

Development and Prospect of Distance Learning in Tsinghua University

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1. Introduction

This paper briefly introduced survey on distance learning in higher educational institutions in Mainland China. It included educational modes and levels, technical transmission modes and management system. Present situation of Distance Learning in 38 universities and National Modern Distance Education Coordination Organization of Chinese Universities were introduced in the paper.

This paper introduced situation of distance learning in Tsinghua University. From 1996 Tsinghua University began to implement program of distance learning. The platform for distance learning was basically completed in 1997. This platform is combined with four different kinds of communication networks. They are Internet, digital satellite communication networks, cable TV networks and telecommunication networks.

Orientation and function of Distance Education in Tsinghua University focus on non-diploma and non-degree high-level training education. IT helps all universities to globalize.

2. Survey on Distance Learning in Higher Educational Institutions in Mainland China

2.1 System and management organization on distance learning

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. It is the first higher education institution that carried out the modern distance learning in Mainland China. 31 higher education institutions that were approved by Ministry of Education to make test as the first group founded Associate Group for Modern Distance Education of China Higher Education Institutions in Beijing in July 2000. The unit in charge of Secretary Group is Tsinghua University. The unit in charge of Teaching Management Group is Beijing Normal University. And the unit in charge of Educational Technology Group is Peking University. Tsinghua University is elected to be the chief unit of group. And vice chief units of group include Peking Univ., Beijing Normal Univ., China People's Univ., Shanghai Jiaotong Univ., Hunan Univ. and Chongqing Univ. Chair of the group is Prof. Hu Dongcheng, Vice

President of Tsinghua Univ. Vice chair of the group is Prof. He Fangchuan, Vice President of Peking Univ. etc. Secretary General is Prof. Yan Jichang, Executive Vice Dean of School of Continuing Education, Tsinghua Univ. Vice Secretary General is Prof. Hou Jianjun, Chief of Division of Distance Learning, Peking Univ., etc. The second group of higher education institutions which were approved to make test on distance learning included 7 universities, such as East China Normal Univ., Xiamen Univ., etc. Other 7 universities have just been approved to join the group soon, such as Nankai Univ., China Agriculture Univ., etc.

2.2 Students who are learning via distance education

There are three kinds of educational systems in the field of China higher education. The first system is ordinary higher education with full time student to get an ordinary diploma and degree. The second system is adult higher education with full time or part time student to get an adult diploma and degree. The third system is self-taught exams with part time student to get adult diploma and degree.

The basic information about the educational levels and number of students in the 38 universities under test is shown in Figure 1 to Figure 3 (all data up to March of 2001).

