The Development of China's RTV Universities Under the Condition of Network Environment: A Case Report of a Pilot Project in Jiangsu RTVU

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Abstract

The Jiangsu Radio & TV University (Jiangsu RTVU) initiated a research and developmental project, called "The Pilot Project of Talents' Training Mode Reform and Open Education" in 1999 to find a way for China's Radio and TV universities to upgrade their distance education delivery mode from the second generation to the third generation. The third generation delivery mode is based on the newly developed information technology (IT) network, thus further increasing the access of the distance education programme to increasing numbers of adults in this populous country, and to meet the country's demand for a more knowledge-based and creative skills economy. The project has been carried out successfully in the past years, and has resulted in several developmental aspects, such as the construction of the basic framework of the skills training programme under the network environment, the mechanism for teaching, learning and management, and the learning support system and the quality monitoring and controlling system. As such, this paper gives a general introduction of this project, with some analysis and discussion. The experiences and constraints faced would be a valuable reference for the establishment of the lifelong learning programme in a network world both in China as well as in other parts of the world.

Abstrak

Jiangsu Radio & TV University (Jiangsu RTVU) telah memulakan satu penyelidikan dan projek pembangunan yang dipanggil "The Pilot Project of Talents' Training Mode Reform and Open

Education" dalam tahun 1999 untuk mencari satu jalan untuk Universiti-universiti Radio & TV China bagi meningkatkan mod penyampaian pendidikan jarak jauh daripada generasi kedua ke generasi ketiga. Mod penyampaian generasi ketiga adalah berasaskan pembangunan rangkaian teknologi maklumat (IT) yang seterusnya meningkatkan kemasukan program pendidikan jarak jauh untuk orang dewasa yang semakin meningkat di dalam negara yang ramai penduduk dan untuk memenuhi keperluan negara untuk ekonomi yang berasaskan pengetahuan dan berkemahiran kreatif. Projek ini telah dilaksanakan dengan jayanya dalam beberapa tahun kebelakangan ini dan telah menghasilkan beberapa aspek pembangunan seperti pembinaan rangka kerja asas, program latihan kemahiran dalam persekitaran rangkaian, mekanisme untuk pengajaran, pembelajaran dan pengurusan, dan sistem sokongan pembelajaran dan sistem kawalan dan penyeliaan berkualiti. Oleh itu kertas kerja ini memberi beberapa pengenalan kepada projek ini dengan beberapa analisis dan perbincangan. Pengalaman dan batasan-batasan yang dihadapi memberi satu rujukan yang berharga untuk pembangunan program pembelajaran sepanjang hayat dalam dunia rangkaian di China dan juga di tempat-tempat lain di dunia.

Introduction

China's Radio and TV Universities (RTVU) practise a nationwide multi-leveled Distance Education System, comprising a national RTVU centre, provincial RTVUs as well as city and county level RTVU branches. Formerly, the RTVU's distance education courses were delivered via printed text books and audio-video materials, aided by local face-to-face tutorships. This mode of distance education basically belonged to the mono-mode of the second generation of distance education (Zhou, 2005).

In the past decade, in tandem with the rapid development of the IT and computer network, China's distance education programme stepped into a new developing period. The Chinese government decided to implement modern distance education projects and construct the modern distance education network. Many well-known universities also set up their "net" colleges, providing modern distance education based on the technology of the interactive satellite TV and computer network. Consequently, RTVU had to face this new challenge and quickly transferred from the second generation distance education mode, which was based mainly on radio and

TV broadcasting, to that of the third generation, which is based on interactive e-communication and the computer network. This issue, which has been of both theoretical and practical significance, has become a focus of attention.

In the autumn of 1999, Jiangsu RTVU participated in "The Pilot Project of Talents' Training Mode Reform and Open Education", which was organised by, and under the charge of the Higher Education Department of the National Education Ministry of China, and coordinated by the RTVU Centre. The purpose of this project was to find a way to develop China's RTVUs by combining the mode of open education with the latest IT. Research into this project would provide some answers to the following questions: How can the RTVUs construct a new teaching-learning environment based on the new IT and the Internet? How can RTVUs build their digitised multimedia curriculum resources and network learning supporting service system? How can a new talents' training mode under the network environment be established, one which should differ from traditional practices (Jiangsu RTVU, 2002).

