The nurse shortage and program capacity limits demand efficient education process. Online, virtual, simulated, and competency-based learning are attempts to expand opportunities to students and increase efficiency (p. 28).

The call for e-learning can also be seen in Standard 5 and 5B of the ANA's *Scope and Standards of Practice*. Standard 5 – Implementations states that a nurse must be able to "utilize technology to measure, record, and retrieve healthcare consumer data, implement the nursing process, and enhance nursing practice" (2010, p. 38). In addition, Standard 5B – Health Teaching and Health Promotion explains that a nurse must "use information technologies to communicate health promotion and disease prevention to healthcare consumer in a variety of settings" (2010, p. 41). These examples exemplify the need for e-learning in nursing education.

The ANA is not the only source stating the benefit of e-learning in nursing education, research also describes the benefits. Locsin states that both traditional caring and technological competency are critical to nursing practice (2005, p. 7). True technological competency can be seen as an expression of caring (Locsin, 2005, p. 77). When knowledge about both nursing practices and nursing technology is up to date, a nurse's practice is most beneficial to the patient.

To be up-to-date on nursing technology, a valuable stepping stone is e-learning. When students experience such simulations, they are not only able to practice their clinical skills in a

safe, nonthreatening environment, but also gain comfort with technology (Gardner & Dunphy, 2010, p. 167). E-learning is a favorable way of increasing student knowledge.

Method

The benefits of e-learning are evident. For this reason, I wanted to further examine this topic by creating my own nursing simulation to be tested and reviewed.

Participants

Seven female students from St. Catherine University's Nursing Program participated in the study. Ages ranged from 21-29 years old. All participants were volunteers and senior nursing students in NURS 4200: Leadership in Professional Nursing Practice. The class was divided into three groups: A, B, and C. This research was performed before the first simulation for all three groups since all three groups participate in simulation at different times. Three participants were a part of Group A. Two participants were a part of Group B and Group C each.

Research Design

Participants play the stimulation and complete a pre and post-survey. After their simulation in NURS 4200, participants completed a post-simulation survey.

Measures

The online survey was distributed along with the stimulation. The survey had two parts. In the pre-game survey, participants identified their learning styles and were asked their opinions on incorporating e-learning into nursing. These questions were answered with a Likert Scale. The post-game survey asks the participant if they think this simulation would be effective to practice their nursing skills by having her answer on a scale from 1-5. Additional questions ask

what the participant liked or disliked about the game. The post-simulation survey asked participants whether they thought the game helped them in preparing for simulation.

Procedure

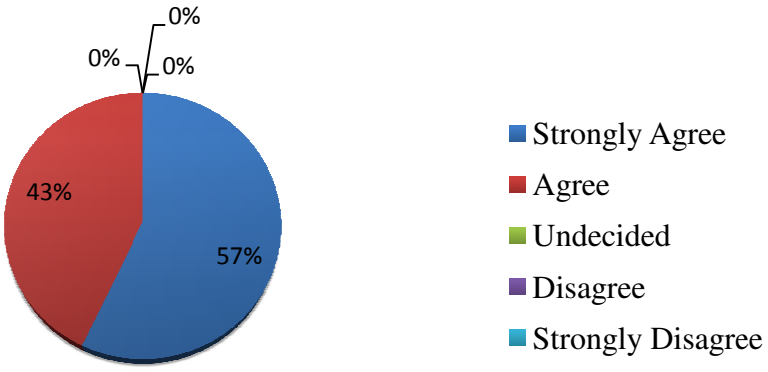
Participants were from the St. Catherine University's Nursing Program and volunteered to participant. They were asked pre-game questions, played the simulation, answered post-game questions, and answered a few post-simulation questions. The first session included the pre-simulation questions, the simulation, and the post-stimulation questions. This process took about 30 minutes. The second session was after the Nursing Department's simulation test out and was two questions and which took about 5 minutes. This took place in a computer lab on St. Catherine University's campus.

Results

Participants answered survey questions to indicate their perspectives on e-learning. Of the seven participants, 86 percent reported they were visual learners. The remaining participant (14 percent) identified as a kinesthetic learner.

