Original research

The use of a game-based learning platform to engage nursing students: A descriptive, qualitative study

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ABSTRACT

Baccalaureate nursing programs require students to complete a research course, and faculty find it challenging to engage students. Educational gaming has recently gained attention as a technique to motivate students and enhance learning. The purpose of this pilot study was to describe undergraduate nursing students' reflections of their experiences with 3D Gamelab©, a game-based learning platform. A descriptive qualitative research design was used to elicit students' reflections of their experiences. Educational content such as handouts, videos, activities, and recommended resources for a required junior level nursing research course was organized into quests for use in 3D GameLab©. At the end of the semester, students were invited to give their feedback through a survey with open-ended questions. Thematic analysis resulted in the following components of the game-based learning experience: navigation, motivation, gaming concept, knowledge, technology, and target population. Although the overall response to 3D GameLab© in this course was negative, game-based learning does have the potential to engage students and enhance learning. To better understand how educational gaming could be used in nursing, further research should be conducted to determine the most motivating elements and the types of course content best delivered in this manner.

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1. Introduction

Following the Institute of Medicine's (IOM) publication of the Six Aims for Improvement in 2001, the American Association of Colleges of Nursing (AACN) responded with the Essentials of Baccalaureate Education for Professional Nursing Practice in 2008, establishing nine specific standards for nursing schools to meet in their programs. These essentials were aimed at supporting the IOM goals through the preparation of nurses to work on interdisciplinary teams and advocate for evidence-based, patient-centered care (Finkelman and Kenner, 2009). In particular, Essential III demands scholarship for evidence-based practice, preparing students to identify practice issues and develop better methods and policies to increase the quality of healthcare. According to AACN, "baccalaureate nurses integrate reliable evidence from multiple ways of knowing to inform practice and make clinical judgments" (2008, p.16), and this is a vital role to national healthcare progress.

To meet this standard, baccalaureate nursing programs typically require students to complete a course in research to gain competencies as documented in the Essentials (AACN, 2008). Unfortunately, it can be difficult to demonstrate the relevance of a research course to baccalaureate nursing students (Halcomb and Peters, 2009). Many students expect courses that focus on anatomy, physiology, and clinical skills, and students are prone to question the reasoning behind a course that does not fit in any of these categories (Ax and Kincade, 2001). This lack of interest can make it challenging for faculty to engage students and foster a motivated learning environment (Kohtz, 2011). Engagement has been shown to promote higher level critical thinking skills and more meaningful learning experiences (Bransford et al., 2000); it is vital that innovative ways to engage nursing students in the research classroom are sought after and implemented.

2. Background

Digital gaming is a form of entertainment that historically remained separate from the classroom (Boyle et al., 2012). However, as teachers have sought innovative ways to motivate students and intensify learning, gaming has recently gained increased attention as a significant answer to the challenge (Bayer-Hummel, 2010), particularly for less advanced students (Gros, 2007; Hunter

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Revell and McCurry, 2013). Globally, research has demonstrated that computer games can increase achievement and intrinsic motivation in elementary, middle, and high school children (Tuzun et al., 2009; Annetta, 2008; Papastergiou, 2009). It has been shown to make learning more enjoyable (Charlier and De Fraine, 2013) and strengthen knowledge retention when measured a month after participation (Brom et al., 2011). In college level students, comprehension and course engagement has been augmented with digital gaming as well (Stansbury et al., 2014). A survey of adults on video games revealed that participants perceived video games provide more lasting knowledge than textbooks or television (Malala, 2009).

Prior studies on baccalaureate nursing student populations have shown that these learners value immediate feedback, visuals, and experiential learning (Robb, 2013). Games, such as "Jeopardy," have been shown to increase engagement, enjoyment, and motivation in nursing students by incorporating these very qualities (Baid and Lambert, 2010; Bayer-Hummel, 2010; Boctor, 2013). Personal response system technology has also been shown to increase knowledge retention and comprehension in nursing classrooms (McCurry and Hunter Revell, 2011). However, though games have repeatedly had a favorable effect on learning (Royse and Newton, 2007), little research has been done on the use of game-based learning platforms in the classrooms of nursing students. This is separate from the concept of simulation which imitates reality in order to recreate an experience in the first or second person (Institute for Simulation & Training, 2014). Instead, gaming is aimed toward a fun experience for the user with goals and rewards and is not necessarily based on situations or reality (Prensky, 2007). Educational gaming should include the elements of problem-solving, feedback, the ability win, rules, goals, competition, and fun (Prensky, 2001).

