

Chapter 55

Implementing Web-Based Learning and Teaching Using Mobile Technology

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ABSTRACT

Mobile technologies have increasingly become pervasive in everyday life over the past few decades. As a result of their affordability and wide availability, mobile devices have become commonly used by several people. Efforts are being made by researchers and institutions to provide infrastructure, content, and resources related to the integration of mobile devices into learning environments are worthy of note. These have led to the provision of more learner motivation, better interaction between learners and teachers, thus leading to an improved educational experience. This book chapter emphasizes on the benefits of mobile learning and also presents a case study of the development of a mobile learning system that facilitates interactive learning in a University environment. The system provides for the student, mobile access to various functions that can improve the process of learning including assessment and provision of feedback to learners. The system was tested and evaluated with satisfactory results.

INTRODUCTION

Technological advancements in recent years have produced major changes in the education sector. Rapid advances in information and communication technology (ICT) have produced a wide range of mobile technologies, which are changing the learning scenario by attracting new learners and providing sophisticated use of mobile devices (Viberg & Gronlund, 2012). Many educational institutions,

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including schools and universities, training departments and institutes for professional development simultaneously struggle for effective methods in producing pervasive learning offers. Significant effort thereby is centered on better learning technologies, as they promise to permanently reach learners by the ubiquitous presence of communication devices such as Mobile phones, Personal Digital Assistants and Tablets among others (Hilderband *et al.*, 2007).

Mobile devices have become an important part of everyday life (Baran, 2014). Improvements in mobile devices have made them appropriate for learning also; mobile technologies have promoted a new learning style known as mobile learning, which is the use of mobile or wireless devices for the purpose of learning while on the move (Park, 2011). Schepman *et al.* (2012) defines m-learning as any kind of learning that occurs when the learner is not in a fixed place, or when he/she takes advantage of learning opportunities provided by mobile devices, thereby relating technological and mobility concepts. Mobile learning is not only the use of mobile technology to support learning. It is also accompanied with an emphasis on teaching and learning tasks to enrich learning methods. According to Yazhen and Jian (2011), it involves connectivity for downloading and/or online working via wireless networks, mobile phone networks or both, and linking to institutional systems like Virtual Learning Environments (VLEs) and Management Information Systems (MIS). The portability of mobile devices and their ability to connect to the Internet for a relatively low cost almost anywhere, make such devices ideal tools for storage of learning experiences and reference materials as well as a general tool to enhance learning process (Casany *et al.*, 2012). Mobile learning can be used in different ways such as live talks and lectures broadcasted to students. While the instructor is presenting a talk, students can watch this on their phones, or MP3. Learners can create a digital video library of various clips that they may access or create on their own. They may also choose to exhibit their work online for access by others. Furthermore, archives of talks, lectures, and presentations can be created for students to later watch at their own time either online or via their portable devices. The benefits and features of m-learning extend its applicability from distance education to supplementary aid for conventional classroom learning (AL-Mukhtar & Sami, 2014). The role of new mobile technologies is to facilitate and promote learning, encourage alternatives through the acquisition of knowledge, the desire to discover, find, understand and assimilate the concepts and ideas to shape an appropriate educational system (Pal *et al.*, 2013).

Researchers are making concerted efforts to develop systems that can easily deliver contents on mobile phones. Many are geared towards exploiting the use of mobile technologies in formal education. For instance, Adagunodo *et al.* (2009) and Awodele *et al.* (2009) focused on delivering examination results via mobile devices. In addition, Ng *et al.* (2011) provided collaborative m-learning; Garcia *et al.* (2011) tried to adapt educational contents to mobile devices and Ahmed *et al.* (2012) provided supplement to courses. Boticki *et al.* (2013) proposed the design of a platform that supports content-independent collaborative mobile learning in the classroom, while Jones *et al.* (2013) examined the dimensions for considering investigating support for inquiries in informal or semiformal settings. Hence, there is the need to maximize the use of mobile technology in delivering contents, thus, bringing up the idea of designing a system that uses mobile technology in delivering e-learning contents and results.

The specific objectives of this chapter are to highlight the benefits of the mobile learning technology, alongside the requirements for its deployment. It is also intended to recognize some significant research efforts directed towards this technology in order to improve teaching and learning. In addition, it describes an implementation of a mobile learning system in higher institution of learning; a system that can provide efficient, but flexible teaching methods for instructors and a more independent and responsive learning environment for learners.

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