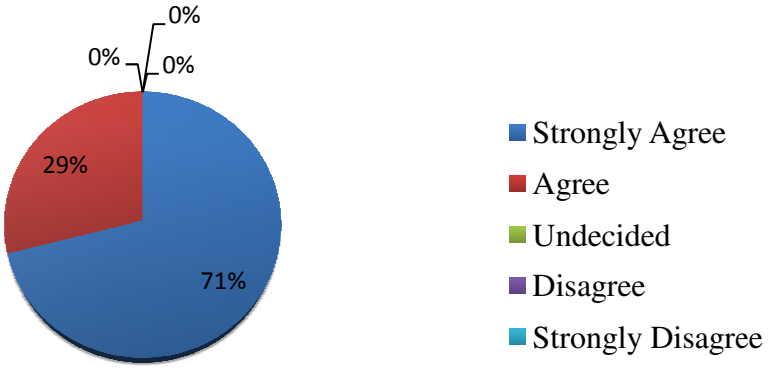
In the pre-game survey, all participants agreed that gaming could be one effective way to practice their nursing skills (see Figure 1). All participants also agreed that it is important to incorporate technology into nursing (see Figure 2). When asked about the importance to incorporate more e-learning into the nursing curriculum, not all participants agreed with the statement. Some participants were undecided (see Figure 3).

Figure 1.



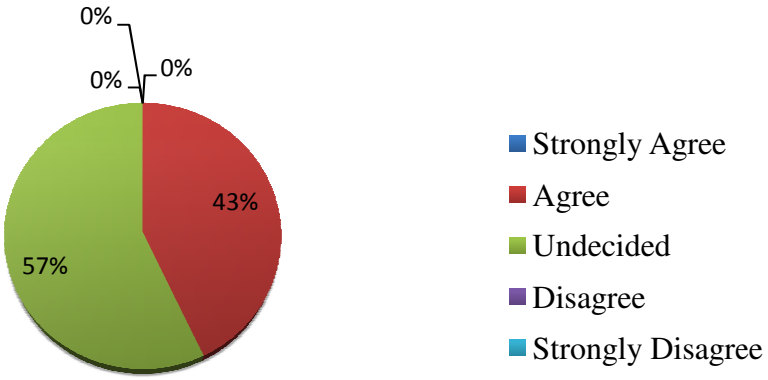
Gaming could be one effective way to practice my nursing skills

Figure 2.



It is important to incorporate technology into nursing

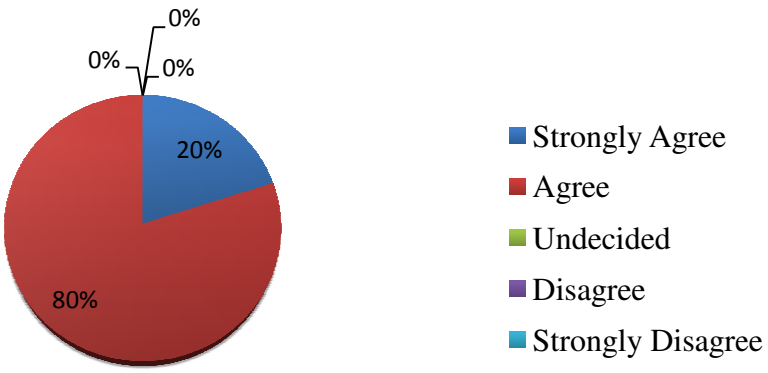
Figure 3.



It is important to incorporate more e-learning into the nursing curriculum

In the post-game survey, all participants agreed that this game could be one effective way to practice their nursing skills (see Figure 4).

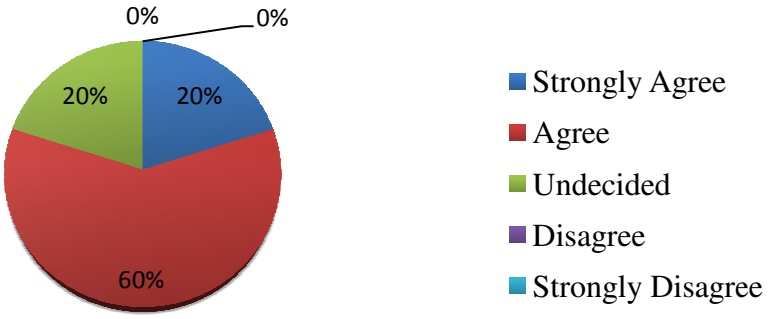
Figure 4.



The game would be one effective way to practice my nursing skills

Answers varied when participants answered if they would play this game to practice their nursing skills (see Figure 5).

Figure 5.



