

# Chapter 14

## Information and Communication Technology in Teaching and Learning: Effects and Challenges in China

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### ABSTRACT

*This chapter provides an overview of the current development of Information and Communication Technology (ICT) utilized in teaching and learning in the People's Republic of China. Specifically, the chapter describes and discusses the effects contemporary ICT has on Chinese elementary and secondary education, as well as the existing challenges in ICT applications. The chapter also examines ICT's application in higher education, particularly in distance education, and the issues that have to be dealt with. The chapter discusses the potential for further developing education with ICT. In addition, it makes recommendations with regard to providing better education with ICT in China.*

### BACKGROUND

On July 17, 2013, China Internet Network Information Center reported that about 591 million Chinese had used the Internet regularly as of June 30, 2013. This places China as the country with the most Internet users in the world. About 44 percent of the Chinese population has used the Internet, which means today Chinese use information and communication technology (ICT) more extensively in their life, including in education. With increasingly sophisticated ICT, it is easier

for Chinese learners to receive distance education than before (Wang, 2010). However, when compared with the United States where about 78 percent of the population use the Internet regularly (Miniwatts Marketing Group, 2012), the gap is still great. There are also obvious gaps within China between different regions.

While proportionately Chinese lag behind developed countries in using the Internet, the increase in the number of users in the first half of 2013 is approximately 2 percent (China Internet Network Information Centre, 2013), higher than

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that in most developed countries. As more Chinese go online, the Internet has grown in importance as a venue for business, entertainment, as well as education. As Chinese are more involved in international affairs, Chinese educators' awareness of internationalization has also increased, and the interaction between Chinese educators and international colleagues has been increasing. China is the only country among Economic and Social Commission of Asia and Pacific members that has extended its commitments to liberalize access in all five subsectors of educational services (Raychaudhuri & De, 2007).

Chinese still spend a smaller percentage of their gross domestic product on education than the average level in the Organization of Economic Cooperation and Development countries (The World Bank, 2012). The Chinese economy is the second largest in the world, next only to that of the United States, but the Chinese population is four times that of the United States. The gap in education between China and the United States is obvious. In 2011 the Chinese expected years of schooling was 11.7, compared with 16.8 of the United States (United Nations Development Programme, 2013). The demand for education in China is huge and the potential of the education market is great (Wang, 2010). It is impossible for the traditional means of education to fulfill this important task on its own. Within China, because of income disparities, the gap in education attainment between densely populated eastern regions and sparsely populated western regions is wide with western regions lagging behind.

In China, formal education from grade 1 to grade 9 is compulsory, which is referred to as basic education. Education from grade 10 to grade 12 is not compulsory, but 85 percent of the relevant age group was enrolled in grades 10 to 12 in 2012 (Ministry of Education, August 16, 2013). Since China opened up in 1978, more youth receive higher education. However, in 2012 the Chinese higher education participation rate was 30 percent (Ministry of Education, August 16, 2013), still

lower than that in developed countries. Besides, many Chinese are not happy with the current provision of education, and many Chinese students are not interested in learning (Sang, 2010). To catch up economically with developed countries, Chinese have to catch up educationally, when utilizing contemporary information and communication technology (ICT) in teaching and learning will be helpful.

In November 2006 the Ministry of Science and Technology and the Ministry of Education launched the Public Service Demonstration Project for Digital Education, hoping to advance key information and communication technologies in providing education to the general public and to contribute toward the establishment of a life-long learning system. The national government invested substantial amounts of money to implement the "rural distance education project" and "connecting all villages project" to make ICT available across the country (Sang, 2010). ICT can and should play a greater role in meeting the huge demand for education. In addition, per student cost for distance education with ICT is lower than that for face to face programs (Zhou, 2007). By September 2012 China formed the largest network education system in the world (CIConsulting, 2012).

## **ICT IN ELEMENTARY AND SECONDARY EDUCATION**

Rapid social development in China requires the continuous advancement of its education system, in which ICT application has been increasing. Progress in education ICT helps the Chinese education system deal with challenges brought by fast economic and social change and the increasing demand that education be available for all. It has been pointed out that there are problems in the Chinese elementary and secondary education system and it needs a comprehensive reform, particularly a reform in its curriculum. With the advancement of contemporary education ICT,

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