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Moving from TV broadcasting to e-learning

Contributions of distance education to teacher education in China

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Abstract

Purpose – The purpose of this paper is threefold. First, it provides an overview of the demand, capacity and challenges of teacher education in China. Second, it highlights the significant contributions of China Central Radio and TV University (CCRTVU) to teacher education in the last three decades. Finally, it discusses challenges and issues for e-learning as a new form of distance education for upgrading qualifications and promoting professional development of teachers and principals in remote, rural schools.

Design/methodology/approach – As a case study, this paper analyses CCRTVU's infrastructure and operational structure, and its unique position to bridge teacher education institutions and integrate educational resources.

Findings – When CCRTVU moves from TV broadcasting to e-learning, it offers new and innovative forms of professional development for millions of school teachers and principals, and accompanying new challenges.

Originality/value – The paper suggests that rigorous research should be conducted to address what works and how to reach teachers and school principals in remote, rural areas.

Keywords Distance learning, E-learning, Teachers, Professional education, China

Paper type General review

Introduction

As Williams (1961) argues, when social-historical conditions change, so do society's demands upon education. China is no exception. China's rapid social and economic reforms – shifting from a manufacturing economy to a knowledge-based economy – during the last three decades have been accompanied by educational reforms. Educational advancement is largely dependent on the preparation of a new generation of teachers and the ongoing in-service professional development of teachers (Cobb *et al.*, 1995). Teacher education in China has undergone three waves of reform:

(1) moving towards setting up more vigorous requirements for teacher qualifications;

(2) transcending the traditional boundaries of teacher education institutions; and

(3) integrating education resources into education systems and practices (Zhou and Reed, 2005).

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However, one problem remains: how to provide opportunities for millions of in-service school teachers and principals to earn or/and upgrade their qualifications through various professional development programs. The process of the upgrading of those in-service teachers and principals is in progress and is yet to be completed. Distance education offers a new and innovative form of professional development in China.

Demand versus capability

China has put constant effort into building a highly qualified teaching force, and has made huge strides towards setting up vigorous requirements for teacher qualifications. For example, the State Council proposed, in "The Action Plan for Rejuvenating Education to Face 21st Century", that by 2010 a primary school teacher should possess at least an associate degree, a junior secondary school teacher a bachelor's degree, and a senior secondary teacher or a principal in the developed regions a Master's degree. In addition, the Ministry of Education (MOE) promulgated "The Regulation about Further Education of School Teachers", regulating that participating in-service professional development is a teacher's right and responsibility.

The resultant demand for the professional development of in-service teachers is faced with multiple challenges posed by the limited timeframe. First and foremost is the demographics of the teachers who need to upgrade their qualifications. According to the 2007 statistics, among the 10.43 million full-time teachers in primary and secondary schools across China, 1.9 million teachers work in urban schools, 3.3 million in county schools, and 5.1 million in village schools. Sixty-two percent of the primary school teachers have earned an associate degree, 41 percent of junior secondary school teachers have earned a bachelor's degree, and 1.4 percent of senior secondary school teachers have earned a Master's degree. To summarise, 300,000 teachers have not obtained the qualification. Therefore, it has become a national priority to provide in-service training for these unqualified teachers.

However, the capacity for such training is far more than deficient, although China is moving towards the universitisation of teacher education by encouraging comprehensive universities and other high educational institutions to get involved in teacher education. Because the majority of teacher education programs are still conducted in single-purpose teacher training institutions – normal universities and teachers' colleges – the minority of teachers are trained in comprehensive universities or other authorised institutions (Zhou and Reed, 2005). For example, only 182 three-year professional teachers' colleges and four-year normal universities (primarily for pre-service education), and 80 teacher colleges (primarily for in-service education) are available in China. The combined capability of these teacher education institutions for the initial degree programmes is roughly 700,000; for non-degree in-service training it is one million. Total dependence on conventional models and means will, accordingly, mean 10-20 years to complete the first cycle of in-service teacher training. Meanwhile, new teachers are continuously joining the teaching profession. It will probably take another 10-20 years to complete a second cycle. Consequently, teacher education in China would undergo a never-ending cycle.

The second challenge results from the uneven distribution of qualified teachers in cities, counties and villages, which is caused by China's uneven economic and social development between urban and rural areas. As a developing country with a population of 1.3 billion, China has a rural population of 56 percent (China State Statistical Bureau, 2007). The uneven distribution of qualified teachers and the

majority of China's rural population have coupled the challenge to the nine years of compulsory education, which aims to provide the rural children with equal education to urban children. Currently, China has 540,000 rural primary and secondary schools, and correspondingly 81.7 percent of teachers work in rural schools (China Education and Research Network, 2008). Among them, only 53 percent primary school teachers have obtained an associate degree and 30 percent of junior high school teachers have earned a bachelor's degree. These teachers desperately long to upgrade their qualifications; however, they are disadvantaged by a variety of roadblocks: time, work and family commitments, and the affordability of attending the in-service programs offered by conventional colleges and universities located in cities.

The third challenge is caused by the snowball effect of the five-year span of a teacher's qualification upgrade program cycle, which demands that a teacher engages in a total of 240 hours (48 hours per year) of professional development. In addition, nearly one million school principals are expected to participate in this professional development. It is estimated that in the coming five years, around ten million primary and secondary school teachers, and one million school principals intend to upgrade their academic training and non-academic qualifications, or professional development.

