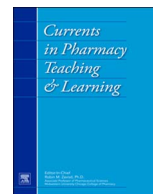




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Experiences in Teaching and Learning

Student perceptions of digital badges in a drug information and literature evaluation course

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ABSTRACT

Background and purpose: The purpose of this article is to describe student perceptions of implementation of digital badges in a drug information and literature evaluation course.

Educational activity and setting: Two digital badges were developed as voluntary learning opportunities. Student perceptions were obtained through pre- and post-survey instruments consisting of selected questions from the Motivated Strategies for Learning Questionnaire.

Findings: The response rate was 69% (106/153). At baseline, 53% of respondents agreed that digital badges could help them better understand course material. More students agreed they would share earned digital badges on LinkedIn (68%) than Facebook (19%). Most students who earned digital badges agreed that badges helped increase their confidence in course material (73%), focus on specific learning objectives (55%), look deeper into course competencies (64%), and were a useful adjunct to the traditional teaching method (82%).

Discussion and summary: Digital badges were perceived by students as a positive adjunct to learning and may provide a novel mechanism for development of an electronic skills-based portfolio.

Background and purpose

Technology integration within academia has dramatically increased in recent years due to new innovations in the way information can be provided to students. Compared to traditional classroom teaching methods, effective technology implementation has the advantage of directly tailoring instruction to various learning styles and increasing student engagement in learning activities. The American Association of Colleges of Pharmacy (AACP) Academic Affairs Committee supports the use of technology in academia to enhance student teaching,¹ including the potential role of gamification and analytics in pharmacy education.^{2,3} Previous reports have identified that the majority of United States (US)-based pharmacy schools use at least one form of technology in their pharmacy curriculum.⁴ Additionally, pharmacy students report they are comfortable with technology and that it provides beneficial impacts on learning course material.⁵

Gamification, or the process of incorporating gaming elements in the academic setting has been a topic of interest in the academic community.^{6,7} Gamification introduces learning challenges to students that must be successfully completed to earn designated

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rewards. Prior studies indicate that student participants in gamified academic environments received better practical and overall scores compared to student non-participants, and that initial motivation was also higher in those who participated in gamified learning.⁸ The millennial generation has been characterized to thrive on increased communication, instant gratification, and frequent rewards; thus, gamification has the potential to effectively increase student engagement in this population.⁹ Gamification techniques used in healthcare didactic instruction include gameshows, board games, card games, and web-based flash cards.¹⁰⁻¹² More recently, the implementation of academic digital badges has become a topic of interest.¹³

Digital badges are electronic icons awarded to individuals that represent mastery of skills, evidence of experiences, or professional accomplishments,¹⁴ like awarding a badge to a girl scout after completing a task or displaying a specific skill.¹⁵ Once awarded, digital badges may be shared with potential employers, colleagues, or associates as electronic representations of work completed to acquire credentials. To maintain recognition and value, additional components such as metadata, credentialing information, or challenge submissions may be linked to the digital badge as associated evidence and viewed upon request.¹⁶ Additionally, digital badges may serve as positive psychological reinforcement towards developing confidence as students progress through their academic careers. Digital badges integrate new technology into the academic setting by incorporating a reward-reinforcement model coupled with individual evidence of completed work to provide potential employers with a well-rounded impression of the skills mastered by the individual.

Digital badges have been utilized in a variety of academic settings. The most notable source of digital badge use has been through massive open online courses (MOOCs), which utilize digital badges as electronic milestones in student learning.¹⁷ In the United States, large academic institutions such as Purdue University, University of California at Davis, Penn State University, and the University of Illinois at Chicago have utilized digital badges in courses such as nursing, agriculture, and research.¹⁸⁻²² In these institutions, digital badges were reported to have increased student motivation to help students focus on additional course competencies. To date, no studies have described the use of digital badges within pharmacy. Implementation of digital badges within a pharmacy professional degree program provides a novel opportunity to add adjunctive venues for students to learn course material. The objective of this cross-sectional study was to evaluate the perceived impact of awarding digital badges to students enrolled in a required drug information and literature evaluation course.

Educational activity and setting

Two digital badge opportunities were created within a required drug information and literature evaluation course as adjunctive learning opportunities using the Purdue University Passport system, an electronic tool that allows users to visually display their work as concrete evidence of their knowledge.²³ The first digital badge created was titled “Communication of Drug Information,” and the second, “Evaluation of Medical Literature,” as shown in Fig. 1. Each digital badge contained links to the following metadata: digital badge image, digital badge description, digital badge required challenges, and digital badge credentialing information. The “Communication of Drug Information” digital badge contained a total of four challenges: two of which were required course assignments (completion of an online tutorial about plagiarism and a written response to a drug information question), and two of which were adjunctive learning opportunities (completion of selected Purdue University Online Writing Lab (OWL) training modules for essential skills of medical writing, and development of a video response to a drug information question).²⁴ The “Evaluation of Medical Literature” digital badge contained a total of three challenges: two of which were required course assignments (two journal article critiques of recently published medical literature), and one adjunctive learning opportunity (completion of a 30-item quiz that assessed student knowledge of biostatistics in medical literature). To be awarded a digital badge, students must have completed all required assignment challenges with a minimum score of 90%. Students who did not originally receive a grade of 90% or above on the required course assignments were given the opportunity to revise and resubmit the challenge for digital badge eligibility. All digital badge challenge submissions were voluntary, additional learning opportunities, and had no effect on the original grades earned by students within the course.

Pre- and post-survey instruments were drafted by the authors using a modified version of the Motivated Strategies for Learning Questionnaire (MSLQ). The MSLQ is a validated questionnaire used to assess the effects of different learning styles on student motivation in college courses.²⁵ In addition to using selected questions from the MSLQ, the Likert scale was modified from a seven-

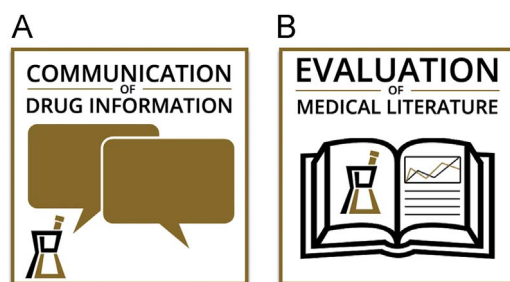


Fig. 1. Digital Badges Developed and Implemented into Drug Information Course. Required assignments: (A) Communication of Drug Information: (1) plagiarism tutorial, (2) essential skills of medical writing training modules, (3) drug information question written response, (4) drug information question video response; (B) Evaluation of Medical Literature: (1) biostatistics knowledge multiple choice quiz, (2) journal article critique 1, (3) journal article critique 2.

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