Through the pilot research and practice of the project over the past six years, the Jiangsu RTVU has successfully formed the new mode of talents' training under the network environment, which includes the new mode of teaching, learning, administration and the entire operating mechanism. This paper describes the transforming process from the second generation of distance education to that of the third one and shows the development of China's RTVU under the network environment.

Practice and Research of the Pilot Project in Jiangsu RTVU

1. General Information on the Pilot Project

Jiangsu RTVU started the pilot project in the autumn of 1999. After six years of practice and promotion, the project has successfully secured the involvement of 78 local branch RTVU institutes in Jiangsu Province, 4,376 faculty and staff members and 202,858 registered open learning students (among which 68,835 have already graduated). The project has covered 12 undergraduate programmes, including Law, English, Chinese Language and Literature, Finance, Accounting, Business Management, Computing Science and Technology, Public Affairs Management,

Administration Management, Primary School Education, Mathematics and Applied Mathematics. It has also covered 23 special major (Junior College) level programmes. The total investment in this project for the entire province has amounted to 280 million Chinese Yuan or about USD35 million (Jiangsu RTVU, 2005).

2. The Goals of the Pilot Project

The project emphasises the practice of open distance education and is guided by the reformation of the talents' training mode while based on old concepts and ideas. It has been grounded upon the construction of the network environment and other infrastructures, take the reforming of the education mode as the kernel content, focusing on student self-learning and emphasising multimedia resource construction and application. It is also supported by the construction of learning supporting service systems and guaranteed by faculty development. It features curriculum development and research, and targets reliable education quality as its goal. The project seeks to find a new way of developing distance open education for RTVUs, in order to cultivate more applicable talents with creative spirits and practical capabilities for social and economic development and modernisation (Jiangsu RTVU, 2002).

3. Personnel Preparation and Training

In order to ensure the continued success of the project, we need to train a professional team of members who should have advanced and updated ideas on education, be knowledgeable both in distance education and in their teaching disciplines, and be able to utilise the newly developed modern educational technology. Among them are teachers with specialisation related to aspects of the project, relevant staff of education administration and technicians of educational technology.

Specialised teachers are responsible for the teaching of the courses involved in the project. They will develop the curricula and teaching resources, design the teaching plans for related courses, give instructional suggestions of how to use teaching materials, manage the teaching process and plan media usage and implementation. They will also be engaged in examination design, evaluation and analyses, providing learning support services and monitoring the quality of student learning. The administrative

staff are responsible for student recruitment, teaching affairs administration, students' status management and examination arrangements.

The technicians of educational technology are responsible for providing technical support, multimedia-teaching resource creation and equipment maintenance. This team will comprise full-time personnel with support from some part-time professionals from nearby universities.

In order to complete the challenging tasks of the project, we need to specify clearly the aims of training programmes. The main contents of training include the new theories and technologies which are badly needed by most of the participants, such as in the distance education theory, knowledge about computer networking, technology of courseware development, multimedia design, etc. A total of 47 training classes has been held. With the cooperation of Bejing University, Nanjing University and Hong Kong Open University, we also arranged some post-graduate level classes for those teachers who wanted to advance in their studies and research. Where the administration staff members are concerned, special courses concerning computing and educational administration software operation have also been provided. Special technology training has been provided to webmasters and VBI, IP station construction personnel. The coverage of these training programmes has been considerably wide with 95% of team members receiving different types of training. All this has ensured the achievement of the anticipated goals and guaranteed the progress of the pilot project.

4. Network Environment Construction and Resource Development

The project has completed the following four tasks, which have set a sound groundwork for the transformation from radio and television based education to the computer network based distance and open education.

