Active Learning Strategies to Enhance Nursing Students’ Knowledge of Pharmacology

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Abstract
This article presents the author’s experience using gaming and social media to enhance undergraduate nursing students’ pharmacology knowledge. Although gaming may help with rote learning, active participation in gaming was not associated with higher exam or final course grades. Active participation in social media, on the other hand, was associated with higher exam and final course grades.

KEY WORDS Active Learning – Gaming – Pharmacology – Social Media – Student Perception of Faculty Caring – Student Satisfaction

Mastery of pharmacology is essential for safe nursing practice. The Institute of Medicine (2006) reports that medication errors injure 1.5 million Americans each year and cost $3.5 billion in lost productivity, wages, and additional medical expenses. Because students enrolled in the author’s pharmacology course found the content challenging, the author sought ways to engage students and facilitate learning, specifically through active learning strategies that included gaming and the use of social media.

The setting was an associate of science in nursing program in a public university in the Southeast with 140 students enrolled in a first-year pharmacology course on three campuses. The course was taught face-to-face on the main campus and broadcast live to the two remote campuses. The student population was predominantly female. Students on the main campus were traditional students, while those on the satellite campuses included both traditional and second-career, nontraditional students.

INTRODUCING THE MATERIAL
The class curriculum was changed from a traditional lecture style to a flipped classroom. Students viewed a one-hour voice-over PowerPoint presentation prior to class, reserving class time for group active learning strategies, such as case studies and a mock court trial for a patient charged with noncompliance. Gaming and social media were optional resources for the students with no mandatory requirements for use. Participation was voluntary, and no grade was awarded for participation. The only guideline was the school netiquette policy.

Gaming
Games can be used to facilitate learning and reinforce knowledge (Blakely, Skirton, Cooper, Allum, & Nelmes, 2010). Although gaming has long been established as an effective teaching strategy to review a large amount of information in a short time, whether it actually facilitates learning may depend on the students’ attitudes toward games (Blakely, Skirton, Cooper, Allum, & Nelmes, 2008; Masters, 2005).

For this course, to minimize students’ performance anxiety, gaming was introduced as an individual activity with no class time allotted. The games were developed using a free, web-based platform to practice knowledge and comprehension. They included simple matching games and progressed to “Jeopardy” and “Who Wants to be a Millionaire?” The games were created using information from a drug grid, a document providing basic information regarding medication classification, indications, actions, and side effects of selected representative medications.

Games were posted as each unit was presented. For student convenience, the games were also hyperlinked on the drug grid in the learning management system selected by the school to make content readily available. Students could repeat the games as many times as they desired; the content remained the same each successive time, allowing students to compare their performance against their previous performance. High scorers recorded their name, if desired, creating a friendly competition among peers.

The web-based design allowed students to connect to the resources from any Internet-accessible device. Students also created and shared web-based flash cards, which were also hyperlinked on the drug grid. Because of limitations of the free program used to design the games, crossword puzzles were not web-based but were located within the course learning management system; as a result,

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students reported that they did not use the crossword puzzles as often as the web-based content. The free program used to design the games did not report student usage, so usage was monitored by student self-report and high-score entries.

Social Media

Social media is pervasive among university students and may facilitate learning (George & Dellasega, 2011). However, social media must relate to practice to be an effective learning strategy (King, Greidanus, Carbonaro, Drummond, & Patterson, 2009). An online presence may allow faculty to foster collegiality through frequent, timely, respectful, positive, and encouraging communication (Plante & Asselin, 2014). Class-specific social media accounts were used, and only class members had access.

Facebook, which is free and familiar to all students, served as the social media platform to discuss National Council Licensure Examination (NCLEX) questions and develop test-taking skills. Because posting on Facebook is not anonymous, this medium presented a greater potential for anxiety and embarrassment than gaming. The author moderated the forum and found it an effective way to engage learners outside the classroom, to maximize teachable moments, and to promote a caring, safe environment.

The author posted a daily NCLEX-style question and monitored responses. Although the school’s netiquette policy was reviewed with students and the author was prepared to intervene by enforcing school policy, this was never necessary. Students also created and shared NCLEX-style questions, demonstrating a high level of thinking per Bloom’s Taxonomy.

