# The Practice and Prospect of Distance Learning in Tsinghua University

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Mankind is marching into a new century characterized by an information society. Conventional education methods are faced with severe challenges. By using the latest technological achievements and new concepts in distance education to establish a virtual university, which meets needs of engineers and managers to obtain all different knowledge, is the only way to construct a lifelong education system and achieve an environment for learning society.

The modern distance education is a new kind of models of education that takes the computer network and satellite communication technologies as its basis and multimedia technology as its means. It merges information technology into education and has been paid more attention in the field of education all over world. It will definitely produce a great impact and changes on education. Meanwhile, it will promote the development of information industry and drives the development of economics.

Tsinghua University is the first university which carried out the modern distance education among conventional universities all over China, and great progress has been made since the end of 1997 when the University just commenced on the project of distance education. Through the practice, we have gained some valuable experiences and performed useful exploration for the development of the distance education and relevant policy formulating in our country.

## Review

In February 1996, President Wang Dazhong of Tsinghua University put forward the idea that Tsinghua University should lead in launching modern distance education programs in China. The University Council approved the project at the same year. The construction of the distance education system in Tsinghua University commenced in June 1997 and completed the preliminary phase in September. Mr. Kuang-piu Chao, a patriot from Hong Kong Novel Group Corporation donated 150million US$ for the construction of the system that gave the full support for the smooth construction of the system. On November 20, 1997, Vice Premier of China Li Langqing visited Tsinghua University. When inspecting the distance education program, he affirmed the achievements of distance education in Tsinghua University fully and made important instructions on China’s development of modern distance education. He urged us to make more contribution in cultivating more high talents by sharing the excellent educational resources of Tsinghua University with the people all over China, especially in remote border provinces and minority nationality regions. In the spring of 1998, Vice Ministers of the Ministry of Education of China Wei Yu and Zhou Yuanqing both visited the system on distance learning expressing their kind concern and support. Many leaders from other provinces, cities and autonomous regions visited the program and gave us many useful suggestions. The distance education has been made encouraging progress and will be further improved under the guidance and support of the State Council, Ministry of Education, and so on.

## Guiding ideology

Tsinghua University is one of four universities that the Ministry of Education of China approved to start nationwide pilot experiments on modern distance education. We follow the guiding principles that the Ministry of Education has put forward for the development of modern distance education in our country, that is, Overall Planning, Advancing by demand, Broadening Opening to the world and Improving Quality.

We should participate and push forward the national project of distance education by making full use of dominant disciplines, technology, courses, teachers and administration of the University, so as to enhance the University’s function of services to the society and promote the progress of constructing Tsinghua University as a first-class university internationally.

## Various experiments on the methods of interactive distance teaching

In China, now the economic and technology development in different regions is quite uneven, and information infrastructure in different regions is quite uneven. In large cities and coastal areas, Internet access is popular, but in the mid west part, there may be only local area network, local cable TV network, or even simple TV reception facilities. Under this Chinese context, our distance education adopts an

integrated technical approach. We use satellite, computer network and cable TV, and these three technologies complement each other. That makes us can transmit the teaching program to all the regions in China.

l At the beginning, the teaching programs broadcasted by the university are transmitted to remote sites using a band width of 4M of KU band Asia-II communications Satellite, offering interactions between instructors and students in both real time and non-real time manners.

l With the development of network infrastructure, more and more web-based courses will put on CERNET and CHINANET. We have offered the courses in Beijing through Beijing Education and Sci-Tech Information Network (BEST INFOR) with ATM 155M bandwidth. In particular, Tsinghua Web School has been established this year. This semester three courses are offered only through web, and more than 20 courses are offered through satellite and web simultaneously. The establishment of Tsinghua Web School has provided the students of distance learning more convenience, breaking through the limitation of time and space. Meanwhile, the administration of educational affairs using network computer has been realized.

l The number of cable TV users is exceed to 8,000million in our country, it costs lower and is convenient for student to study at home. At present, some remote sites, e.g. Xiamen City, have used the cable TV to conduct the distance education.

The above three network platforms have same transmitting protocol of TCP/IP.

l Real time interaction is realized by constructing two-way virtual classrooms using VSAT sites and /or conducting full bi-directional interactive discussion and questioning and answering using exiting PSTN or ISDN-based video conference system. For VSAT system, the transmitting quality is good but the facilities costs are very high, and it takes up the band of satellite. So it is not impossible to establish many VSAT sites. For ISDN videoconference system, the transmitting quality is good and the facilities costs are not very high, so there are many remote sites to adopt ISDN as interactive means. But not all region in China are ISDN accessible. For Video-phone and Desktop video-conference system, the costs are low but quality is poor, so the system are seldom used now.