In a study by Lynch-Sauer et al. (2011), 88% of nursing students believed that nursing education should make better use of video games and related new media technology. Furthermore, it has been demonstrated that baccalaureate nursing students have a tendency to be "field-dependent learners," a learning style that typically directs students toward vocations requiring considerable amounts of human contact and communication (Noble et al., 2008). These types of students learn best in the presence of interaction and feedback, a characteristic of most video gaming platforms. Therefore, the purpose of this study was to describe undergraduate nursing students' experiences with a game-based learning platform in a research course.

3. Research design

Little is known about student experiences using educational gaming in a research course, thus a pilot study was conducted to describe undergraduate nursing students' experiences with a game-based learning platform. This pilot study uses a qualitative descriptive design which allows for "studying something in its natural state to the extent that is possible within the context of the research arena" (Lambert and Lambert, 2012, p.255), revealing various perspectives and common themes among the participants' experiences.

The commercially available online game-based learning platform, 3D GameLab© (now known as Rezzly©) was utilized as a teaching tool for a required undergraduate nursing research course. 3D GameLab© was chosen for its ability to integrate game elements into course content and because the co-investigator had prior experience using the platform. 3D GameLab© was an online learning platform where educators could load content modules called quests. The quests contained readings, videos, or learning activities. As students completed quests, they earned virtual

badges, achievement points, and virtual awards. These virtual rewards were meant to motivate students to complete activities. In addition, they were able to track their progress and compare their progress to that of their peers through the course leaderboard.

For this study, course content such as handouts, videos, and activities were loaded into 3D GameLab© and organized into quests. Traditionally, this content would have been delivered through the university learning management system. Students were oriented to 3D GameLab© by the co-investigator who has had extensive prior experience with the platform. The platform was explained and demonstrated for students in a course class period. Trouble-shooting was done by the co-investigator by email, phone, and in office hours. The researcher was a nurse faculty member in the School of Nursing with an interest in educational technology but is not an information technologist. After students used 3D GameLab© to access course content, students were required to access the university learning management system for course quizzes and tests. It was anticipated that 3D GameLab© would be used over the semester.

3.1. Study context

The study was performed at a public university in the Northwestern United States. The nursing program at this university is a competitive, eight-semester program that produces approximately 120 baccalaureate-prepared nurses annually. In the fifth semester of the program, all students are required to complete a semester-long nursing research course that emphasizes defining research-able problems, analyzing steps in the research process, and utilizing research in the practice setting. The class was held in a large lecture theater-style classroom and meets once a week for three hours. Active learning strategies were incorporated throughout the semester in this research course. Students were expected to come to class prepared; reading the required materials and completing the pre-class activities (viewing voice-over PowerPoints, quiz, etc). Class lecture was very interactive with minimal PowerPoint lecture and was organized in the following format: 30–60 min of lecture and discussion. The lecture focused on material that was more challenging, and provided time for discussion and questions. The remainder of class was followed by time to work on on assignments/projects in groups while the instructor is available for feedback.

3.2. Recruitment and informants

This study utilized a convenience sampling technique. The recruitment targeted undergraduate baccalaureate nursing students in their research class. At the beginning of the semester, students were invited to participate in the study.

3.3. Data collection

Approval by the university's institutional review board (IRB) was obtained prior to the conduction of the study. At the end of the course, students provided feedback on their experiences with the game-based learning platform used at the beginning of the semester. A survey with open-ended questions developed by the researchers was given to students to be completed and submitted online. The survey assessed students' perceptions of how the platform impacted their learning, the strengths and weaknesses of the platform, and whether gaming can be helpful as a learning tool. Although it was anticipated that 3D GameLab© was going to be used for the semester, it was removed after six weeks.