Mobile Affordances and Learning Theories in Supporting and Enhancing Learning

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ABSTRACT

Mobile technology promises to enhance and better support students’ learning. The exploration and adoption of appropriate pedagogies that enhance learning is crucial for the wider adoption of mobile learning. An increasing number of studies have started to address how existing learning theory can be used to underpin and better frame mobile learning activities. In particular, there are a number of learning theories that have been identified which particularly lend themselves to the specific affordances of mobile learning. This paper examines how mobile technology was incorporated within three different computing courses. These case studies explore how specific learning approaches (collaborative learning, connectivism and experiential learning) were adopted to frame the use of the technology within each course and how the affordances of mobile technology were harnessed to enhance and better support existing learning practices.

KEYWORDS
Affordance, Blended Learning, Case Study, Learning Theories, Mobile Learning

INTRODUCTION

Developing effective learning activities requires careful evaluation of the intended learning approach. This evaluation should focus on whether these activities have met the desired outcomes of the learning and adopted appropriate pedagogically sound approaches. It important that technology does not drive or negatively influence the learning; rather it should support and enhance the learning. Since mobile learning is still relatively new, compared to other learning approaches, there is still little empirical evidence of how mobile technology enhances the learning process (Herrington & Herrington, 2007.) Consequently, it is important that mobile learning activities be designed with careful consideration of appropriate learning theory to help ensure that desired learning outcomes are met.

A small number of studies have started to examine how mobile technology is underpinned by new and current learning theories. Some researchers have proposed specific mobile learning theories that encapsulate the affordance of mobile learning (see for example Sharples, Taylor, and Vavoula, (2010) and Laurillard, (2009)), while others have identified a range of current learning theories and related them to mobile learning (see for example Keskin, and Metcalf (2011), and Herrington and Herrington (2007)). However, regardless of which theories which are adopted it is important to consider how they best target the learning outcomes.

This article examines three case studies and frames these within a specific learning theory or approach, namely collaborative learning, connectivism and experiential learning. These case
studies illustrate three different approaches to how the relative affordances of mobile technology can be operationalised to support different learning outcomes. The article outlines how the various learning theories have help shape the learning activities as well as describing various ways that mobile technology can be adopted with education.

AFFORDANCE AND LEARNING THEORY

Mobile technology has provided educators and learners with new ways to structure and support their own learning. The distinction between elearning and mobile learning can specifically rest with the various affordances of mobile technology. As Lai, Yang, Chen and Chan (2007, p.5) describe in their study, “mobile technologies ‘afford’ real-time information whenever and wherever learners need it”. In particular, the specific features which mobile technology brings to the context of education relates to how mobile technology is used or supports learning or teaching. Parsons, Thomas and Wishart (2016) identify five specific mobile affordances which differentiate elearning from mobile learning, namely portability, evidence and data gathering, communication, interaction with the interface, and outdoor environment. These specific affordances each underpin and indicate the various ways that mobile technology could be used to enhance and better support learners. In particular, mobile technology enables learners to move around and interact with their environment (portability and outdoor environment), capture their learning (evidence and data gathering), and share and develop their understanding and learning with others (communication) by utilising the rich toolkit of the mobile device (interaction with the interface). Due to these affordances, mobile learning is underpinned by various learning theories which are reinforced by the ability of mobile technology to better support the interaction, capturing, sharing and examination of learning.

There are a number of learning theories or approaches commonly cited in the mobile learning literature. For example, Herrington and Herrington (2007) identify six theories that are most commonly discussed within mobile learning literature, while Keskin, and Metcalf (2011) identify nine theories that are similar or are in addition to Herrington and Herrington’s (2007) identified theories. Identifying appropriate learning theory helps ground learning activities so that learning is more likely to be effective. In context of this article, we identified three learning theories or approaches that directly related to the case studies discussed in this article; these were collaborative learning, connectivism and experiential learning. The following gives a brief overview of these three specific learning theories in context of the mobile affordances identified by Parsons, Thomas and Wishart (2016).

The portable nature of mobile technology enables students to move between and interact with indoor and outdoor environments (for example Chen, Kao, and Sheu (2003), Roschelle (2003), Seppälä and Alamiäki (2003)). This interaction facilitates and supports engagement of the current learning, underpinned within experiential learning principles. Experiential learning enables learners to “acquire and apply knowledge, skills and feelings in an immediate and relevant setting.” (Brookfield, 1983, p. 16). Capturing and reflecting on these experiences are key factors within the learning process and are further reinforced by the ability of the device to gather evidence and data. The ability to record and take notes further supports the ability for reflection, which is a vital part of the experiential learning approach (Lai, Yang, Chen, Ho and Chan, 2007, Shih, Chuang, and Hwang, 2010). The interplay between the various affordances of mobile learning and how it is framed within the context of experiential learning has been examined in a number of studies (for example, Stagg, and Donkin, 2016; Zacharia, Lazaridou, and Avraamidou, 2016; Lai, Chen, and Yang, 2014). In particular Lai, et al. (2007), found that mobile technology supported students’ learning and increased the level of new knowledge creation, enhancing the awareness of learning in context and enriching the conceptualisation of knowledge through the learning experience.

In addition to the portability of the device, mobile learning also provides the opportunity for connection and communication between other learners. Social interaction is seen as an essential component of the learning process, enabling learners to interact and learn with others (Salomon, &
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