MONTCLAIR STATE UNIVERSITY

The Emerging Learning Design Journal

Volume 6 | Issue 1 Article 3

January 2019

Spotlighting Innovative Use Cases of Mobile Learning

Alex Rockey
University of California, Davis, arockey@ucdavis.edu

Samantha Eastman
University of California, Riverside, samantha@ucr.edu

Mindy Colin
University of California, Santa Barbara, mcolin@ucsb.edu

Margaret Merrill
University of California, Davis, mmerrill@ucdavis.edu

EMERGING LEARNING DESIGN

Volume 6 (2018) pp. 13-15
digitalcommons.montclair.edu/eldj/
ISSN 2474-8218

Emerging Learning Design Journal Brief

Spotlighting Innovative Use Cases of Mobile Learning

Alex Rockey[a*], Samantha Eastman[b], Mindy Colin[c], Margaret Merrill[a]
[a]University of California, Davis
[b]University of California, Riverside
[c]University of California, Santa Barbara
[*]arockey@ucdavis.edu
November 29, 2018

ABSTRACT

Students bring 2-3 devices to class, 100% of 18-29 year olds own a cellphone and 94% own a smartphone (PEW Research Center, 2018), reflecting ubiquitous mobile device ownership among university-aged students across the U.S. Due to the surge of personal devices, campus infrastructure is increasing capacity to rapidly meet demands for wireless access, and instructors are using mobile learning to push classroom boundaries within and beyond the campus environment. This brief showcases innovative uses of mobile learning uncovered through a cross-campus study at four campuses. Our findings have implications for administrative, funding, information technology, and curricular decisions on individual campuses, and across university systems.

Keywords: Mobile Learning, Collaborative/Constructivist Learning, Creativity

INTRODUCTION

As mobile learning (m-learning) is still in its infancy on University of California (UC) campuses, the Mobile Learning Special Interest Group (m-SIG), formed from members of the UC-wide Instructional Design and Faculty Support group, established the goal of researching and sharing m-learning practices, issues, and future development plans UC-wide. In the first research phase, which investigated campus infrastructure and device ownership, the m-SIG found (Rockey et al., 2017) that UC campuses reflected national trends in mobile device ownership (PEW Research Center, 2018).

Before the m-SIG could begin gathering m-learning use cases from instructors (phase two), a subset of which are the main topic of this brief, its members needed to define m-learning in a way that would guide participant selection and semi-structured interviews. The m-SIG felt that the description of mlearning used by EDUCAUSE (2017), a leading US organization in educational technology, captured the basics of m-learning and best represented m-SIG members' common understanding:

> Using portable computing devices (such as iPads, laptops, tablet PCs, PDAs, and smart phones) with wireless networks enables mobility and mobile learning, allowing teaching and learning to extend to spaces beyond the traditional classroom. Within the classroom, mobile learning gives instructors and learners increased flexibility and new opportunities for interaction.

This description aligned with m-SIG discussions about m-learning characteristics, including criteria for devices, flexibility in teaching methods, and constructivist strategies, which elicit knowledge creation through active learning.

USE CASES

In phase two, convenience sampling was used at each participating campus to select multiple professors[1] for interviews who were innovating with mobile technologies for their courses. In this brief, one exemplary use case from each campus is shared to illustrate successes and challenges especially relevant for instructional designers supporting faculty's use of mobile devices to enhance student learning. The m-SIG chose these particular use cases and specific technologies to illustrate the breadth of m-learning

[1] This research study was approved by UC Institutional Review Boards and each participant signed a consent form.

Volume 6 (2018) pp. 13-15
digitalcommons.montclair.edu/eldj/
ISSN 2474-8218

variation related to instructional approaches, disciplines, learning goals, and technological tools.

Google Forms and iClickers for Understanding the Scientific Process (Research Methods in Psychology, ~200 students)

Victoria Cross' students (UC Davis) used iClickers, a personal response system, and Google Forms, an online survey tool, to apply research methods. During one class period, students generated hypotheses about a scenario, which they shared via iClickers, participated in the scenario to test their hypotheses, analyzed the results of the scenario collected by the whole class through Google Forms, and then reevaluated their original hypotheses based on this data. Students' re-evaluation of their initial hypotheses emphasized the importance of being willing to change one's hypothesis based on data.

Google Forms and iClickers were used strategically in conjunction with one another to mitigate the limitations of iClickers and utilize the affordances of Google Forms. Successes included students' opportunity to construct their own understanding of the scientific process. In addition, moving the activity from its original paper format to mobile devices allowed more students to participate, and the collective use and representation of everyone's data increased student accountability and engagement. Challenges Cross faced as she iteratively developed this activity included: limited WiFi access (necessary when using Google Forms), iClicker limitations, and students' varying digital literacies.