(i) A computer network with high transfer speed has been established. In 1999, Jiangsu RTVU established its campus network with the speed of 1,000 mps and an Internet web station with its own domain name. In the year 2,000, Jiangsu RTVU's broadband local area network based on ATM technology, equipped with the Video-On-Demand (VOD) system based on IP, was established. This has provided high

speed transfer and sharing of teaching resources and management data among all levels of the local RTVU branches in Jiangsu Province. Programmes such as the RTVU online platform, Video-On-Demand (VOD), FTP, BBS, CHAT, instant voice online teaching and discussion were carried out.

(ii) The brand-new teaching platform based on networking was developed. In 2004, Jiangsu RTVU successfully integrated its previous teaching resources and teaching platforms, and released the "one station" service platform and its website on both CERNET (China's Education and Research Net) and ChinaNET. The resource organisation is based upon specialisations and covers all the courses, providing a more convenient and individualised learning environment for distance learners.

(iii) Hardware facilities have been improved. Currently, in all the branches of Jiangsu RTVU, there are 3,460 seats in the networked reading rooms; 2,564 seats in the audio-video reading rooms; 15,865 seats in the multimedia classrooms and 3,811 seats in the language laboratories. A total of 14,298 computers for teaching-learning usage is available. In 2003, a digital library system which is capable of providing services for 300,000 registered users was set up, with an electronic collection of 322,000 e-books and 5,400 academic periodicals in the CNKI electronic version.

(iv) The development of multimedia teaching materials is considered very essential in networked distance education. Through a variety of ways, such as subscribing, recording, receiving donations, exchanging with other universities, self-creation, etc., Jiangsu RTVU has now constructed an extensive multimedia teaching resource database. All the teaching documents and the administration information of the courses covered by the project are now online. In 1999, only 71% of the courses were conducted in more than two media. By the end of 2004, all the courses were using at least three kinds of media (pure text web pages not included), such as online courses, audio-video cassettes, direct broadcasting courses, IP, VBI, VOD and CAI courseware. The VOD course videos now accumulated amount to more than 4,060 course hours (Jiangsu RTVU, 2005, p. 13).

5. *Innovation of the Teaching Mode*

The pilot project has actively tried to create a variety of new teaching modes to meet the special needs of the adult open learners, and has achieved the transformation from the traditional mode which has the teacher, classroom and text book as its centre, to the new teaching mode which focuses on the learners and is based on a synthetic usage of a variety of multimedia teaching materials. The new mode can be simply recapitulated as a trinity of "guided learning, aided learning and self-help learning". "Guided learning" means that the teachers will provide instruction and guidance on learning contents, learning methods and media resource selecting and usage. "Aided learning" means focusing on the learners, providing them with personalised learning resources and conditions, and helping them resolve difficulties and problems they might find in their learning. "Self-help learning" means that under the above conditions, the learners should use various media to conduct individualised autonomous learning and participate in cooperated group studies.

There are various alternative ways for students to go about their autonomous learning. They may read text books by themselves, listen and watch audio-video cassettes, browse through online teaching programmes, attend local face-to-face tutorial lectures, participate in interactive online video courses and watch web broadcasts of course series. They may also participate in cooperated group studies and discussions. They can also use online exercises and the simulated examination system to evaluate their own studies, use toll free telephone services, the voice mail-box, e-mail, online real time chats or BBS to conduct discussions and get consultations, etc.

6. *Reforming the Mode of Administration and Quality Monitoring*

The pilot project has also actively examined the educational administration mode, which is adaptable to adult open learning, to realise the transformation from the traditional administration mode based on campus attendance and grades to the new one based on open registration and course credits.

The following have been achieved:

(i)   Established and implemented the course credit managing system.

(ii) Established the open education quality controlling and monitoring system, which includes arranging course argumentation, appointing a duty teacher for each course with specific duties, designing scientific implementation details for every course, controlling the quality of on-going examinations, enhancing inspection and feedback, applying strict examination discipline, encouraging examination reform and emphasising results analysis.

(iii) On-going quality evaluation. The administration for each step of the teaching process has been strengthened. The marked homework of every course is selected at random and sent for inspection every semester. A management mechanism of analysing, providing feedback and appraising and correction of mistakes, has been established. The dynamic process, current situation and the results of student learning have been closely watched, in order to detect and resolve problems in time, and to improve the quality of teaching and learning effectively.

