Mobile app design for teaching and learning: Educators’ experiences in an online graduate course

Yu-Chang Hsu
Boise State University

Yu-Hui Ching
Boise State University

DOI: https://doi.org/10.19173/irrodl.v14i4.1542

Keywords: online learning, mobile app design, programming, App Inventor (AI), Virtual Learning Community (VLC), distance education

Abstract
This research explored how educators with limited programming experiences learned to design mobile apps through peer support and instructor guidance. Educators were positive about the sense of community in this online course. They also considered App Inventor a great web-based visual programming tool for developing useful and fully functioning mobile apps. They had a great sense of empowerment through developing unique apps by using App Inventor. They felt their own design work and creative problem solving were inspired by the customized...
mobile apps shared by peers. The learning activities, including sharing customized apps, providing peer feedback, composing design proposals, and keeping design journals (blogging), complemented each other to support a positive sense of community and form a strong virtual community of learning mobile app design. This study helped reveal the educational value of mobile app design activities and the web-based visual programming tool, and the possibility of teaching/learning mobile app design online. The findings can also encourage educators to explore and experiment on the potential of incorporating these design learning activities in their respective settings, and to develop mobile apps for their diverse needs in teaching and learning.

**Author Biographies**

**Yu-Chang Hsu, Boise State University**

Dr. Hsu is Assistant Professor of Educational Technology at Boise State University. His research interests include cognitive and metacognitive processes of integrating multiple external representations in STEM fields, learning and instructional innovation through emerging technologies, and developing students' computational thinking (CT) through programming experiences and transfer of CT to STEM learning in general. Before joining Boise State University, he served as the assessment coordinator (postdoctoral scholar) for the College of Engineering at Penn State University in Toys’n MORE project funded by NSF STEM Talent Expansion Program Grant (DUE # 0756992). He was one of the project leaders, conducting STEM education research with populations including underrepresented students, coordinating assessment efforts across 15 commonwealth campuses, and providing leadership in writing the annual reports.

Dr. Hsu has been selected as one of the Mobile Learning Scholars of Boise State University in 2011 and 2012 for his innovative proposal on integrating mobile learning and applications in his graduate level course—Graphic Design for Learning, where students engaged in real-time data collection, design example sharing, and community building. He has conducted a fully online workshop for K-12 educators and taught a new course for graduate students, both on using Google/MIT Android App Inventor to design mobile apps, which helps educators leverage the power of mobile computing and applications for learning and instruction. As the PI, he has been collaborating with colleagues from Department of Computer Science, Department of Educational Technology, and TRiO Pre-College programs (supporting disadvantaged and underrepresented students) on a project to foster high school students’ computational thinking through designing mobile apps. He has been selected as one of 2013 STEM Education Scholars of Boise State University to work on individual and collaborative research projects to enhance STEM education in Boise and beyond.

**Yu-Hui Ching, Boise State University**

Yu-Hui Ching, Ph.D., is Visiting Assistant Professor of Educational Technology at Boise State University. She teaches graduate level online courses on Instructional Design, Theoretical Foundations of Educational Technology, and Internet for Educators. Her research interests include Web 2.0 technologies for teaching and learning, computer-supported collaborative learning, and ill-structured problem solving.
The Clemson Master of Education in Teaching and Learning is a 100% online graduate program for current PK-12 educators. The rich, engaging curriculum will prepare you to advance your professional standing in just 18 months. Students have the option of personalizing their experience by selecting from one of three specialization areas: STEAM, Experiential Learning for Early Childhood, or Instructional Coaching. Likewise, summer courses are also taught one at a time but in a five week timeframe - with the exception of the first summer where students will take two classes beginning late June. Year 1 Summer (beginning late June). Curriculum Theory (ED 8650)*.