SnapChat for Exam Preparation (Vertebrate Biology Lab, 40-50 students)

Kelly Thomasson (UC Santa Barbara) wanted to reduce student "cramming" for the fast-paced species-identification portion of the final exam by finding a way to make memorization more fun throughout the quarter. She chose to use a group feed in the image and text sharing app, SnapChat, because all but one of her students already had it, and because it mimicked the exam format by showing images for 10 seconds and then deleting them. After asking students how to use SnapChat, Thomasson posted 2-5 photos daily to the group feed of vertebrate animals in the local environment. Students sometimes responded with animal names and posted their own photos of animals.

Thomasson found use of SnapChat successful because students appreciated the constant postings and requested more of them. Thomasson also remarked, "Our class was more connected socially because they could respond to the feed… Everybody in the class always came to office hours and lab time… They were all very friendly." Additionally, though this section's average student grades on the final exam were similar to other sections' grades, their grade distribution was narrower (Thomasson, 2018).

iPads for Field Mapping (Summer Field Geology, 7-30 students)

Nicolas Barth's students received 5 weeks of field training at UC reserves in eastern California to learn about geological mapping. As stated in his interview, Barth seeks to "teach field skills to the next generation of geologists" by using iPads as "GeoPads." A GeoPad is a "tablet-based field mapping system capable of integrated GPS/GIS/measurement/photo/data collection in a rugged field-ready format that can be held in one hand" (Barth, 2017). Using a scaffolded, project-based approach, Barth transitioned students from traditional, paper mapping to use of tablets as they synthesized and applied knowledge and skills to new problems. As with paper maps, students used GeoPads to collect, interpret, and communicate geologic data to identify item locations on a map, recognize landforms, build maps based on what they saw, and write reports.

Barth found success with digital mapping to improve students' mastery of basic skills of geologic interpretation. It created efficiencies that allowed more time for development of higher order thinking, and simplified concepts relating to spatial orientation through dynamic, graphical representation. Additionally, GeoPads reduced gaps in technology fluency among students, all of whom gained highly sought-after digital skills. Challenges were in finding and managing a sustainable GeoPad system, troubleshooting software updates, and coping with hardware limitations in the field, while maintaining student morale and productivity.

Volume 6 (2018) pp. 13-15
digitalcommons.montclair.edu/eldj/
ISSN 2474-8218

CONCLUSION: EMERGING THEMES

Emerging themes from these use cases suggest that common affordances of m-learning include increased participation and engagement, the ability to quickly generate and visualize large data sets, increased learning efficiencies, and application of personally-owned mobile devices for learning both in and out of class time. Common challenges include keeping pace with changing technologies, gaps in students' digital literacies, the cost and management of mobile devices, and inadequate WiFi infrastructure.

These innovative use cases provide insight into how some faculty are making use of mobile devices as part of coursework. While a few use cases cannot represent every classroom across UC campuses, they do provide inspiration for integrating near-ubiquitous tools to support student learning.

In phase three of the research project, the m-SIG will analyze the remaining fourteen use cases to generate findings that will outline pedagogical strategies, affordances, challenges, student feedback, and impacts on instructors' teaching styles and course design. We anticipate those findings to have implications for administrative, funding, information technology, and curricular decisions on individual campuses, and across university systems.

REFERENCES

Barth, N. (n.d). UCR Geopad Digital Field Mapping System. Retrieved from http://geopad.ucr.edu/system.html

Eastman, S., Rockey, A., Colin, M., Merrill, M. (2018, May). Spotlighting innovative use cases of mobile learning. Presented at Emerging Learning Design Conference, Montclair, NJ.

EDUCAUSE. (2017). Mobile Learning. Retrieved from https://library.educause.edu/topics/teaching-and-learning/mobile-learning

Naismith, L., Sharples, M., Vavoula, G., & Lonsdale, P. (2004). Literature review in mobile technologies and learning. In Futurelab Series (Report 11). Retrieved from https://telearn.archives-ouvertes.fr/hal00190143/document

Pew Research Center. (2018). Mobile Fact Sheet. Retrieved from http://www.pewinternet.org/fact-sheet/mobile

Rockey, A., Colin, M., Eastman, S., Merrill, M., & O'Connor, M. (2017, August). Designing a cross-campus research project on mobile learning. Presented at University of California Computing Services Conference, UC San Diego.

Thomasson, K. M. (2018, May). SnapEd!: Accessing the Benefits of Popular Social Media for Education. Symposium Presentation presented at the Graduate Student Teaching Symposium, University of California Santa Barbara. Retrieved from http://tales.id.ucsb.edu/presentations-from-the2018-graduate-student-teaching-symposium/