

## Chapter 41

# Design of Blended Mobile Learning in an Urban Environment

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### ABSTRACT

*As mobile phones become more and more common, the term mobile learning has received a lot of attention in recent years. Although teachers at educational institutions and managers in companies are aware of this new learning mode, many are uncertain if such adoption of technology is suitable for them. They are also puzzled by the various forms of e-learning, including Learning Management System (LMS), Massive Open Online Courses (MOOC), Augmented Reality (AR) and Student Response Systems (SRS). This aim of this chapter is to provide educators and managers with an overview of the different forms of e-learning. It begins by reviewing LMS and MOOC, and then it focuses on SRS and AR. The following three types of SRSs are discussed – Clicker-based, Mobile phone-based and Game-based. Exemplars are described to show the benefits of mobile learning when it is properly designed and well-implemented by the educators in an urban environment. The chapter concludes by stating the implications of mobile learning technologies for working professionals.*

### INTRODUCTION

The concept of mobile learning and its applications have received considerable attention in recent years. Although educators at primary schools, secondary schools and even universities are aware of this new learning mode, many are still uncertain whether the adoption of this technology for learning would be suitable for them. Educators who want to adopt mobile learning may not have acquired the sufficient knowledge and experience to modify their current teaching methods to maximize the benefits of this new mode of learning. The aim of this chapter is to provide educators with an overview of the different

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forms of mobile learning as well as their benefits and challenges. The phenomenon of mobile learning will be examined to reveal its importance to educators and learners. To provide a better focus, this chapter reveals certain effective teaching strategies and good practices in the design of blended mobile learning, in which mobile technology is used in conjunction with the traditional face-to-face classroom setting and other e-Learning tools. Examples are illustrated on the benefits of adopting mobile learning if it is properly designed and well implemented by educators in an urban environment. The applications of mobile-learning technologies are illustrated, and implications for working professionals in an urban environment are further deliberated.

In a fast-paced, highly urbanized society, professionals who have finished their formal education often lack time to keep themselves familiar with the knowledge they acquired in school and to keep abreast of the advances and latest developments in their own fields. When there is a lack of sufficient training and continuous maintenance of professional knowledge, blunders are likely to occur, and they may have significant financial implications for rectification. Sometimes, human lives can be even lost in the process.

For example, in Hong Kong, the “Capital City of Asia”, there have been incidents involving working medical professionals. In 2011, a patient was admitted to Queen Elizabeth Hospital for throat removal surgery and a tracheostoma procedure to create an artificial breathing hole for him. However, the three nurses who were taking care of the patient mistook the permanent tracheostoma as a temporary one and taped down all four sides. The patient died a few days after the surgery. In 2011, the Hospital Authority had to pay HK\$1.3 million in compensation to a university student because a doctor accidentally made a hole in his heart when he was a baby, and the mistake was not fixed until 12 years later (Yeung, 2016). In August 2014, a pathologist at the United Christian Hospital made mistakes in the reports of 118 people; consequently, 17 received the wrong treatment, and some cancer cells were missed. In 2014, there were 49 serious medical incidents in Hong Kong, a record high since the Hospital Authority started writing reports on medical incidents in 2008. There were 26 serious medical incidents in 2013 and 34 in 2012 (Yu, 2015). More recently, in June 2016, the Nursing Council ruled that the performance of three nurses was below professional standards. The council ruled that the mistake was not intentional and that the nurses had learned a hard lesson (Yeung, 2016).

There are also examples that show how engineers, another important group of professionals in urban environments, need to avoid blunders. On May 20, 2016, the green rooftop of a sports center at the City University of Hong Kong (CityU) collapsed without warning and injured three people. The collapsed rooftop covered an area of 1,400 square meters (35 m x 40 m). The rooftop was capable of holding a loading of capacity of 73 kilograms per square meter. However, the green pitch gave the rooftop a loading of approximately 300 to 400 kilograms per square meter. Hence, the rooftop had to be five times stronger than it was to hold the vegetation. The recent rain was believed to have quadrupled the weight of the rooftop to 700 tons. An investigation is currently still underway at the time of this writing, but CityU has claimed that it had followed expert advice from construction engineers. In the past four years, the City University has spent over HK\$700,000 on rooftop vegetation. All similarly structured rooftop gardens have now been dismantled (Li, 2016).

Therefore, there is a need to maintain the knowledge and skills of professionals such as nurses, doctors, and engineers in a timely and self-paced manner after they finish their formal education. It is proposed that blended learning is an effective way to achieve that goal. In this context, this chapter first provides an overview of various contemporary mobile-learning technologies. Then, it introduces relevant classroom and self-paced learning examples that are specific to medical and engineering professions. Finally, this chapter provides future research directions and concluding remarks.

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