Educational Technology International
2005, Vol. 6, No. 2, 1-9.

The Development of Cyber-Education in China: A Review of Experiences and Lessons

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Starting with analyzing the development of cyber-education in China, this article discusses experiences and lessons acquired through making reflections on the following aspects: technology *vs.* pedagogy, the degree education *vs.* non-degree education, resource exclusivism *vs.* resource inclusivism, mono-service system *vs.* multi-service system, and educational quality *vs.* economic profit. Finally, the paper puts forward some suggestions on the future development of cyber-education in China.

Keywords: China, cyber-education, experiences-and-lessons, reflections, prospects

Cyber-education in China: An Overview

Since the 1990s, the rapid development of modern information and communication technologies (ICT) such as computer multimedia, network and satellite communication has launched a profound influence on social politics, economy and education. Under such a condition, modern distance education or network education, two commonly used alternative terms for cyber-education or e-learning in China, was born and begun to develop. In this article, we use the term cyber-education to denote well-organized educational activities taking place through networks.

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The development of cyber-education is closely connected with the promotion of educational informatization in China. In 1998, Ministry of Education released "Action Plan for Invigorating Education in the 21st Century"[1], which pushed distance education of China forward greatly. Subsequently, the national conference on educational informatization was held in June, 2000. The conference declared that information infrastructure of modern distance education in China would have been constructed in three years. It was decided that our distance education network will be built on the basis of CERNET (China Education and Research Network) and CEBsat (China Education Broadband Satellite net) [2].

CERNET is the first nationwide education and research computer network in China. By leveraging the existing fiber infrastructure and resources from state and local treasury, CERNET has completed the 20,000 kilo-meters high-speed transmission link (DWDM/SDH) crossing over 220 cities, with the total backbone bandwidth of 40Gbps. By the end of 2000, bandwidth of CERNET backbone has been up to 2.5Gbps. More than 1200 universities and colleges have accessed to CERNET backbone at speed of 100M to 1000M mostly. Rebuilt China Education Satellite Multimedia Transmission Platform allows simultaneous transmission of eight video channels, eight audio channels, and more than 20 sets of IP data broadcast. Moreover, the Internet access service provisioned on the platform enables high-speed interconnection with CERNET. Thus, the modern distance education system with a space-land consolidated bi-directional education network has come into being.

In 1998, Ministry of Education officially entitled Tsinghua University, Beijing University of Post and Telecommunications, Zhejiang University and Hunan University as the first batch of educational institutions pioneering cyber-education [3]. Up to 2005, there have been 68 universities and colleges carrying out cyber-education experiments with 2.3 million registered students. The number of this kind of students covers 10% of total enrollments in national universities and colleges. The largest institution involving cyber-education is CCRTVU (China Central Radio and TV University),which covers over 1.5 million --nearly 65% of the registered online students. As 95% of CCRTVU students are in-service learners, they don't worry about employment.

Sixty-eight authorized universities and colleges have established management and teaching institutions which are responsible for modern distance education, mostly with a name of Network Education College or Modern Distance Education College. In 2003, 336,000 staff members took up full responsibility for distance education, among which

19,000 were from the universities and 317,000 from learning centers outside campus and public service systems [4].

By the end of 2003, there had been 2347 learning centers outside campus and 142 centers attached to public service system. Four different types of learning models that are widely used have been identified: (a) satellite broadcast; (b) IP radio and TV; (c) internet; (d) the combination of disks and face-to-face instruction.

The development of online learning resources has also been strengthened. Over 10,000 online courses have been developed. In July of 2000, Ministry of Education started to perform the project of "New Century Online Curricula". Up till now, 320 subjects have been designed. The national excellent curriculum construction program initiated in 2003 plans to put 1500 subjects to the internet in three years, free to all the universities and colleges.

Chinese government pay much attention to modern distance education by promulgating series of laws, regulations and principles on the development and organization of modern distance education project, on the establishment and management of online schools and educational websites, on resource development, on recruitment management, on the establishment of learning centers outside campus and public service system ,on quality evaluation and authorization of network education to host universities , on training model reform and open education trial programs of CCRTVU, etc. All the above specify definitely qualifications, conditions, ratifications and administrations of modern distance education, ways and methods of online registration, charge and application for degree as well. In addition, the government stipulates requirements about studying and issuing of technological standards for modern distance education. In 2000, China E-Learning Technology Standardization Committee (CELTSC) was founded. Professor Zhu Zhiting from East China Normal University, the first author of this paper, is Chairman of the committee. Since its foundation, the committee has worked out a whole framework of e-learning technology specifications. (For more information, see http://www.celtsc.edu.cn).

