

# Online Education in Japan and China: A Comparative Research

Wang Shudong\* and Neil Heffernan\*\*

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## Abstract

In this paper the authors will compare online education in Japan and China. A thorough analysis of data from numerous sources will be performed. The comparison is based on “software aspects”, such as the level of awareness educational authorities have of online education, and “hardware aspects”, such as the infrastructure of wired Internet and mobile telecommunications. The results of this evaluation indicate that China is lagging behind Japan when it comes to both the software and hardware aspects of providing adequate online education. Some possible remedies to this problem are then discussed along with ideas for future research in this area.

**Key words:** Comparative research, China and Japan, online education, government policies, IT infrastructure, current development

## 1. Introduction

The maturity of online education is positively correlated with economic and technological development. The majority of the members of the OECD (the Organization for Economic Co-operation and Development) are the developed countries in the world and have 97% of the Internet IP addresses, control 92% of the production of computer hardware and software, and have 86% of Internet users around the globe. On the contrary, the countries to the south of the Sahara Desert in Africa only possess less than 1% of the Internet users in the world (Yuan, 2007). Thus, rich and technologically advanced counties and regions have advantages in developing online education.

Japan, the second biggest economic power in the world, is also a land of high technology. Advanced technology has formed the premise of online education development in Japan. As a result, government policies are another catalyst for healthy and rapid online

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\* Faculty of Law, Hiroshima Shudo University

\*\* English Education Center, Ehime University

education development.

In this paper, the authors will conduct a comparative study on the development of online education in both China and Japan. The principal purpose of this paper is to investigate the main gaps of recent online education developments in these two countries, then try to suggest some remedies for eliminating these gaps.

The paper consists of the following parts: Section 1 introduces the background of the problem and delineates the purpose of the research. In Section 2, we compare the two government's policies toward online education. Section 3 compares the popularity of LMS (Learning Management System) use for online learning. Also in Section 3 we discuss the current use of mobile devices for online education. Section 4 compares mobile online education in both countries. Section 5 concludes that at present, China lags behind Japan in online education, especially in mobile online education, but has great potential to catch up quite rapidly. Section 6 demarcates future work to be done in this area.

## **2. A comparison of the two governments' policies toward online education.**

As early as January, 2001, the Japanese government promulgated an "E-Japan Strategy", aimed at making Japan the world's most advanced country in IT infrastructure within 5 years. The Japanese parliament passed relevant laws to ensure the enforcement of this plan. After the "E-Japan Strategy", an "E-Japan Priority Plan 2004" was announced in June 2004, which aimed to emphasize online education policies and prepare for achieving its IT goals in 2005, and laying the stepping stones for 2006 and beyond.

Since the features of the "E-Japan Strategies" include responding to the diverse educational needs in the era of lifelong learning, they have had beneficial effects for the utilization of online education in Japan. (Ministry of Economy, Trade and Industry, Japan, 2006). As related policies to support the promotion of online education, the Japanese government has turned its attention toward policies that enhance "soft" areas rather than the development of "hard" areas. Rich and effective online education content is required and emphasized in Japan's educational policies, such as human resources for content, and the effective utilization of content resources.

In September, 2006, following the implementation of the "E-Japan Strategy", the Japa-

nese government announced a new ambitious IT plan called U-Japan. The “u” in “u-Japan” represents not only “ubiquitous,” but also “universal,” “user oriented,” and “unique.” The plan focuses on “easy connection to networks anytime, anywhere, by anything and anyone” (Ministry of Internal Affairs and Communications, 2007). According to the Japanese government, everyone, including the elderly and disabled, will be able to use ICT with ease in order to assist in their daily lives. Further, the ICT Policy Outline 2007 states that “ICT will also transform society from one of uniformity and standardization to one that is creative and vigorous, and which strives to achieve more creative business approaches and services, as well as a new social system and values” (Ministry of Internal Affairs and Communications, 2006).

