Chapter 11

Mobile Cloud Services as Catalysts for Pedagogical Change

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ABSTRACT

This chapter explores the potential of mobile cloud services to act as catalysts of pedagogical change in tertiary education. Mobile computing has emerged as a significant platform, with worldwide uptake dwarfing traditional desktop and laptop computing. According to the International Telecommunication Union (Acharya & Teltscher, 2010), at the end of 2010, 76% of the world’s population is now own mobile phones (116% in developed countries [by subscription], and 68% in developing countries), and mobile broadband subscriptions to the Internet (940 million) outnumbered fixed broadband connections (555 million). The advent of the iPhone, the iPad, and Android based smartphones have driven the explosion of mobile application development, numbering over 650,000 mobile apps across four main platforms (GSMArena, 2011; Perez, 2011), with many of these apps providing access and interaction with cloud services. Harnessing the potential of these two new computing behemoths within education is still at early stages of development and research. This chapter provides research-informed examples of the impact of mobile cloud services on teaching practice and learner experiences.

INTRODUCTION

Facilitating pedagogical change in higher education is often a difficult and slow process. As Herrington, Reeves and Oliver (2009) argue “Despite the considerable affordances provided by new technologies, the curriculum, delivery and pedagogies in higher education have arguably been placed in a straitjacket, as teachers struggle to create innovative and radical solutions to the problems that abound in the sector” (p. 3). However, Herrington et al (2009) go on to argue that “emerging and established technologies provide
exciting opportunities for changing current forms of pedagogy” (p. 3). The researcher argues that the introduction of mobile cloud computing into a course can act as a catalyst for pedagogical change by disrupting existing power relationships within the teaching and learning environment, creating a foundation for facilitating student-generated content and student-generated contexts. Thus a move from pedagogy (lecturer-directed) to heutagogy (student-directed or student-negotiated) can be facilitated. This is illustrated by critical reflection upon four years of action research on mobile Web 2.0 at Unitec, with a comparison of two case studies that have evidenced different levels of pedagogical change. Six critical success factors for mobile cloud computing integration have been identified throughout the twenty-five m-learning projects implemented at Unitec between 2007 and 2010 (Cochrane, 2010b, 2010c). The six critical success factors inform a critique of the two case studies used here as examples of the impact of mobile cloud services as catalysts for pedagogical change.

Figure 1 provides an outline of the growth and scope of the researcher’s m-learning projects between 2006 to 2010. The generic term Wireless Mobile Devices (WMDs) is used to cover the variety of smartphones, netbooks, and touch-screen devices used throughout these projects.

Evidence of pedagogical change 2006 to 2010 has been seen in a shift from initial mobile Web 2.0 projects based in the final year of a course to subsequent projects that aim at course integration across entire programs and include elements of international collaboration between groups of students and lecturers across the globe. The use of mobile cloud services has enabled the development of student eportfolios that bridge the classroom and informal learning environments, providing communication and collaboration across time-zones and distance, and providing rich tools for student-negotiated projects and student-negotiated learning outcomes (Cochrane & Flitta, 2011; Cochrane & Rhodes, 2011).

BACKGROUND

Mobile Cloud Services

Cloud services involve the hosting of user content, and user-customizable web applications on remote servers accessible via the Internet and effectively independent of the computer platform used to access these. Web 2.0 comprises a user customizable subset of cloud-based services with a focus upon social networking and sharing of user-generated content. There are strong overlaps between the affordances of Web 2.0 and the tenets of social constructivist pedagogy. Web 2.0 tools can be used to enable personalization, sharing and collaboration based around user-generated content and user-generated contexts, with very little technical knowledge required by the end users. For example Wenger, White, Smith and Rowe (2005) propose that Web 2.0 tools can be used to support communication and collaboration enabling communities of practice to exist and interact across the barriers of time and distance. The appropriation of Web 2.0 tools within a social constructivist pedagogical framework has been termed Pedagogy2.0 (McLoughlin & Lee, 2010).

Mirroring this shift in pedagogy from teacher-generated content to learner-generated content via Web 2.0 is the development of m-learning appropriating the affordances of mobile Web 2.0. Although much of the emphasis of m-learning has been upon the flexible delivery of teacher-generated content, there has been a significant shift to focusing m-learning upon learner-generated content and learner-generated contexts (Andrew, Hall, & Taylor, 2009; Cochrane & Bateman, 2009, 2010; Cook, Pachler, & Bradley, 2008; A. Herrington & Herrington, 2007; J. Herrington, Mantei, Olney, & Ferry, 2009; Pachler, Bachmair, & Cook, 2010). As smartphones have developed into powerful Internet capable mobile computers they can now provide ubiquitous access to these cloud-based services in virtually any context and provide powerful tools for creating
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