Chapter 7

Exploring the Educational Potential of Internet of Things (IoT) in Seamless Learning

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ABSTRACT

One of the new concepts that appear in the learning revolution with emerging technological advances is seamless learning. This type of learning involves the continuity of learning experiences by means of technology regardless of environment and time, and without any interruption. A necessary and useful technology in realizing seamless learning is “Internet of Things”. IoT technology is an infrastructure on which things can communicate with one another or with human beings by connecting to the Internet, and which has the capability of simultaneously storing and exchanging the collected data on cloud computing systems. With its potential in a wide area of applications in the future, this technology is expected to be used in education as well. Furthermore, it has a huge potential to contribute to seamless learning experiences. Development and expansion of this technology will make future educational institutions feel the necessity to accept and adapt this technology. In this regard, this study aimed to introduce IoT technology and to explore educational potential of seamless learning.

INTRODUCTION

Dramatic changes in information and communication technologies has transformed our lives and the way we learn. Therefore, learning goes beyond the walls of the classroom. “The world is becoming a mobigital virtual space where people can learn and teach digitally anywhere and anytime” (Şad & Göktaş, 2014, p. 606). Besides, individuals have gained the habit of rapid knowledge acquisition and...
sharing. One of the new concepts that appear in the learning revolution based on technological advances is seamless learning. This concept, independent of the technology as an essential component, was initially defined by American College Personnel Association (1994) as connecting in and out of classroom student experiences within the campus to ensure their seamless learning. Moreover, Kuh (1996) emphasized that this process was of high significance regarding students’ out of campus experiences. Later on, Chan et al. (2006) stated that interconnected mobile devices had the potential of initiating a new era in technology-enhanced learning by ensuring the continuity of learning. Today, mobile technologies, which are owned by almost every individual, do not only support learning but they also provide constant communication for learners through social networks and other ways of communication, establishing a perpetual link between virtual and the real world, and access to information by joining the networks (Looi et al., 2010). Regardless of time and space, these technologies simplify individuals’ activities of communication, collaboration, sharing and learning with peers, friends and family members (Looi et al., 2010). Thus, learners can learn everything they are curious about uninterruptedly on the basis of individual or social interaction in formal or informal learning environments (Chan et al., 2006). In this regard, seamless learning can be defined as the continuity of learning in real or virtual world based on individual or group cooperation in in-school or out-of-school, formal and informal learning environments by means of personal technological devices (Looi et al., 2010; Wong & Looi, 2011; Wong, 2012). In seamless learning, learners are able to learn everything they need in different environments and situations using their personal mobile devices easily and quickly. While this learning can be individual, it can also take place among peers, in small or larger groups, even with teachers at school, in the outside world, in museums, in virtual environments, in social networks and in short, virtually everywhere (Milrad et al., 2013). Interconnected mobile devices in the seamless learning process have a significant role in providing support services to learners and their access to learning content via digital networks, in enriching the learning process, learning resources, learning opportunities and experiences, and the continuation of learning activities in a seamless way. With mobile devices, learning experiences show continuity in different environments. One of the necessary and useful technologies in realizing seamless learning is the “Internet of Things (IoT)” technology. IoT enables learners to learn any content at any given time in an uninterrupted manner by making every object in learning environment digital, intelligent and connected to a network. Therefore, IoT provides a technological background for seamless learning environments (Xue, Wang & Chen, 2011). IoT is anticipated to change our world and our habits. Also, the learning habits of individuals are also subject to change. Individuals experience seamless learning processes and share the gained experiences with the rise of devices connected to the Internet. In this sense, IoT technology is regarded as one of the effective means of technology that can mediate the experience sharing process of seamless learning. For this purpose, IoT technology is introduced and its potential use in the field of education is discussed in this section.

INTERNET OF THINGS

Internet of Things is a concept which was first coined by Kevin Ashton in 1999 in one of his presentations (Ashton, 2009). This concept is also called Internet of Everything (IoE). There are several definitions of IoT. This concept expresses a broad technology that consists of networks through which all objects can communicate with one another by means of different communication protocols and connect to the Internet.
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