The central government of China has always given positive support to the research & development of e-learning technology. For example, the Ministry of Education (MOE) invested 100 million yuan RMB to the project "Development of e-Learning Resources", the Sci-tech Ministry invested 44 million yuan to the project "Key Technology and Its Applications in Modern Distance Education". Apart from this, the MOE has initiated the project "Connecting-all-Schools", which is jointly funded by the central government and

local administrations. A recent large project is named “Educational Informatization for Primary and Secondary Schools in Rural and Distance Areas”, with a joint investment of 10 billion yuan from central & local governments.

Cyber-education has also been found widely in corporation training besides the field of education. At present, large enterprises in the field of domestic finance, communication, electricity, such as the Bank of China, Peace Insurance, Nokia Company (China), Oriental Communication, Guangming Milk and Milkway Security have established E-learning platforms to train their staff members.

Quite a number of government sections in China have founded distance training centers. Larger training centers are as follows: China Rural Distance Education Net of Ministry of Agriculture, Distance Education Net of Ministry of Construction, Distance Medical Education Center established by Ministry of Health in 2001 and Distance Education Training live teaching initiated by China Meteorology Bureau in 2003 which provides convenient study opportunities for over 50 thousand workers.

Experience and lessons: Several Reflections

China has yielded fruitful results in cyber-Education, but on the other hand, many problems appear. Especially in the recent years, cyber-education has stood serious tests with criticisms and blames instead of optimistic expectations. The reputation of cyber-education is suspected by the society because their graduates cannot find jobs. The unexpected information puzzles us so much that we suppose either the system and personnel or the method of network education is wrong. After investigation, we can decide that the real reason for this unbalanced situation is that market system was introduced into cyber-education at the beginning, however, without relevantly perfect market game rules. We see troubled situation of cyber-education just as a football match without referees and foul lines. Undoubtedly, any market must be managed and monitored. Therefore, it is quite necessary to analyze deeply some contradictory relations in the development of network education.

Technology vs. ideology

The starting point and destination of network education should be education itself while

network as a type of technology is only environment and means. Thus, we think the development of cyber-education ought to abide by the principle "Education is root while network is means". Essentially, technology facilitates spatial & temporal structures of the learning space while ideology determinates educational relationships among pedagogical elements. Only a good integration of technology and ideology could generate sound e-pedagogies.

Nowadays network universities have gradually changed the opinion of regarding network technology as sovereign means. As a newly-rising education form, China's cyber-education is supported by blending learning ideas which surely lead to three combinations: the combination of network education and traditional education; the combination of campus dominant education and online multi-education; the combination of completeness and systematism of traditional education and advance of network education.

Formal education vs. informal education

At the beginning, cyber-education shouldered the responsibility of reforming higher education from talents-centered to populace-centered .Therefore, the performance of degree education-- adult and compulsory education--is the main task of different cyber-education institutes which plays an active role in increasing the number of college students. But in 2001, the fact that the recruitment policy was amended from planned to self-determined leads to declined quality of teaching with a lot of network institutes because of the strong motivation of seeking after great profits. Thus cyber-education gets into a difficult condition.

The troubled situation forces us to reconsider whether we should develop only degree education or attach the same importance to degree and non-degree education (continuing education). In face of the severe reality, we realize that we should adopt flexible measures to local conditions and create an appropriate environment for various kinds of education.

Resource exclusivism vs. resource inclusivism

Cyber-education practices for multiple years show that universities would rather invest respectively to develop online resources for more recruited students than to share the resources with their competitors. Resource exclusivism results in severe waste of

investments. Essentially, the failure in optimization of education resources is caused by the aspiration for economic profits. For the benefit of the overall distant education, we need to renew our ideas and strive for multi-win strategies among various parties, that is, a resources inclusivism should be adopted.