Off-Campus Sites Construction

The Tsinghua Distance Education has now more than 90 off-campus sites with a wide coverage all over China. The establishment of remote sites is mostly done in collaboration with four kinds of organizations, as following:

l State -owned large-and-medium-sized enterprises, e.g., Iron and Steel Firm, Laiwu, Shandong; Qilu Petrochemicals, Shandong; The First Automobile Works, Changchun, Jilin; Daqing Petrochemicals, and so on.

l Universities, colleges and schools at different levels, e.g. Yunnan University, Jiangnan college, Sichuan Radio and TV University, zhejiang Radio and TV University, and so on

l Government agencies, e.g. Bureau of Science and Technology, Nanhai, Guangdong; Association for Science and Technology, Shijiazhuang, Hebei; and so on.

l Scientific and technological research institutions, e.g., 014 Base, China Aerospace Corporation, and so on.

On the basis of the instructions of vice premier Li Lanqing, we pay attention to develop the remote sites at western regions, up to now, we have established 18 off-campus sites at the western regions including Xinjiang Autonomous Region, Qinghai Province, Guangxi Province, Yunnan Province, Ninxia Province, Shaanxi Province, and so on.

Types of courses

The distance education in Tsinghua University is focused on postgraduate continuing education, oriented mainly towards in service staff of science and technology and business management with bachelor degree. Its target is to train and provide more high level human resources equipped with advanced science and technology and versatile experts in different fields to companies and regions so that they can better serve in the nation’s economic development. Main types of courses are as following:

l Training on new and advanced technology, short courses highlighting the latest and major technological advancement and know-how, e.g., the reform of state-owned enterprises, the rule of WTO, The impact of WTO accession on Chinese enterprises, JAVA Programming, and so on.

l Maser degree courses for university graduates with working experience. Three courses are available now, that is, Computer application technology, Business management and Civil and Commercial law. More than 4000 students are studying the courses now.

l Bachelor degree courses for students who have already graduated from colleges for professional training. Four courses are available now, Economics, English, Law and Arts Design. More than 2500 students are studying the courses now.

Quality assurance mechanism of the distance education program

l Technical support is the prerequisite for distance education.

As we said above, In China, now the economic and technological development is quite uneven. It varies from different regions to different

organizations even in a same region. But the delivery of courses and interaction between teachers and students in distance education depends on media.

l The quality of courseware is a key factor for the quality of distance education. There are several factors affect the quality, and those are:

1. Content analysis

In our university, for credit courses, the curriculum of every subject and the syllabus of every course are reviewed by the degree sub-committee of the related subjects. That makes the contents of courses conform to the request of the Ministry of Education and the Degree Office. For training courses, the content of a course is determined on demands of audiences.

2. Teachers

We select excellent professional teachers to provide courseware scripts and take part in the making of courseware.

3. The instructional design

With the development of educational technology and distance education, there is a change in educational concept and idea. The student-centered education will become a main aspect. The instructional design should adapt to the change and make the courseware more suitable for distance learning.

4. Educational research

We encourage the teachers and administrators working at distance education to do the educational research. It is very important for promoting the quality of the distance education. The development of technology brings us challenges accompanying opportunities. The specific technology used by us will vary from courses to courses according to the characteristics of the courses.

l Make students accessible to coaching, interaction.

We organize the real time discussion and questioning and answering between teachers and students on the basis of the needs of the students. We also encourage discussion and communication using various methods among students. And we open discussion forum on Internet and students interact both with the instructors and with the other students.

l Control the outcome of the students and assure the quality of students who are awarded degree.

The strict exam system makes the outcome of students with high quality. The exams are held at the appointed places and time. The invigilators are the teachers from the university to avoid cheat on exam.

Acts in the near future

l The implementation of web-based distance learning overall.

Tsinghua Web School has been set up in April of this year. The center of information network and modern educational technology of Tsinghua University will be established. It is formed by merging original Computer & Information Management Center, Audio-Visual Center and Research Center of Multi-media Educational Software together. It will serves as technical support in teaching through web. It will be in charge of system operating, standard formulating, web-based courseware evaluation and production, in the meantime, it will be in charge of the operation and management of satellite system also. Tsinghua University Academic Affair Office and the School of Continuing Education have started the project of web-based courseware production, and it is estimated that about 40 web-based courses will be completed by the end of this year.

With the upgrading of China Education and Research Network, We will carry out distance education through web nationwide. In order to provide more convenience for student’s learning, we will build the mirror websites at CHINANET and other websites in different regions.

l Enhance collaborations with the institutes beyond Chinese mainland.

With the characteristics of globalization and opening of modern distance education, it is with great significance to implement the collaborations with the institutes beyond Chinese mainland. We have conducted the cooperation with the School of Professional and Continuing Education (SPACE) of the University of Hong Kong, World Bank Institute (WBI), UNESCO, APRU (Association of Pacific rim University), MUCIA (Mid-Western University Consortium for International Activity), with the focus on training courses. And we also hope to spread the distance education of Tsinghua University over the special administrative districts of Hong Kong and Macao, Taiwan, Singapore, and so on.

With a welcome to the 21st century, the Tsinghua Distance Education System, characterized by multiple level offering, guaranteed quality courses, more flexibility and convenience, will spread out to the public, in a daring strive for further progress and making contribution to the cause of education in China and around the whole world.

（文章来源：华南师范大学电教系未来教育研究中心）