

# Chapter 22

## Guidelines for Design and Implementation of Mobile Learning

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### ABSTRACT

*As technology evolves, there is a shift towards the use of mobile technology to deliver education both on-campus in a blended format and online delivery. This shift is moving at a very fast pace which is a major challenge for educational organizations which has to train staff and build the infrastructure for mobile delivery. Educators have to be trained on how to develop quality mobile learning materials, how to use the technology for the delivery, and how to provide quality support to students so that they are successful when using mobile technology to learn. This chapter provides guidelines for designing and implementing mobile learning.*

### INTRODUCTION

As more people around the world use mobile technology there will be an increasing need for designing and delivering education on mobile technology. There is a sense of urgency to develop learning materials for mobile learning because of the rapid increase in the use of mobile devices such as cell phones, smart phones, tablet PCs, web pads, and palmtop computers by learners and individuals for everyday tasks. By the end of 2016 there will be over four and a half billion mobile phones worldwide and mobile connection will bypass landline connections. As a result, there will be more access to information and learning materials from anywhere and at anytime, using these mobile devices (Ally et al., 2014). The trend in society today is learning and working “on the go” rather than having to be at a specific location to learn and work. Also, there is a trend towards ubiquitous computing, where computing devices will be invisible to the users because of the wireless connectivity of mobile devices. As a result, we are seeing

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more use of mobile learning in education and training that will require development of quality mobile learning materials (Jalil et al., 2015). A good model for designing mobile learning materials is essential if there is to be quality mobile learning. Badrul Khan (2005) proposed a framework for developing learning materials that can be used for developing high quality mobile learning materials. This chapter will describe how Badrul Khan Framework can be used to develop high quality mobile learning materials to meet the needs of a variety of learners.

## **BACKGROUND**

There are many definitions of mobile learning. According to Ally (2004), mobile learning is the use of electronic learning materials with built-in learning strategies for delivery on mobile computing devices to allow access from anywhere and at anytime. O'Malley et al (2003) defined mobile learning as any sort of learning that happens when the learner is not at a fixed, predetermined location, or learning that happens when the learner takes advantage of the learning opportunities offered by mobile technologies. Traxler (2005) defined mobile learning as any educational provision where the sole or dominant technologies are handheld or palmtop devices. The definition of mobile learning we will be using in the chapter is “the delivery of learning materials and providing learning support on mobile devices to provide flexibility to the learner so that the learner can learn while they are mobile”.

Because of the proliferation in the use of mobile technologies around the world, there is a significant interest in mobile learning to provide flexibility in learning. The design of the mobile learning interface from a pedagogical viewpoint is critical to promote success in learning (Subramanya & Yi, 2006). A systematic framework must be used for the design of mobile learning so that developers can produce high quality learning materials that meet the needs of learners. This chapter will describe how to design, develop, and deliver mobile learning materials using Badrul Khan's (2005) Framework (see Figure 1). However, it is important to discuss why mobile learning should be implemented in education and the benefits of mobile learning.

### **Benefits of Mobile Learning**

Mobile learning contributes to global education since learners can access mobile learning materials from anywhere at their convenience regardless of time zones. Mobile devices are small enough to be portable, which allows learners to use the device from any location to interact with other learners from anywhere, and at anytime to share information and expertise, complete a task, or work collaboratively on a project. Learners can use the wireless capability of their mobile devices to access up-to-date and relevant learning materials from the web and to communicate with experts in the field that they are studying. Situated learning, which is the application of knowledge and skills in specific contexts, is facilitated, since learners can complete courses while working on the job or in their own space, and apply what they learn at the same time.

Mobile devices have many benefits because they allow for mobility while learning and working; however, there are some limitations to mobile devices that designers must be aware of when designing learning materials for delivery on mobile devices. Some of the limitations of mobile devices in delivering learning materials include the small screen size for the output of information, small or restricted input devices, low bandwidth, and challenges when navigating through the information. As a result, it is

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