The era of flipped learning: promoting active learning and higher order thinking with innovative flipped learning strategies and supporting systems

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The flipped learning era

In recent years, “flipped learning” has attracted much attention from researchers and school teachers (Chung, Lai, & Hwang, 2019). It has become an important instructional approach in school settings and has been widely discussed in international journals and conferences. In flipped learning, students learn via videos or multimedia learning materials prepared by the teacher before class (Lin & Hwang, 2018; Sams & Bergmann, 2013). In the class, they are guided to engage in learning activities in which they apply knowledge with the assistance of the teacher or peers. It is expected that, via having more opportunities to interact with the teacher and peers as well as to practice and apply knowledge, students’ learning performance and higher order thinking abilities can be improved.

The popularity of mobile and wireless communication technologies, which are generally accepted by all levels of school students as a learning device (Chen, Chiu, Huang, & Chang, 2011; Yin & Fitzgerald, 2015), has further facilitated the promotion of flipped learning (Wang, 2016). With the help of mobile devices, flipped learning can be seamless (Hwang, Lai, & Wang, 2015); that is, learners can access the instructional materials without being limited by time or location (Hwang, Chu, & Lai, 2017; Sarrab, Alzahrani, Alwan, & Alfarraj, 2014), and the notes taken and information collected in the pre-class stage of flipped learning can be accessed and shared in the class.

The trend of flipped learning studies

By searching for article-type studies from the SCOPUS database using the keyword “flipped learning” or “flipped classroom,” it was found that the number of publications has increased at a fast pace since 2013 (see Figure 1), showing the rapid growth of flipped learning applications.

Figure 2 shows the number of flipped learning studies for individual application domains. It can be seen that flipped learning has been applied to a variety of subjects. The top 10 flipped learning application domains are Social Sciences (799), Computer Science (198), Engineering (188), Medicine (132), Mathematics (82), Arts and Humanities (69), Nursing (57), Business, Management and Accounting (55), Chemistry (53), and Pharmacology, Toxicology and Pharmaceutics (37).

Figure 3 shows the number of flipped learning studies published by individual countries or regions by counting only the nationality of the first author of each publication. It was found that the flipped learning approach has been adopted by many countries around the world. The top five countries or regions are the United States (433), China (106), Taiwan (65), Australia (57), and South Korea (45).

Innovative flipped learning issues reported in this special issue

Although the number of flipped learning applications is increasing at a fast pace, researchers and educators have reported the problems encountered in conducting flipped learning activities (Tsai, Shen, Chiang, & Lin, 2017). For example, students might fail to comprehend the learning content when watching videos at home; teachers might have difficulties knowing the before-class learning
Figure 1. Number of flipped learning studies published in the SCOPUS database.

Figure 2. The number of flipped learning studies for individual application domains.

Figure 3. The number of flipped learning studies published by individual countries or regions.
status of individual students, which makes it difficult to conduct effective in-class activities (Hwang et al., 2015).

The purpose of this special issue was to invite researchers who are engaged in studies to share and exchange their research experiences and findings of using technologies and strategies to provide better Flipped Learning. After several rounds of review, a total of 14 quality papers were accepted for publication in this special issue.

The first category of the studies focuses on the issues of flipped learning strategies. For example, one of the studies investigated the timing of using rubrics in flipped learning by measuring students’ learning achievement, metacognitive awareness, and cognitive load. Another study explored the role of university students’ online self-regulated learning in the flipped classroom. In addition, the impacts of using peer instruction, gamification, game-based learning and the problem-posing guiding approach on students’ learning performance, perceptions and higher order thinking have been reported by several studies included in the special issue. This implies that, in this new flipped learning era, the main concern of flipped learning is not whether it works, but how we can use more effective strategies to make it work better.

The second category of the studies published in this special issue focuses on the use of emergent technologies. For example, one of the studies investigated the effectiveness of the Student Response System (SRS) in a flipped English grammar class for EFL (English as Foreign Language) learners. Another study investigated the impacts of using mobile technology-assisted peer assessment in flipped learning on students’ dance skills and self-efficacy. This complies with the point of Hwang et al. (2015) that, in the mobile era, mobile and wireless communication technologies are becoming the major technologies adopted by teachers and students in flipped learning.

The third category of the studies refers to the innovative applications of flipped learning, such as social humanities education, nursing education, 3-on-3 basketball games, and dance skills. Many people might consider that flipped learning is generally adopted in science, mathematics or language courses. In fact, flipped learning can also be used to improve students’ performance in other courses. The studies included in this special issue provide a good demonstration in this regard.

Conclusions

From the studies reported in this special issue, it can be seen that flipped learning has taken a step forward into a new age, that is, using innovative strategies and technologies to facilitate flipped learning outcomes. In early studies, researchers focused on investigating the effectiveness of flipped learning by comparing its performance with that of traditional instruction. Nowadays, many studies have already reported the effectiveness of flipped learning, and hence researchers have started to investigate whether adopting innovative strategies or technologies can make flipped learning more effective. Therefore, the studies reported in this special issue demonstrate the most up-to-date flipped learning research, which not only provides a good reference for school teachers to implement flipped classes, but also inspires researchers to find valuable research directions.

References


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