Editorial: impacts of smart devices in education

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It is becoming a new trend in education to learn anywhere through Massive Open Online Courses (MOOCs) using Information and Communication Technology (ICT) tools. The popularity of smart phones has further sped up this trend owing to their portability and diverse functionalities. In addition to facilitating students' learning and their interaction with both their peers and their teachers, no matter where they are, smart phones also enable teachers to manage their classes, such as assigning homework and providing feedback to students. Lai et al. (2016), who investigated both learners' and teachers' preferences in mobile learning using a mobile learning environmental preference survey (MLEPS) with eight important factors (e.g., continuity, ease of use, adaptive content, relevance), showed that mobile learning is one of the preferred learning environments nowadays. The impacts of learners with different personal characteristics learning through handheld devices have also been investigated by researchers (Karthikeyan et al., 2015). Currently, various applications have been developed to facilitate teaching and learning via smartphones, such as programming systems (Lo and Lee, 2016), and Graduate Record Examinations (GRE) preparing systems (Nivedha et al., 2014).

On the other hand, to promote mobile learning in educational institutions such as schools and colleges, it has become a new issue to prepare handheld devices for individual students. When considering this issue, several factors, such as financial, maintenance and management problems, need to be taken into account. The Prepare Your Own devices and Determination (PYOD) strategy proposed by Hwang et al. (2017) is such an approach conducted in Taiwan's high schools. Hwang et al. (2017) not only defined the achievement levels of mobile learning implemented in individual schools, but also showed how the mobile devices prepared by schools and students could be effectively managed and utilised to facilitate learning and even higher order thinking. In the meantime, to avoid the potential negative effects of allowing students to use mobile devices in the class is a great challenge to many teachers, and hence researchers have suggested that teachers need to employ effective strategies for guiding students to utilise smart phones in the class (Anshari et al., 2017).

The rapid growth of mobile learning studies and application has also led researchers to conduct reviews on relevant topics (Sung et al., 2016; Parkavi et al., 2017; Reddy et al., 2016; Subeh et al., 2017). In particular, a detailed study on learning science through mobile applications (apps) was carried out by Zydney and Warner (2016), who employed a qualitative analysis on design, theoretical foundations, and learners' outcomes. They also provide several recommendations for mobile app designers, such as the provision of facilities for supporting collaboration, the importance of following the instructional principles, as well as the need to integrate theories and practical applications. From these review studies, it can be seen that smart devices are playing a vital role in education around the world. The aim of this special issue is to inform researchers and school teachers of the latest advancements in smart device-based teaching and learning. It is expected that the studies presented in this special issue can inspire mobile learning researchers and provide school teachers with appropriate references for conducting mobile learning activities in the future.

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