To share and manage online education resources, we should not only establish different university resource centers but also create a mechanism to realize countrywide management and share distributed education resources. We should take standardization and copyright into account for the use of software and consider the reallocation of profits for the share of hardware.

Mono-service system vs. multi-service system

Learning support service is an important factor to assure the development of cyber-education. Many years of practice witness the co-existent situation formed by CCRTVU-centered mono-service system and multi-service system performed mainly by learning centers of various experimental universities and colleges. Which system is better has invoked intense arguments, but without a definite answer yet.

The Ministry of Education have paid much attention to the mentioned problems recently and issued continuously three relevant circulars on the construction of learning centers and public support service system. We think it important to prepare standards of learning support service system, including technical standards and service standards, any of which experimental institutes can select freely. In the last analysis, only really efficient operating model of learning support service, high quality and credibility are crucial to attract universities and colleges to network education, but not administrative measures.

Educational quality vs. economic profit

Running on a large scale is an important element to reduce the cost and ensure the benefit of cyber-education institutions, without exception for cyber-education in China. In order to seek after the greatest profits, the number of the registered students soared sharply from 30,000 of 1998 to nearly 1,000,000 of 2003. However, on the other hand, the number of teachers, resource construction and teaching support service cannot match such a large number of the students. This profit-driven idea results in sudden falling quality in almost all

the business fields. The key to get out of the difficult is whether we can realize the essence of the problem. Therefore, we must abide by the principle of "Quality is essence". If we are creative and enterprising, cyber-education will surely develop healthily.

Thinking about future: Some prospects

Boost to legislation of network education and lifelong study

Legislation and lawmaking in the field of network are relatively weak and lag behind, mainly without perfect law construction and definite mechanism.

However, the importance of legislation has been realized gradually. On July 29 of 2005, the first lifelong education law—"Lifelong Education Byelaw of Fujian Province"-- was approved in China Mainland and has been put into effect [5].

Further measures to promote resource sharing and raise teaching quality

Public service system should be constructed with much effort. In fact, the system is like a kind of "Learning Supermarket" which provides an environment for learners to select subjects, to study, to sit for examinations and to accumulate credits. Public service system breaks down incompatible and unshared situation and contributes to carrying out standards, constructing subjects and sharing software and hardware

On December of 2004, a brand new "Learning Plaza" of 42000 square meters was built by Shanghai Radio and Television University with an investment of 240 million yuan, in which there are multimedia classrooms and cyber-bars and learners of different ages, professions and levels of study can find suitable subjects. "Learning Plaza" is an attempt and initiative made by Shanghai Distance Education Group, a large enterprise in the field of open and distance education in China. Relevant standards of network should be spread rapidly. There is no shirking the responsibility for China E-Learning Technology Standardization Committee (CELTSC).

Quality assessment & evaluation should be developed in a short time. Since the implement of modern distance education, Ministry of Education has organized a series of evaluations on CCRTVU. The evaluations not only greatly urge and improve administrative

competencies of CCRTVU and other provincial TVUS, but also accumulate precious experience for the rest experimental universities and colleges.

Common examinations for some basic subjects should be started in modern distance education. Since 2004, two subjects—computer and English-- have been examined commonly. From 2005, two other subjects –mathematics and Chinese language—will be added to the common examination. Only those who pass the common examination are qualified to obtain authorized diploma.

The rule of "Extirpating Brand" should be performed. Ministry of Education adopts the rule to cancel recruitment qualifications of some universities and colleges which break the law. In 2004, five experimental institutes were ordered to stop recruiting after investigation.

Relation adjustment and accurate orientation

Experimental universities, joint enterprises, learning centers outside campus and public service system ought to orientate themselves in developing network education. The main task of the universities is to teach well and guarantee teaching quality while what the other parties should do is to provide excellent support service.

Technology study and active use of advanced home and abroad technology

Recently, with the gradual development of grid technology, grid has been applied widely. In October of 2003, China Grid was started up pilot operations. Up till now, China Grid has been the most splendid grid project activated by China government. Nine universities are presently engaged in the project. By the time of its completion, resources from 100 key universities will have been shared widely over CERNET, including online subject grid and digital library grid. The establishment of China Grid will push China network education forward actively.

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