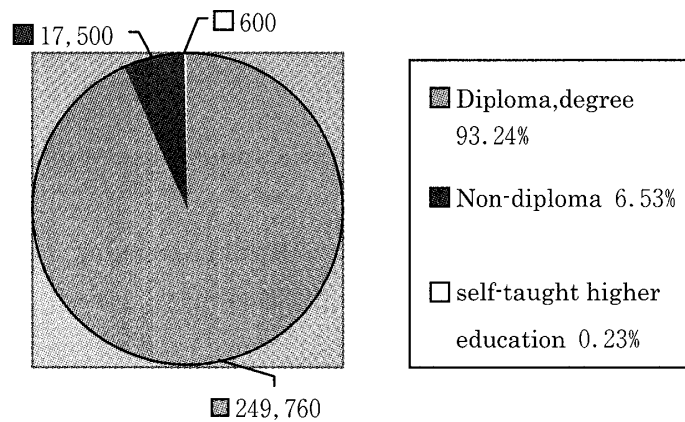


Figure 1: Number of student

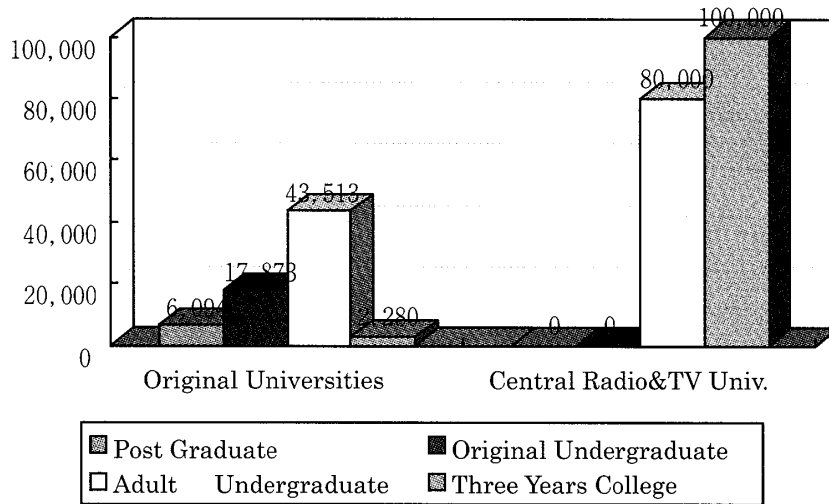


Figure 2: Studying for Diploma, degree

2.3 Transmission modes

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, distance education adopts an integrated technical approach. Satellite, computer network and cable TV are used in different region, and these three technologies also complement each other. Transmission of the teaching program to all the regions in China can be achieved.

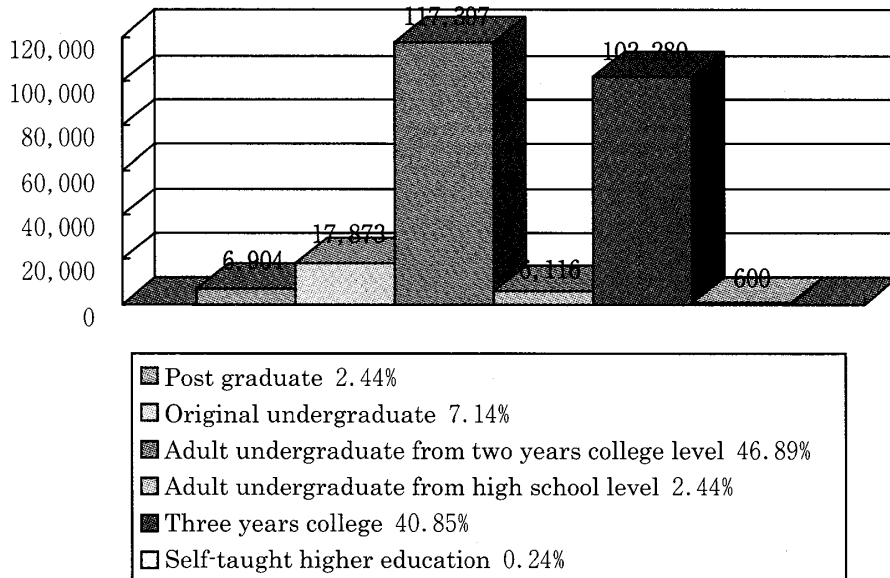


Figure 3: Studying for Diploma, degree (Cont.)

The survey of technical transmission modes adopted by 38 universities is shown in Figure 4. China Education Broadband Satellite Net was opened from Oct. 31, 2000. It can transmit audio, video broadcasting, IP program, etc. to whole country for the universities under distance learning tests. This system uses KU band Sino-I communications Satellite. It has 6A transmitter and down transmitting central frequency is 12620 MHz. Peking University, Central Radio &TV Univ., China Agriculture Univ., Beijing University of Posts and Telecommunications, etc uses this system to transmit courses.

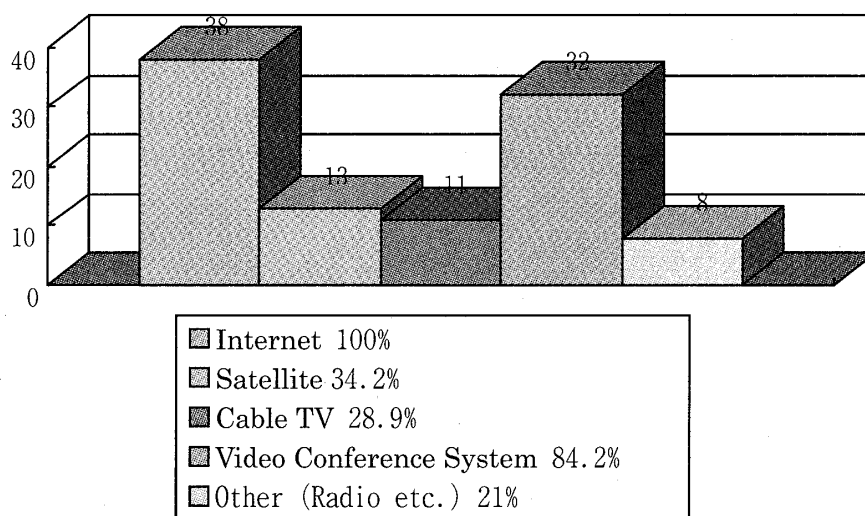


Figure 4: Transmission Modes (38 universities)

3. Situation of Distance Learning in Tsinghua University

3.1 Guidelines

Tsinghua University is one of first 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, planning as a whole, driving by demand, extending and opening, improving the 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 international university.