Both the E-Japan Strategy and the U-Japan Plan were promulgated by the Japanese government based on the Basic Law on the Formation of an Advanced Information and Telecommunications Network Society, also called the IT Basic Law, passed in 2000. Since then, the Japanese government has setup an IT Strategy Headquarters whose present head is the prime minister of Japan. These headquarters regularly hold meetings to guide IT development in Japan.

Consequently, E-Japan and U-Japan include online education. The E-Japan Strategy has consistently reached its goals in relation to online education: as of March, 2005, more than 50% of classrooms in Japan were equipped with LAN, and 76.8 % of teachers were trained and able to use computers to assist teaching and learning in the classroom. Further, 73% of public schools have homepages, while home Internet usage has increased 23-fold since 2001. Lastly, and perhaps most importantly, DSL, CATV and FTTH have decreased in price by two-thirds. Therefore, online education fundamentals have been tremendously enhanced since the introduction of the E-Japan Strategy (Sakamoto, 2006). In the U-Japan Plan, educating IT human resources, encouraging campuses to be digitalized, requiring teaching staff to develop their ICT abilities, and improving the IT ethics of teachers have had an auspicious start under this program.

In Japan, online education support come from various of departments of the Japanese government, such as the Ministry of Economy Trade and Industry, the Ministry of Education, Culture, Science and Technology and the Ministry of Internal Affairs and Communication. Online education has become a very important concept which draws a lot of attention not only from governments, but also from educational institutions at different levels and industries.

Many other developed countries and regions have IT strategies in place for long-term planning. For instance, in the United States, the Networking IT R&D Program started in 2000; the EU has implemented the eEurope 2005 Action Plan; the U.K has the UK Online Plan (2000-2005); Korea has the e-Korea Vision 2006; Singapore with Infocomm21 (2000-2004), and the Connected Singapore Program (2003-present). All of these actions and plans include online education as a very important part of school curriculums and detailed measures and goals are in place for each (Sakamoto, 2006).

In comparison, the Chinese government seems to lack enough law and policy guidelines and long term strategies in the field of online education. In 1999, the Ministry of Education of the People's Republic of China announced the Action Plan for China Education Development toward the 21<sup>st</sup> Century. The Plan encouraged the implementation of the "Modern Distance Education Project" based on the platform of China Education and Research Net and the Satellite Video Transmission Network, in order to construct an open education and a life-long study system (Ministry of Education of the People's Republic of China, 1999). Since its implementation, online education has taken great strides forward: at the end of 2002, 70% of universities and colleges built LAN and were connected to the Internet; at the end of 2004, 48,605 satellite distance education spots and 7094 computer rooms were built in rural areas. In 2005, sixty eight universities were approved to offer degrees though online education and the number of registered students reached 2.3million (Nan, 2005). However, seeing as China is a large country with a population of 1.3 billion, people who are currently benefiting from low cost online education are still in the minority. On the other hand, online education in the western and central parts of China are much more backward than in the eastern areas. A huge gap exists and is only getting larger. Unlike Japan, different departments of the Chinese central government lack collaboration on this issue.

Therefore, it is not surprising that in the 2007 e-Readiness Rankings published by the Economist Intelligence Unit, Japan was ranked as 18<sup>th</sup> while mainland China dropped to 56<sup>th</sup> from 54<sup>th</sup>, their 2005 standing (Economist Intelligence Unit, 2007).