Discussion

Through the implementation of the project, Jiangsu RTVU has established a brand-new network environment of distance education, developed abundant teaching materials in various media forms and constructed the learning support service system, thus basically realising the transformation from the second to the third generation of distance education.

During the past three years, we have carried out a couple of questionnaire surveys, in order to analyse and evaluate the experiences and defects of the project (for more details about these questionnaire surveys, see Zhou, 2005, pp. 397–407). The survey was aimed at the distance learners who had registered in the specific courses offered under by the project, in order to investigate their learning experiences and their adaptation to the new network environment. The respondents followed courses in Accounting, Law, Education Management and Computing Science, and originated from different levels of the RTVU branches located in different areas of

northern, middle and southern Jiangsu Province. Small sample groups were selected at random and 360 questionnaire forms distributed. From the received 359 forms, 300 (84% of the total) were valid. Among these, 120 were from provincial RTVU (40%), 109 from city RTVU (36%) and 71 from country RTVU branches. There were 174 responses from female students (58%) and 126 from male students (42%).

The implementation of the pilot project in Jiangsu RTVU gives rise to the following issues:

1. The transformation from the second generation to the third generation of distance education does not mean that the new generation will totally negate and replace the previous one. Rather, it means an integration and optimisation of the available factors and functions of the two generations. During the process of transforming from audio-video based distance education to the new era of network and digitised distance education, China's RTVU must pay close attention to the current reality, and capacity of the RTVU branches at different local areas, as well as the psychological and economic sustainability of the students. The existing foundation and resources should be as a base to develop a new mode of net-based distance education that is most suitable to prevailing conditions.

The implementation of Jiangsu RTVU's pilot project shows that computer multimedia technology, web-based courses, online interactions and tutorships, audio-video cassettes, compact discs, personal computers, radio and TV broadcasting, projectors, and even printed materials form the main media of the three generations of distance education; they can be integrated into optimised systems for student usage. Therefore, the significance of transformation is not simply adopting some new media. More significant is that by establishing a network education system and applying interactive communication technology, more alternative media and ways of learning have been provided to the students. This makes learning more interesting, and enable the students to be able to pace their learning to their own schedule, preference and habits. Consequently, the activity of individualised learning and cooperated group studies of the open learning students has been greatly stimulated, and the process of teaching and learning has become more open, flexible, diversified and personalised.

In our questionnaire, we listed the five main learning activities: Face-to-face lectures or tutorship, group studies, video presentations, online learning and using the VOD system. We asked the respondents to make a categorised order of the activities according to their participating frequency. The results are shown in Table 1. The mean value and the standard deviation reflect the basic situation of the distribution of the samples. The result shows that face-to-face instruction is still the most frequently participated activity, indicating that it is still considered very important by most students. Group studies and online learning are ranked as the second and third frequent activities respectively, with very close mean values, indicating that these two more personalised features are becoming increasingly popular; this in turn demonstrates the success of the pilot project. During our interviews, we found that group studies are especially popular among adult learners. The adult peer students exchange and communicate with each other, discuss problems in their studies and assist each other in pre-examination reviewing. They think the group studies also provide them with a way to socialise and this is a very pleasant experience. Watching videos and using VOD are ranked at number 4 and 5. This indicates that watching videos as the second generation method is still adopted by some students, while the VOD, as the new method of the third generation, has not been enthusiastically adopted. Both these forms may, nevertheless, be of some potential and work together in providing supporting services for distance learners.

Table 1   Participating frequencies of the five activities by open learning students

	Face-to-face instruction	Group study	Watch video	Online learning	VOD
Arithmetic mean	1.45	2.79	3.75	2.88	4.15
Standard deviation	0.95	1.09	1.01	1.23	1.05

2.   While transforming from the second to the third generation of distance education, the student becomes the main focus of education. Consequently, we must pay more attention to the following issues:

(i)   Are the students aware of the change of their own role in the teaching-learning activity, and becoming more prepared to be the master of their own learning?

(ii) If they are willing and ready to adapt themselves to the new methods of learning under the network environment, are they capable of getting satisfactory learning results by using these methods?