3.2 Running System at Present

The Tsinghua Distance Education has now set up 113 off-campus sites in all the provinces, autonomous regions and municipalities except Tibet in Mainland China. The establishment of remote sites is mostly done in collaboration with four kinds of organizations, as following:

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. 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.

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

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

3.3 Transmission Modes and Tests on Various Modes of Interactive Distance Learning

Four kinds of network, Internet, Satellite Digital Broadcasting Network, Cable Radio&TV Network and communication network, are used for distance learning in Tsinghua University (see Figure 5). The basic mode for teaching stations out-of campus is the coordinated running of satellite network and computer network. We rent the special channel of Asia-2 communication satellite. Its bandwidth is 6.5MHz to transmit courseware including video and audio course and IP data broadcasting course. IP data broadcasting is the focus in later development.

Real-time interactive question and answer system uses these several modes:

Satellite VSAT System. We have built 6 two-way VSAT stations in China. It has a transmitting speed of 384K, a good transmitting quality and high reliability. But the disadvantages are too high initial investments, taking too much satellite channel resource.

ISDN Video Conference System. Most stations use this mode to make real time discussing. It has low initial investments, counting expenses by time used. But sometimes it is hard to connect the network and not all the regions in China have opened this kind of operation.

Video & Audio Phone System. Low costs and easy usage, but bad transmission quality and low reliability. It can be used only in a few of stations as a temporary scheme.

Real-time Interactive System online. This mode is convenient and has low costs. But it needs the network has enough bandwidth. This mode is the development trend and

will become the main technical mode with the accretion of network speed and bandwidth.

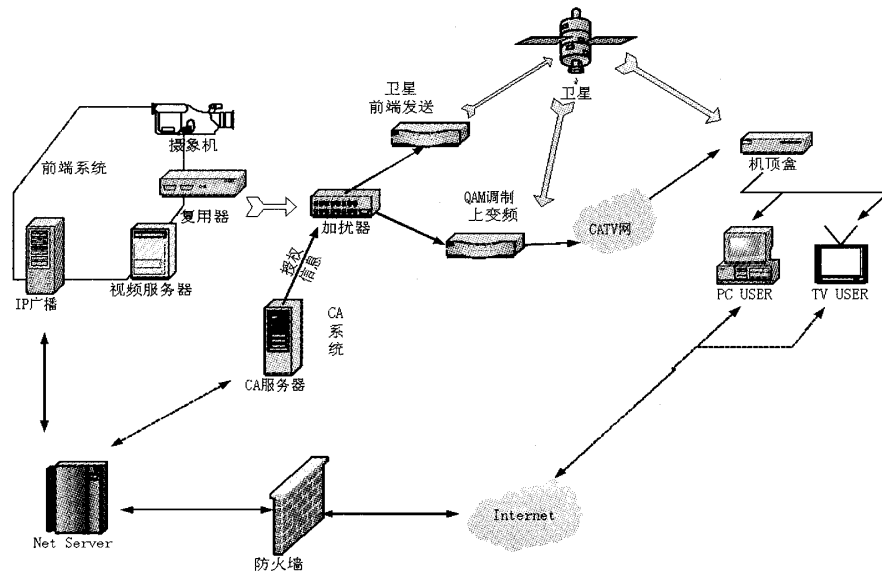


Figure 5: System scheme of distance learning in Tsinghua Univ.

China has the biggest Cable TV Transmission Network in the world and it is broadband high-speed network that can deliver multi-channel educational or other programs. We have made a test on Distance Learning by using Cable TV Network with the cooperation of Xiamen Cable TV Transmission Center, etc.

Tests on Network Distance Learning have been made several times. For example, graduate student courses such as computer application technology have been offered by using Beijing Science and Education Information Network (ATM 155M). And all the courses are web-based and personal instructions and discussion are secondary teaching mode.