### **3. The inactive use of online LMS/CMS for education in China**

Online education systems (platforms) and applications are innumerable. The key is how educational authorities make best use of them for their teaching. WebCT, Blackboard,

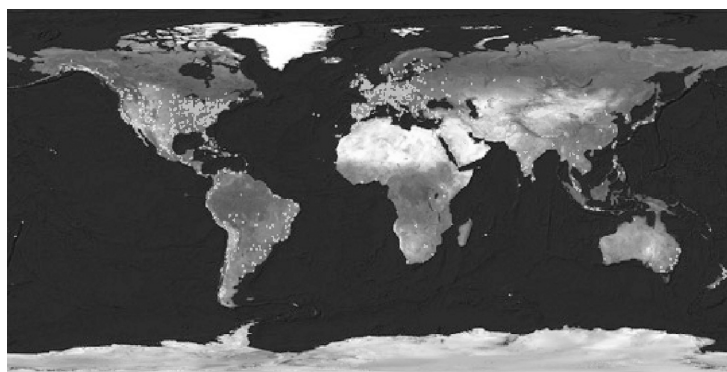
CyberExtension Virtual Learning Environment, WebWeaver Suite and Moodle are well known LMSs. Most Japanese universities are actively using at least one or more LMSs for online teaching and learning. Among these LMS, some were purchased by educational institutions, some were bought by language teachers with their own research or teaching budget, and a small amount of language teachers are developing and setting up their own free online learning systems.

**Table 1 LMS examples in Japan universities**

University	Online Language LMS
Hiroshima University	Virtual University
Hiroshima Shudo University	Gyuto-e, Moodle, Hiplus, Meeting plaza
Yamaguchi University	Smart Html, Moodle, Aruku Academy Service
Tokyo Keizai University	ALC NetAcademy
Ritsumei University	Gyuto-e (a TOEIC-based Program)
Osaka University	WebCT

Most of the online LMSs shown in the above table are commercial, but Moodle is a free open source Learning Source Software which is wildly popular with teachers. People can freely download Moodle and use it on any computer with any OS. This LMS is designed to help educators create online courses with opportunities for rich interaction (Moodle, 2007). As Moodle is free, it has the ability to cross platforms, is easy to use, and is only gaining in popularity. Currently Moodle has nearly 20 million users, speaking over 70 languages in 196 countries as of April, 2008 (Moodle, 2008). And the numbers are increasing every day. It can be asserted that Moodle usage reflects a degree of maturity of LMS usage in a country. On the Internet there are over 490 registered Moodle sites for language study in Japan while mainland China has only about 310, some of which have started to disappear.

It can also be argued that those who do not use Moodle may use some other LMSs for online language education. However, Moodle, a LMS-designed program, is full of interactive functions. Teachers who use the system have access to an array of powerful tools such as lesson, Wiki, assignments, forums, journals, quizzes, surveys, chat rooms, and workshops, and many more (Whilliam & Rice, 2006). What is more important, the system is open-code, and it can be customized to meet different online modalities.



**Figure 1: Moodle User Intensity in the world (May 2008, image from Moodle site)**

Among the nine most commonly used LMSs, Moodle was assessed by Graf and List (2005) to be the best by using QWS (the Qualitative Weight and Sum) Approach. Moreover, the phenomena that most Moodle users are in Europe and North America (see Figure 1), both are areas ranked high in e-Readiness, also strongly supports our assumption: there is a reason to believe that usage of Moodle can reflect online education level.

#### **4. Mobile online education**

The ultimate purpose of mobile online learning is to learn knowledge ubiquitously and movably (Ogata & Yano, 2004). Mobile learning is conducted with m-devices, such as mobile phones, PDAs, and iPods. Through these devices, people can learn when they are on the move, are practically anywhere, as long as they have their devices with them. Mobile online education is bound to become the next most popular learning environment and the main means of u-learning, meaning that education can happen anytime, anywhere.

In Japan, as of January 2007, contracts with mobile phone companies (mainly AU-KDDI, NTT DoCoMo and Softbank) exceeded 95,315,200, which is roughly 78.5% of Japan's total population. Considering that there might be several mobile phones being used by members of the same family on one contract, this represents a much larger percentage of the population actually using cell phones. In Japan, nearly all of mobile phones have Internet connection capability. Web browsing, email, FM radio, recorders, e-books and audio players can be all enabled on all mobile phones if the service is required by a user. Many Japanese universities are using mobile phones to assist foreign language studies.