If available, I would play this game to practice my nursing skills

Participants were also asked what they liked about the game. The comments were as followed: “It reviews all the basic checks and assessments we learned in NURS 3100. It's a nice way to go back over such things as a senior,” “I liked that it was interactive and visual,” “Was

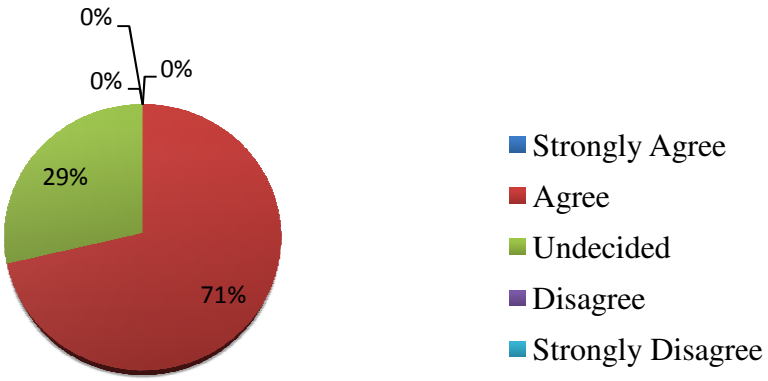
very accurate and well programmed." "I liked the whole idea. I liked too how you split it up into modules and then put it all together. It was fun and a very clever idea!! :) I liked it a lot," and "It was hands on. Incorporated the skills we have learned and tested us on our knowledge, keeping it fresh."

Participants were then asked what they did not like about the game. The comments were also followed: "At times it could get frustrating with the computer glitches or not know what to do next," "I ran into quite a few glitches. For example, it froze on the final so I was not able to complete it," "It was hard to click on items and know what to do next. The instructions didn't always pop-up on the screen," "Sometimes I got stuck on a certain thing - the program wouldn't let me back to the start or something - particularly the assessment. After I read about the skin it wouldn't take me back to the patient...so I have no idea if I passed the assessment. Also...it was hard to tell what was wrong. For example the first one was the wrong patient - I don't know how you knew that because you couldn't read the patient's arm band....but maybe it was just to get you to check to see if you had the right patient," and "The game was a little delayed. Little direction on what the game expected us to do, so not knowing what exactly to click on was a little frustrating."

Lastly, participants were asked if they had any other thoughts or comments about the game. The answers were as followed: "I liked it. I think it was very well put together," "Enjoyed the game," "I'd say if it worked more smoothly (and I know it's just the software) it would have been REALLY good! ;) It definitely got you thinking about what you need to do in a patient's room and for a patient. I liked it," and "Overall it was a great way to practice and refresh the skills we have already learned."

After the NURS 4200 simulation, participants then answered the post-simulation survey. Participants had mixed responses to whether the game helped them prepare for that simulation (see Figure 6). Participants were then asked that if they selected agree or strongly agree to

Figure 6.



This game helped me in preparing for simulation

indicate how the game helped prepare them for simulation. The responses were as followed: "It reminded me of some of the basics I needed to know for simulation like safety checks (the wrist band, checking lines, side rails, environment, etc...)," "I think the game helped a lot with assessments, making sure that the patient was safe, and also helped me practice med passes," "The visual aspect helped reenact a situation of a nurse and patient. Also it helps refresh our skills," "The game was a fun way to review our skills for simulation," and "Made me remember the little things to check for."

Participants who answered disagree, strongly disagree, or undecided, were asked to indicate why they thought the game was not helpful and why. The response was as followed: "I would not say the game was not helpful. It was a very good review. However, the simulation had more complex patients than the game. In the end, the game was nice to review, but did not really affect the simulation."

Discussion

As described above, the benefits of e-learning are evident. E-learning simulations are a way for incorporating new technologies into the classroom, as they provide safe learning environments for students to explore and practice. This small research project also suggests that there are benefits of e-learning.

The surveys revealed that participants believe that technology is important to incorporate into nursing. All participants also agreed, to some extent, that gaming could be one effective way to practice their nursing skills. These two factors indicate that students may be willing to use technology as a way to learn. More than half of the participants were still undecided if it is important to incorporate more e-learning into the nursing curriculum. However, after playing the game, the percentage of participants willing to use this type of e-learning increased. All participants agreed that this game could be one effective way to practice their nursing skills.

Limits of this research are due to the small scale of this project. Additionally, having the whole class, not just volunteers, could affect of the number of the participants who agree that e-learning is beneficial. Using a professional simulation may have yielded different results. Additionally, the number of participants was not only small but also limited to the female gender. Further research could be done on a large scale reaching a more diverse pool of participants.

Implications of this research could direct faculty members to investigate or even possibly developing e-learning simulations to fit their curriculum. As time changes, so does the technology available to the public. Learning how we can utilize these technologies allows us to better advance our practices.

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