Chapter 4.6
Ubiquitous Computing
Applications in Education

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ABSTRACT

With the development of technology, new roads have been opened in education. An interesting idea is to use computers in teaching and learning procedure. Students will have the opportunity to gain access to information resources in a timeless and limitless way. Teachers will be able to transform their classes in a student-centered environment, avoiding the drawbacks of the traditional teacher-centered model. In this direction, ubiquitous computing has significant advantages. Ubiquitous means that computational devices are distributed into the physical world, giving us boundless access to communication and information channels. Now, knowledge can be built based on collaboration, communication, experimentation, and on students’ experiences. Research has shown positive impacts on learning. This chapter deals with issues directly connected to ubiquitous computing, such as its features, types of devices used, and pedagogical goals. The advantages and disadvantages of ubiquitous environments are fully examined and some initiatives are referred.

INSIDE CHAPTER

With this effort we try to cover the subject of ubiquitous or pervasive computing in education. We present important issues related to it. The first is the features of this technology. It is important to see and understand them. We also describe the connection means in a pervasive environment. Devices are basic elements of such systems because all educational activities are based on them. Devices vary from those with small screens to those with larger screens. Another separation may be given based on their computational capabilities. We also deal with the pedagogical goals that must be implemented. It is a crucial part of such efforts because the desired result is to assimilate and efficiently teach the students. We describe the advantages and disadvantages of the referred technology. As we will see, ubiquitous computing offers a lot of interesting advantages, but on the other hand, there are open issues that must be taken into consideration. The last part is devoted to the description of some initiatives that take or took place in universities and schools. We describe some platforms that may be used to
Ubiquitous computing environments are different from what one traditionally finds in most school settings. It offers to all students and teachers continuous access to a wide range of software, electronic documents, the Internet, and other digital resources for teaching and learning. These initiatives' goals include increasing economic competitiveness, reducing inequities in access to computers and information between students from wealthy and poor families, and raising student achievement through specific interventions. Other reasons cited for supporting laptop initiatives include improving classroom culture, increasing students' engagement, making it easier to differentiate instruction according to students' needs, and solidifying home-school connections (Bonifaz & Zucker, 2004).

The UK government and Scottish executives have listed a number of priorities for ubiquitous education for the 14+ age range. This list is discussed in Smith (2002) and Sutherland (2002). According to authors, the priorities posed are:

- Widening participation of students
- Increasing the diversity of students in education
- Quality and standards through the use of ubiquitous computing