Chapter 5

Usages of Information Communication Technology (ICT)

ABSTRACT

This chapter highlights roles of ICT in facilitating creative learning processes. A knowledge conversation model of creative learning addresses four types of knowledge: individual tacit knowledge, individual explicit knowledge, collective tacit knowledge, and collective explicit knowledge. Creativity motives conversations between different types of knowledge, which means creativity shapes new learning opportunities and facilitates learning processes. Therefore, this chapter regards ICT as one stimulus of 'explicit-collective knowledge' and could facilitate the learning loop as well as creativity development. Additionally, technological pedagogical content knowledge (TPACK) framework as a part of training programme of staff development is proposed to Chinese universities.

INTRODUCTION

The new technologies have the potential to fundamentally transform how and what learn throughout their lives. In parallel with pedagogical development, Information and Communication Technology (ICT) has been drawn much attention on supporting learning environment in educational institutions. The emergences of the era of new technologies such as the Internet and various

applications have taken steps towards a new environmental challenge in the field of teaching, learning, and assessment (Daud & Zakaria, 2012; Zhou, 2016). Just as the advances in biotechnologies made possible the 'green revolution' in agriculture, new digital technologies make possible a 'learning revolution' in education (Resnick, 2002; Zhou, 2018).

As mentioned, Chinese government has devoted much on digitalization in developing a 'innovation-oriented nation'. According to the report provided by Mckinsey Global Institute (MGI) in 2017 (https://www.mckinsey.com), China has one of the most active digital-investment and start-up ecosystems in the world, has the potential to set the world's digital frontier in coming decades. Today, China is undergoing a digital transformation as a result of Chinese consumers' enthusiasm for these technologies as well as the nation's fast-growing digital infrastructure. By the end of 2015, China had 688 million Internet users and 620 million mobile Internet users. Among them, 413 million had shopped online, 152 million enjoyed the convenience of digital health services, and nearly 100 million used apps for transportation. As part of its 13th Five-Year Program, China plans to increase its fixed broadband penetration rate by 30 percent and its mobile broadband penetration rate by 28 percent by 2020. The nation also plans to advance research on key technologies such as 5G and ultra-wideband, and to initiate the commercialization of 5G. Meanwhile, the plan of Made in China 2025 focuses on digitalization of China's manufacturing sector, Internet Plus seeks to transform a broad spectrum of industries through use of digital technologies. The plan emphasizes more than just integrating mobile Internet, cloud computing, big data and the IoT into businesses in various traditional industries to enhance operational efficiency (Accenture 2020).

Increasingly, people will need to work alongside robots and employ AI. Many jobs will be 'machine enhanced'. This requires a transformation in the way that educating and training people's skills, this also requires to integrate digital technologies into educational system that facilitates the 'learning revolution'. As suggested by The World Bank (2013), China will have to reply more on innovations in ICT and pedagogical techniques involving the greater use of multimedia and flexible online training customized to the varying needs of students. Meanwhile, opportunities in online education are not confined to university students, with online applications available to pre-school and school-age students, as well as specialized applications and programmes for test preparations and professional development. However, a big problem in education changes towards 'student-centered learning' model in a Chinese university is to deal with the conflict between limited classroom space and

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