The daily Facebook questions were compiled into a practice exam, providing students an opportunity to become familiar with the course’s online testing program prior to the first exam. Initially, only one nontraditional student participated in the social media, but by the end of the semester, only one student did not participate.

Students described the social media forum as a safe environment for promoting faculty/student interactions and asked to keep the group open at the end of the semester. They found faculty responses to be caring, encouraging, and supportive and the feedback timely and frequent. As students participating in social media benefitted from feedback to individual questions, faculty time was actually saved.

Social media was especially useful for interacting with and getting to know the students on remote campuses and engaging learners across generations. Students who reported viewing but not answering questions also reported that the Facebook questions were helpful. The feedback suggested that games were used less by both traditional and nontraditional students than Facebook or flashcards.

EVALUATING THE STRATEGY

Twenty-four students earned an “A” in the course, a significant increase from previous courses; benchmark testing scores were greatly improved. Three students failed the course, citing personal demands that prevented required participation in the course. Weekly high scores for web-based gaming, related exam grades, and the final course grade were recorded anonymously for each student. Student participation was evaluated based on substantial student-initiated posts and responses to peer or faculty posts prior to each exam.

To assess the many changes to this course, Brookfield’s (1995) Classroom Critical Incident Survey was completed at midterm. In addition to the five questions contained in Brookfield’s survey, students were asked to list three words to describe the class. The top five adjectives were fun, interesting, engaging, interactive, and challenging.

Upon completion of the course, students who received a grade of 90 percent or higher on exams were emailed the following three questions as a quick assessment of participation: How often did you play the games associated with each unit in pharmacology? How often did you use the flash cards? How much did you follow the Facebook group? These questions were asked as the basis for creating a Guide for Student Success to share with future classes. All 24 students who received the questionnaire responded. As for end-of-course evaluations, both gaming and social media were mentioned positively. Students reported that the faculty was caring and the students were no longer afraid of course content.

DISCUSSION AND IMPLICATIONS

Although the use of gaming did not correlate with higher course grades, participation in class social media (measured by assessing students’ substantial posts) did correlate with higher grades. Feedback from all students at midterm indicated that students were initially overwhelmed by the quantity of resources available and frustrated when games did not work due to compatibility issues with different systems or servers, but they viewed both strategies as reflecting faculty caring. They reported that both strategies enhanced their enjoyment, reduced stress, and offered immediate feedback.

Email responses from the students who earned 90 percent or higher on examinations varied. These students reported the repetition and interaction from the games aided in learning, helping them think faster and avoid overanalyzing. Although all students had access to all resources, high-achieving students reported that they reserved the games for content they personally perceived as more challenging, such as cardiac medications.

With respect to social media, the prompt faculty responses helped all students clarify the muddiest points. Some students created and maintained a Facebook account explicitly for this activity, whereas others reported a “love-hate” relationship. One student wrote, “I like to look at things on my own time and analyze the questions, but I did not feel that I learned a whole lot because by the time I got it to 20 people had already answered.” This student felt distanced from the group as the semester went on. Although high-achieving students looked forward to the questions, discussions, and pointers from the faculty, their use of Facebook varied — some checked daily whereas others checked weekly. High-achieving students reported that they paid more attention to the faculty’s posts rather than peer postings.

Because gaming requires substantial faculty preparation time, recommendations include developing popular games familiar to the students, such as “Jeopardy,” rather than simple matching games. One benefit is that no further faculty time is required once a game is created. As faculty struggle to balance time, financial, and workload demands, the use of social media offers an economical, effective method to facilitate student learning. All participants benefit from faculty postings, which may reduce multiple student inquiries.

Faculty can promote a caring, safe environment by ensuring that only class members have access to the social media group, monitoring posts, and intervening if needed per school policy. George and Dellasega (2011) recommend establishing social media conduct or
netiquette guidelines in the course syllabus. Social media may enhance perceptions of faculty caring and peer camaraderie.

REFERENCES

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