For instance, English teachers in Nagoya Women's University regularly send emails to students' mobile phones for vocabulary review; Nagoya Kinjo Gakuin University created electronic flash cards for students to review English on their mobile phones (Houser & Thornton, 2005). Mobile video blogs are used at Kochi University for English speaking practice. Podcasting language education is enthusiastically performed in Osaka Jogakuyin College (McCarty, 2007).

Besides language study, mobile phones are being used for evaluating teacher's teaching, checking students' attendance, and for submitting homework (Matsumura, et.al, 2006). One segment of broadcasting technology (mobile digital TV) was used to play educational animated figures for mathematical study (Hayashi, et.al, 2006). In addition, more and more Japanese universities are enhancing their wireless LAN environment so that students can access online education anywhere on campus.

In contrast, because of a lack of solid infrastructure enhancement, mobile education has not been fully exploited in China. Mobile phone technology in China just started to enter the 3G generation, while Japan did so in 2004. Although China has the most mobile phones users in the world, 70% of mobile phones do not have the capability to connect to the Internet (17 million WAP users via 130 million mobile phone holders) (CNNIC, 2007). Only SMS (short message service) is universally available in China. Further, the price of accessing online educational is comparatively expensive. In China, the actual practices of mobile online education are not often reported. A search of the most of influential academic databases both in China and in other countries regarding China's mobile online education garnered very few results.

In order to verify the assumption that China lags behind in mobile online education,



Figure 2: Among 30 randomly selected university website, 13 have mobile phones oriented pages

the authors did a “University Search” of all Japanese universities on Google. Then, the authors randomly selected 30 ( $n=30$ ) university sites, and found 11 have special mobile phone oriented pages/inner sites. Some were carefully designed for three different major Japanese mobile phone web browsing systems: i-mode, ezweb and Yahoo Mobile. The content of the mobile phones sites ranged from emergency notices from the school to lesson review quizzes from individual teachers.

In the same way, we did a search of Chinese university sites. Among 30 randomly selected university sites, none have web pages designed for mobile phone WAP users. There are no QR codes for mobile phones to recognize university email addresses or site URLs.



Figure 3: Among 30 randomly selected university websites, none have mobile phones oriented pages

## 5. Discussion and conclusions

From the above empirical data we can conclude that, in general, the mainland of China lags behind Japan in the area of online education, particularly in mobile online education. The reasons that Chinese online education has fallen behind are due to the sluggish government policies, a lack of close collaboration between governmental departments, and teachers' motivation of using LMS. Simply put, mobile online education has not yet officially been launched in China. Some of the main disadvantages in this regard include a lack of human resources engaged in online education, and government policies toward



online education are bereft of detail. However, because of this slow start, online education in China is sure to become more and more developed in the coming years. However, these developments are clearly linked to the building up of IT infrastructure. This has clear connotations to the economic power and technological strengths of the country.

In spite of rapid and continuous economical development in China, the country is still a developing nation; its economy and technology still can not compete with Japan. Since the existence of this situation will probably continue for the foreseeable future, it will surely take more time for China to catch up with Japan with regards to online education development. At present, China should focus on solving the problems inherent in its system: Online education is still expensive and is beyond reach of most low-income participants; the speed of China Education and Research Net (CERNET) is comparatively slow, which is very frustrating for people who study at home via DSL. Lastly, online education in China content is not dynamic, interactive and rich. In fact, mobile online education does not receive the attention it direly needs in China.

## 6. Future work

There is still much work to be done in this area. Due to the lack of confirmation of the data so far the authors have obtained, many differences in online education in both countries are not discussed and a complete analysis of the situation in both countries cannot be done. The difference in computer literacy rates between college teachers in China and Japan is an area that still needs much work, as is an investigation into the differences between the countries in exactly how diplomas are issued for education done through online learning. Without research in these facets of online education, there is unlikely to be a clear picture presented of the situation of online learning in both countries.

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