Tsinghua Network School has opened in April 2000. There are 137 network courses and 397 network self-study courseware that can be provided to students now.

3.4 Levels and Types of the 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:

Training on high technology and advanced modern business and administration

management, short courses such as the reform of state-owned enterprises, the rule of WTO, The impact of WTO accession on Chinese enterprises, JAVA Programming etc. More than 2,000 students are studying the courses now.

Postgraduate courses for university graduates with working experience. Three courses are available now, which is, Computer application technology, Business management and Civil and Commercial law. There are 6,200 students are studying the courses now.

Adult diploma courses for students who have already graduated from colleges for professional training. Four courses are available now, Economics, English, Law and Arts Design. There are 5,200 students are studying the courses now.

3.5 Quality Guarantee System

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.

The quality of courseware is a key factor for the quality of distance education. To achieve this goal, we tried to do well in a few aspects.

For credit courses, teaching schedules and syllabi are examined and approved strictly to ensure them accord with the requirement of Ministry of Education For training courses, the content of a course is determined on demands of audiences.

We choose excellent teachers to teach, to offer courseware scripts and to participate in courseware's produce.

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.

Carry out discussion, tutorship and question answer. 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.

Stringent examination system: Establish and keep strict examination discipline and good examination atmosphere. 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. We signed contact with the Exam Center of the Ministry of Education in Mar. 14, 2001. The exams of distance learning of Tsinghua University will be organized by the Exam Center. This is useful to guarantee the exam quality and reduce the exam costs.

3.6 Distance Learning Does a Favor to Developing Western Regions of China

There have been established 24 teaching stations in western areas. There are 3,821 students now, which include 1,877 students for advance studies as postgraduate, 444 students for adult diploma education, 1,500 students for training of high technology and advanced and 1500 students for modern business management. Many preferential policies are provided to western students such as more recruit number and low tuitions. The tuition fee of Adult Diploma Education in Western areas is 50% off. The tuition fee of Advance studies as postgraduate in Western areas is 30% off. These policies are welcomed very much and got a high appraise from Ministry of Education.

3.7 Many units of Tsinghua University actively develop online education

School of Architecture and Graduate School in Tsinghua Univ. etc. are developing and using online courses for training postgraduates and engineering masters.

3.8 Cooperation with abroad

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. Tsinghua University made cooperation with WBI in Mar 2001. Distance education course "Challenge and Opportunity of Globalization and China's Entry into WTO" were provided to students. 8 distance stations participated this course. There were totally 420 students and 297 of them passed the course. The course is running the second time during Aug.-Oct. this year. More stations and students participated and got an overall welcome.

Our other partners aboard have MUCIA, APRU, NIME and Osaka Univ., etc.

4. Some Thinking About Development of Distance Learning

Principles of Tsinghua University to develop continuing education must be followed. It can't take too much the resource in the Campus and can't damage the reputation of Tsinghua University; it should focuses on Non-diploma and Non-degree education and in-

service study. Diploma and degree Education should consider the endure ability of the university. Excellence students in the society can have the opportunity to get diplomas and degrees of Tsinghua University. We put forward the guideline that “Engage on the internal work, neaten the stations, perfect the service, and improve the quality” to direct our work. We will try to integrate the campus resource, avoid overlap and no order competition, and explore the mechanism of the industrialization of training education. It is our aim to ensure Tsinghua’s leader position in the universities in developing distance education and make good preparation to compete with educational organizations in our country and from aboard. To enhance the service system for Distance Learning, including network service, digital library, etc. is important to achieve this aim. Schools and Academic departments should also encourage faculties to devote into Distance Learning and set up the reputation of Distance Learning of Tsinghua University.

Tsinghua Network School has been set up in April 2000. The center of information network and modern educational technology of Tsinghua University will be established. Merging original Computer & Information Management Center, Audio-Visual Center and Research Center of Multi-media Educational Software together forms it. It will serves as technical support in online learning. 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 Educational Administration Office and the School of Continuing Education have started the project of web-based courseware production.

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

To enhance collaborations with the institutes beyond Chinese mainland is very important. Except the old partners we are cooperating, we also hope to spread the distance education of Tsinghua University over the special administrative districts of Hong Kong and Macao, Taiwan province, Malaysia, and so on. IT helps all universities to globalize.