

## Chapter 14

# Mobile Wireless Technologies Application in Education

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### ABSTRACT

*This chapter brings the reader's attention to understanding how technologies are aiding education with a focus on mobile technologies. In the early sections of this chapter, mobile technologies are explained briefly along with their significance to education. Implications for all involved in the education process using these technologies are then discussed. A pedagogical framework for mobile learning is then introduced along with standard theories commonly used, such as the transactional distance theory. Technological limitations and considerations are discussed to highlight future measures when designing these technologies specifically for educational purposes. Examples of mobile technology implementations in current education stages are then presented, such as mobile technology uses in higher education along with technologies used for early learners. Finally, the main objective of this chapter is presented to discuss the future of mobile technologies thoroughly, including assumptions of how these technologies will be part of everyday life for future learners.*

### INTRODUCTION

Mobile technologies have been a part of most people's lives for a number of years now especially in western countries. It has become normal for people to be able to talk to others anytime from anywhere, take pictures, record data and obtain information from all over the world. As time passes, mobile technologies develop at consid-

erable speed to offer even richer experiences for their growing number of users.

In order to utilize mobile technologies for learning purposes, educators' main task is to recognize best practices to use these resources to support education. Currently, even though applications are being developed for many purposes on a daily basis, the ones with learning objectives are lacking.

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## **MOBILE WIRELESS TECHNOLOGIES**

Mobile or wireless technologies are often mistaken as being the same as mobile wireless technologies. Mobile wireless technologies are different from mobile or wireless technologies simply because not all mobile technologies are wireless nor are all wireless technologies mobile. Mobile technologies consist of two aspects: mobility and computing. Mobile computing generally represents continuous access to network resources without limitation of time and location. Wireless generally represents the transmission of any kind of data such as text, voice, video or image which are conducted through radio waves, infrared waves or microwaves instead of wires. Therefore, mobile wireless technologies is defined as any wireless technology that uses radio frequency spectrum in any band to aid transmission of text data, voice, video or multimedia services to mobile devices freedom of time and location limitation.

## **MOBILE TECHNOLOGIES ACCESS TO NETWORK RESOURCES**

Due to technical complexities, understanding how teachers and students access network resources using mobile wireless devices are not easy. However, understanding how mobile wireless devices work may provide clearer insights to the use of this technology in all aspects of our society specifically education.

Wireless computers operate in a similar way to regular computers without the wires. A wireless network interface card is installed in laptop computers and uses a very low frequency instead of a wired connection to connect to a network, then sends a very low power signal to a wireless access point which is installed in buildings and classrooms. The wireless access points are connected to a wired network such as a local area network. Therefore, the wireless access points

serve as the bridge between the wireless network interface card and the wire network. The wireless access points support transmission for many users simultaneously and far more than wired networks. However, using wireless access points to connect to a network limits the speed of transmission compared to wired computers.

In the case of PDAs and mobile wireless phones, users need to subscribe to wireless services which are provided by operators such as AT&T, Vodafone, and T-mobile etc. With wireless services subscription, teachers and students simply press some buttons on their mobile wireless devices to access the network. Different infrastructure is required for different mobile wireless devices in order to access network resources.

## **HOW CAN MOBILE TECHNOLOGIES BE SIGNIFICANT TO EDUCATION?**

Most technologies for personal use are mobile devices that can fit in our pockets and enable worldwide communication. This universal appeal creates an interest in utilizing these resources for learning purposes. There are many examples of learning using mobile devices such as personal digital assistants and mobile phones but are part of a larger space of possible mobile technologies which are mostly classified into the two dimensions of personal vs. shared and portable vs. static.

Education using mobile technologies is starting to reach institution wide implementations. Educators and developers should take into account the following factors for successful implementations:

- **Context:** Utilization of contextual information which may go against learner's privacy rights.
- **Mobility:** Being able to learn outside the classroom may cause learners to participate in activities what clash with the educators program or curriculum.

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