(iii) If they have acquired the basic knowledge and skills that needed for network learning, will they be prepared with the necessary facilities and conditions to go online?

Our questionnaire survey showed that 25% of the students investigated are not used to online learning with the ratio of those preferring face-to-face instruction being much high than that preferring online learning, especially at the county level RTVU branches. "Unadapted to the new learning mode" has been ranked by our respondents as the number 3 difficulty in their learning (the first two being "without enough time" and "self-knowledge base is too low"). 22% of the respondents consider their skills in computing and network usage negligible; this has affected their communication and exchanges with their teachers and peer learners. 32% of the respondents said that they have no equipment to access the internet.

Obviously, as the new distance education technology is developing rapidly, our students still need some time to adapt to the new situation; they need more instruction and help, especially with instructions about learning strategies and skills. It is necessary therefore to set up certain consulting institutions responsible for providing such instruction. It is also very important to set up learners' centres at suitable local RTVU branches, equipped with adequate facilities for open learners to use, and at which they can obtain technical support and training. Generally speaking, we should not intervene directly into the process of student learning, but we need to do more to ensure that their learning process moves smoothly.

Among the factors that comprise the entire learning environment of the third generation of distance education, the presence of technical support and digitised multimedia teaching resources is crucial. At the present time, the construction of the network environment and the development of

digitised multimedia resources, the two important factors in building the learning support service system, still need to be accelerated.

Since the initiation of the pilot project, the ATM network has gradually covered all the city and county level RTVU branches involved in the project. However, our recent questionnaire survey indicates that, while 90% of the students are satisfied or relatively satisfied with the learning support service system, their satisfaction regarding the different aspects of the whole system is not even. They do not seem quite satisfied with the resource and technical support aspects. They are more satisfied with the learning process services and administration and management services than with the resource services and technical-equipment services (Table 2). An earlier questionnaire survey also showed that 37% of the students consider that the slow network speed is the main obstruction that holds them back from using online learning. Only 26% of the students think that the content of related courses available on the net is rich enough, while 66% think that the quality of the resources available online are only satisfactory.

Table 2   Degree of Learner Satisfaction on the Four Factors in the Learning Support Service System

	Learning process service	Teaching resource service	Technical and equipment support	Administration and management
Mean*	3.08	2.93	2.92	3.09

*Mean value: 4=satisfied; 3=relatively satisfied; 2=not satisfied enough; 1=not satisfied at all. The figures in the table are the average of all the respondents.

Alongside with the expansion of modern distance open education and the full-scale expansion of this project, the demand for abundant multimedia resources of good quality will certainly increase continually. The shortage of resources will become a bottleneck problem. Therefore, we must make a general plan of resource co-construction and sharing, and carry it out step by step. We should adhere to the resource building strategy of buying, receiving, recasting and self-developing according to different situations, paying attention to re-utilising resources of the second generation,

transforming them to meet the third generation's technical standards whenever possible. Through a variety of ways, we will enrich our multimedia teaching resources to meet the needs of the fast development of contemporary open distance education.

Conclusion

"The Pilot Project of Talents' Training Mode Reform and Open Education" carried out by Jiangsu RTVU is both successful and significant, exploring the development of China's RTVU under the network environment. Over the past six years of research, practice and implementation, we have accumulated some valuable experiences in teaching and other aspects of the network environment and resource construction, teaching and learning mode innovation, administration and management reformation. This pilot project has not only provided important experiences for the further expansion of the open distance learning system in Jiangsu Province, but also provides positive and valuable references for developing open distance education under the network environment both in China and other relevant parts of the world.

References

Jiangsu RTVU. (2002). Midterm Self-Assessment Report of the "Pilot Project of Talents' Training Mode Reform and Open Education", unpublished, printed by Jiangsu RTVU.

Jiangsu RTVU. (2005). Conclusion Self-Assessment Report of the "Pilot Project of Talents' Training Mode Reform and Open Education", unpublished, printed by Jiangsu RTVU.

Zhou, W. (2005). Learning Support Service in Modern Distance Education. Beijing: Central Radio and TV University Press.