

Chapter 19

Enhancing Learning With Wearable Technologies in and out of Educational Settings

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ABSTRACT

The rapid developments in mobile and wireless technology have led to the emergence of different design approaches that respond to user requirements. Among recent emerging technologies, wearable technology appears to be a growing field. Wearable technologies are defined as intelligent devices with a variety of sensors in order to monitor physical movement, which are lightweight, easy to carry, bendable. These devices can be tracked and linked constantly through applications while users are maintaining their daily routines and actions. Due to these features, the use of wearable technology offers many educational opportunities in teaching-learning environments, such as student engagement, contextual learning, recording & sharing, evaluation & feedback, administrative functions and so forth... Besides the educational affordances, there are also some ethical issues. Wearables have major concerns related to privacy, accuracy, intellectual property and accessibility.

INTRODUCTION

Nowadays, information and communication technologies (ICTs) are frequently used by individuals in societies. Since ICTs provide users with a great number of benefits, such as speed, instant access to the information, visual communication, socialization and so forth to facilitate their everyday responsibilities, people, regardless of their age, tend to improve behavioural intention to accept and use these technologies in their daily lives. The rapid developments in mobile and wireless technology have led to the emergence of different design approaches that respond to user requirements. Making especially the human-computer user interface smaller, mobile technologies can now be used in any place at any time.

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With the developing sensor technologies and nanotechnological renovations, the concept of “wearable technologies” has become a part of our lives. Thanks to the ubiquity features of wearable technologies such as sensors, microprocessors and wireless communication capabilities, wearables have become widespread all around the world among the people of all ages (Howard, 2015; Lorente & Morant, 2014). People use wearable technologies on the market in many areas such as health, entertainment, travel, business, industry, patient care entertainment, mass media, fashion, travel and so forth. Considering the influence of mobile technologies on education, wearable technologies are expected to have great influence on education. Wearable devices have been increasingly used in experimental studies conducted in the field of education in recent years. The potential of wearable devices regarding the development and execution of applications in the field of education is also expected to have important influence in the field and to draw the attention of interested authorities (Johnson, Adams Becker, Estrada, & Freeman, 2015).

From this point of view, this chapter discusses the integration of wearables into education by presenting recent practices for instructional purposes. Furthermore, in addition to educational affordances of wearables, the ethical considerations that may be confronted while using these technologies are expressed in detail.

By the end of this chapter, the reader will be able to

- Describe how the wearable technology is defined.
- Explain the feature of the sensors integrated into wearable devices.
- Identify the differences between divergent wearable devices.
- Discuss how the wearables can be integrated into teaching-learning environments.
- Criticize the educational affordances of wearables.
- Discuss about the ethical considerations arising from the use of wearables in education.

BACKGROUND OF WEARABLE TECHNOLOGY

Technological developments have influence on social dynamics of the community. The modern human sometimes uses technology as a tool and sometimes uses it just to use technology. As a result, technology, which has become an attractive object with technologies whose basic purpose is to facilitate our lives, has been a part of our lives. After mobile technologies like the mobile phone and tablet computer have taken a place in our lives, they have led to fundamental changes in many aspects of our lives ranging from our way of doing business to our understanding of entertainment. It is known that these technologies have great influence especially on the field of education and still constitute the focus of a number of related studies. Making especially the human-computer user interface smaller, mobile technologies can now be used in any place at any time. With the developing sensor technologies and nanotechnological renovations, the concept of “wearable technologies” has become a part of our lives. Wearable technologies, which include electronic accessories such as comfortable clothes and a band, wristband, ring, glasses and helmet are also called wearables. In addition, they are also known as wearable devices (Kiana Tehrani & Michael, 2014). Wearables can function effectively just as mobile devices do. While there are wearable devices that work as an extension of mobile devices, there are other ones that work independently. With the developing processors and communication technologies, the number of independently working wearable devices is increasing.

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