A One Year Federal Mobile Learning Initiative Review

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INTRODUCTION

The project goal was to engage college students by integrating iPad mobile learning devices into active teaching and learning. An effective mobile learning environment was built by following the conceptual models of technology, pedagogy and content knowledge (TPCK) and substitution, augmentation, modification and redefinition (SAMR). Emphasis was placed on shared learning resources, course redesigns, formative assessment and reflection. An effective path was identified to address productive faculty movement from one level to the next using the SAMR model. In parallel with faculty development and course redesign, it was decided that appropriated aligned learning assessments are key and can be developed through SAMR levels, such as by embedding formative feedback and iterative practice into constructive and contextualized activities. Specifically, authentic, project/challenge-based learning designs should center on methods and apps, which align with the learner-centered approaches observed to be effective during the first year of the mobile learning initiative.

In April 2012, the three federal higher education institutions met to discuss creating functional, meaningful mobile learning in and outside of the classrooms. The emphasizes was that sound pedagogical principles should guide implementation to encourage meaningful student engagement.

From the beginning, three key priority planning and implementation teams were identified and guided by the Technological Pedagogical and Content Knowledge (TPCK) model (Koehler & Mishra, 2009): Technology, Content and Pedagogy Teams. The Pedagogy Team addressed the training of and communication with key educators and technology coaches called iChampions; the implementation and update of an iPads in Education website; and professional development activities throughout the country to provide awareness and activities to increase iChampion capacity. One tangible successful outcome for the iChampions is a national faculty development event called iCelebration, which focused on short-sharing sessions of one specific iPad app.

The conceptual framework that guides the aspirations underlying mobile learning is Puentedura's (2009) SAMR model because it describes the stages that an institution might experience on the path to redefining how it approaches technology-enabled education.

- **Substitution:** Technology acts as a direct tool substitute, with no functional change.
- **Augmentation:** Technology acts as a direct tool substitute, with functional improvement.
- **Modification:** Technology allows for significant task redesign.
- **Redefinition:** Technology allows for the creation of new tasks, previously inconceivable.

The SAMR model was adopted and integrated into iChampion and broad faculty development activities, supported by visits by Dr. Puentedura. iChampions and faculty reflected on their teaching approaches and identified ways their practice has moved toward redefinition. The adoption of iPad mobile learning environments guided by the SAMR model for faculty development and engaged pedagogy is founded in current research in education, as outlined in the following section.

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The project goal of engagement is supported by the TPCK and SAMR models in context of mobile learning. Specific to our evidence, we provide information on mobile learning for language development, which is a major program in our institutions, mobile learning devices as an ideal tool for addressing the 21st century skills of communication.

BACKGROUND

Mobile learning implementation began with incoming Foundations students in pre-college language development courses. Mobile Learning Environments (MLEs) have been shown to support language immersion and practice that develops fluency and general academic skills. In particular, MLEs are especially well suited to support the core communication and general academic/pre-professional skills that center on collaboration, construction, and contextualized learning.

Pedagogical Approaches in Mobile Learning

Learning through high levels of "comprehensible input" seems to be the most direct path to acquiring the grammar and vocabulary of a language, and to applying the language in real communicative situations (Krashen, 2003; Watson, 2009). Mobile learning environments support classroom and out-of-class comprehensible input through engagement in a receptive stage of reading and listening followed by a productive stage of speaking and writing because all of the tools are easily accessed and learned. A large study of mobile learning and literacy suggests that mobile devices have contributed to students gaining broad skills, knowledge and abilities that support learning and literacy development (Warschauer, 2006). This study documents shifts toward interdisciplinary, iterative, public, collaborative, purposeful and authentic writing tasks in MLEs along with increased range in writing used classes. The study also suggests mobile computing leads to higher quality student work, more autonomy in the writing process, more individualized learning, and development of multimedia literacy that integrates 21st century skills (Warschauer, 2006). Overall writing ability increased significantly, with the largest increases noted in groups who used mobile devices in all stages of the writing process (Warschauer, 2009). Mobile language learning systems were found to be effective and engaging for vocabulary development through spaced practice (Thornton & Houser, 2004). Relevant to our context, research showed that reluctant readers were more motivated to read eBooks on mobile devices (Maynard, 2010). In language application, students appear to analyze and synthesize text better with graphic organizer apps than when they use non-technology tools (Garcia, 2011).

The collaborative capacity of the iPad, its digital resources, and the technical infrastructure on the campuses form an ecosystem that is very well suited to language development and broader adult learning. It is accepted in learning sciences that multiple forms of conversation, interaction and collaboration amplify learning. Research in MLEs (Zurita & Nussbaum, 2004) shows significant learning gains with mobile collaboration. Language, mathematics, and academic skills are complex cognitive processes requiring immersion and practice over time. Success can be magnified by MLEs because learning time and the learning environment can extend far beyond the classroom and class period. The iPads, digital resources and learning systems like Sakai and iTunesU give each student continual access to the types of self-directed, personalized learning that expands learning as needed throughout the duration of a course with the teacher's support (Graham, 2006).

These findings suggest that MLEs support academic language and skills development when students are immersed in practice with continuous formative assessment in these environments. Teaching strategies that emphasize engaged construction and collaboration in authentic, contextual practice with formative feedback should be the focus of faculty development programs, course design, and selection of learning resources going forward.

Further, MLEs offer a range of tools for the most effective learning approaches, increase likelihood that each student will have experiences in their zone of proximal development (Vygotsky, 1978), and will have constant access to the tools they need to practice and share learning. Among the highly effective learning approaches (Hattie, 2013) that are well-supported by MLEs are vocabulary programs (language practice, games), creativity programs (drawing, writing, iMovie, iPhoto), meta-cognitive strategies (mind mapping, brainstorming), reflection (journals, portfolios, audio notation), feedback on performance, especially forma-