Transforming the educational settings: innovative designs and applications of learning technologies and learning environments

Gwo-Jen Hwang, Hui-Chun Chu, Chengjiu Yin & Hiroaki Ogata

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In recent years, technology-enhanced learning (TEL) has become a popular and important trend of educational settings. Researchers have designed and developed many extensive computerized learning environments and technologies, which not only enable learners to access rich information, but also situate them in learning contexts for solving problems via collecting data, analyzing data, interpreting findings, and making inferences (Wu & Tsai, 2007; Yang, Newby, & Bill, 2008). The objective of this special issue is to provide an opportunity for researchers to share their studies and exchange their research experiences and findings of developing and employing innovative learning environments and learning technologies. The scope of this special issue includes mobile and TEL, digital game-based learning, innovative applications of TEL, and innovative e-learning strategies or tools. The environments and strategies as well as the research issues presented in the submitted papers had to be thoroughly evaluated via collecting data from practical applications. To ensure the quality of the special issue, all of the submissions have gone through a double-blind review. After three rounds of review, a total of seven papers were accepted. The topics of these accepted papers include mobile learning, digital game-based learning, Mindtools, and epistemic beliefs regarding web information searching. As indicated by several previous studies, these topics are important trends of TEL (Hsu et al., 2012; Hwang, 2014; Hwang & Wu, 2012).

Owing to the rapid advancement of mobile and wireless communication technologies, mobile TEL has been recognized as an important research topic for both formal and informal learning (Hwang & Wu, 2014). Several terms, such as seamless learning (Wong & Looi, 2011), mobile learning (Sharples, 2000), ubiquitous learning, and context-aware ubiquitous learning (Hwang, Tsai, & Yang, 2008), are related to this topic. In this special issue, three papers studied the use of mobile technology in learning. In the paper entitled “Enculturating seamless language learning through artifact creation and social interaction processes,” Wong, Chai, Aw and King present a study that employed mobile and wireless communication technologies to support language learning through artifact creation and social interactions. Another paper entitled “Learning English through action: a study of mobile-assisted language learning” focuses on the use of mobile technology in language learning, while the third study entitled “The benefits of a challenge: student motivation and flow experience in tablet-PC-game-based learning” aimed to bring in the gaming issue to investigate the students’ learning motivation and flow experience using mobile devices. From these studies, several new aspects or applications of employing mobile technologies in educational settings are observed, that is, the artifact creation-based mobile learning strategy, English phrase learning using mobile devices, and mobile gaming approaches.

Digital game-based learning is also becoming a popular research trend of educational technology (Hwang & Wu, 2012). In addition to the mobile gaming study mentioned
above, two papers belong to this category; one entitled “A simulated learning environment of history game for enhancing players’ cultural awareness” and another, “A time sequence-oriented concept map approach to developing educational computer games for history courses.” The applications of both studies are history courses. The former focuses on students’ cultural awareness, while the latter aims to show the effects of integrating a well-known Mindtool, concept mapping, in educational computer games on students’ learning performance. These studies reveal that digital game-based learning can not only promote the learning perception of students, but also has the potential of improving students’ learning performance if the learning tools or strategies can be properly integrated into the gaming scenarios (Gerber & Scott, 2011; Sung & Hwang, 2013).

In the paper entitled “A spreadsheet-based Mindtool for improving students’ learning performance in identifying relationships between numerical variables,” Lai and Hwang further developed a geoscience learning environment with a rarely seen Mindtool, spreadsheets, to help students learn to find the relationships among numerical variables. Moreover, the learning sequence patterns of the students were analyzed to investigate the factors affecting their learning performance. This study inspires readers from two aspects: first, in addition to the well-known concept maps, it is worth trying to employ different computer systems as Mindtools for different educational purposes (Jonassen, 2000); second, learning sequence pattern analysis is a promising way of helping researchers explain their findings.

In the last paper entitled “The relationships between Chinese higher education students’ epistemic beliefs and their judgmental standards of searching for literature online: undergraduate versus graduate comparisons,” the students were situated in a learning context of web information searching, which is an important knowledge acquisition skill nowadays. In this study, the authors focused on students’ epistemic beliefs and their judgmental standards of web information searching, which are becoming increasingly important since web content has gradually become one of the most popular sources of acquiring information for students (Tsai & Hwang, 2013).

From these papers, it is found that the scope of this special issue in some ways reflects the broader research trends of TEL. It is also found that integrating learning strategies or tools into mobile learning systems or digital game-based learning systems could be a good direction to improve students’ learning performance. Moreover, Mindtools can be a good choice for engaging students in higher order thinking, implying the potential of selecting and integrating suitable Mindtools to learning systems for individual applications. Finally, students’ epistemic beliefs and their judgmental standards of using technologies to acquire knowledge could significantly affect their learning behaviors and outcomes; therefore, it is worth investigating relevant issues and proposing new learning strategies to enhance students’ epistemic beliefs of TEL.

References


Gwo-Jen Hwang

*National Taiwan University of Science and Technology, Taiwan*

Hui-Chun Chu

*Soochow University, Taiwan*

Chengjiu Yin

*Kyushu University, Japan*

Hiroaki Ogata

*Kyushu University, Japan*