It is particularly urgent to address one simple question: how to provide quality in-service training for the targeted teachers and principals with different needs and demands? There is no simple or best solution. There are, however, several macro reform calls: transcending the traditional boundaries of teacher education institutions, utilising modern technologies, establishing an information platform integrated with educational resources for teachers, equipping teachers with theories and practices and preparing them as life-long learners. Specifically, distance education can be an efficient and effective way for in-service teacher training, catering for the macro reform calls.

CCRTVU's significant contributions to teacher education

Founded in 1978, CCRTVU is a dedicated open and distance education institution, under the direct supervision of the MOE. CCRTVU offers, on a nationwide basis, an avenue of an alternative means of providing open access to higher education. In the last three decades, it has witnessed an evolution of its infrastructure, operational system, content development and delivery (Ruth and Shi, 2001). It has contributed significantly to China's teacher education in several unique ways: it transcends the boundary of conventional higher education institutions, because it jettisons the traditional teaching-venue-restricted education; furthermore, it develops and shares educational resources, and therefore it broadens the currently existing access to teacher education in China.

Broadening access to teacher education

In China, CCRTVU plays an essential role in providing and making teacher education accessible on a massive scale, because its distance education is a huge and powerful growing network system. It has experienced a process of revolution in the past few decades. As indicated in its name, it started radio- and TV-based teaching in the first phase of development starting in 1978. Up until now, China Education Television (CETV) has three channels which mainly transmit CCRTVU's courses via satellite. The three CETV channels broadcast 47 hours per day, covering 80 percent of regional cities and towns (International Labour Organisation, 2004). In addition, a provincial TV Channel –

Shandong TV CETV – offers three hours per week of the special programme "Friends of Principals in Elementary and Secondary Schools", and six hours of "Primary Teacher Education" and "Secondary Teacher Education", respectively.

The second phase was to advance distance learning based on information and internet technologies from the outset of 1990s. Computer technologies and networks, merged with TV satellite broadcasting, have led to an accelerated development of distance education for teacher education. It delivers instruction via satellite broadcasting (the "Air Net") and computer technologies (the "Land Net") as shown in Figure 1, emancipating those teachers disadvantaged by teaching and/or family obligations, and empowering teachers in rural, remote villages, who have no time and/or access to teacher education, with comparable opportunities to those available in conventional normal universities.

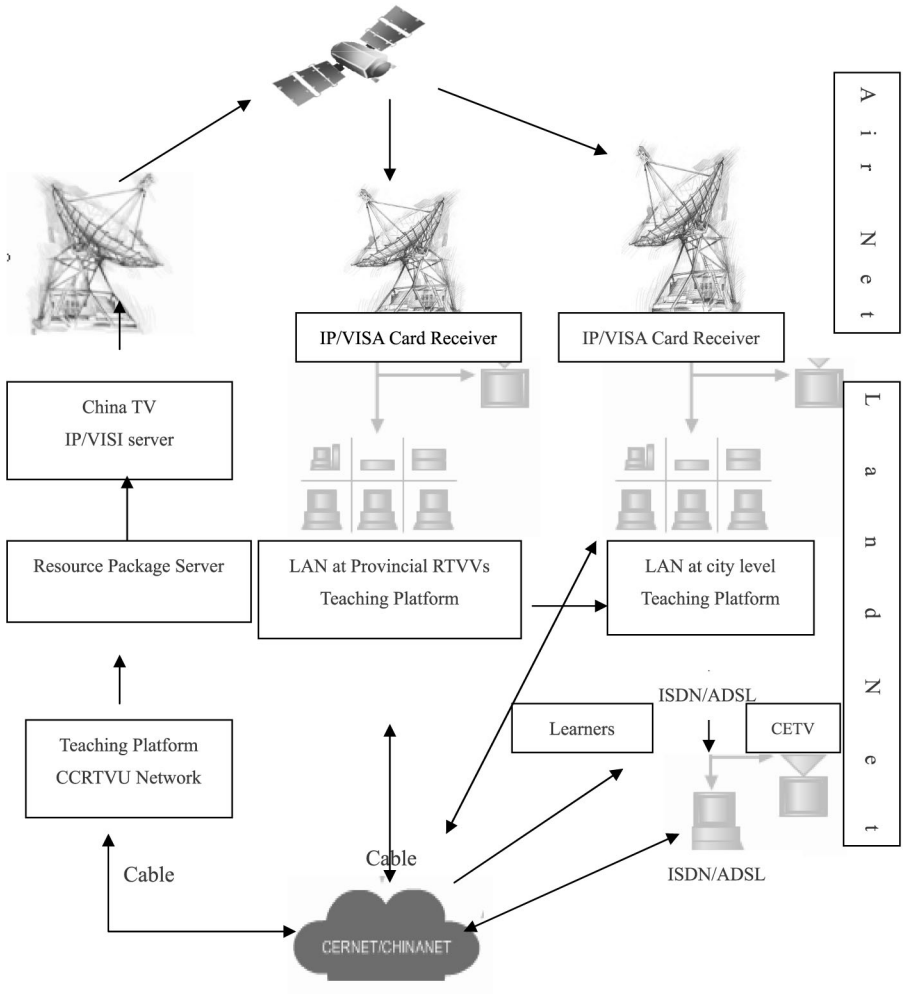

Figure 1.
Infrastructure of CCRTVU

In addition, CCRTVU has established a public support system platform, providing open online access to learning resources, individual experts, and support for study groups. So far, 5 million in-service teachers have participated in satellite TV training (CCRTVU, 2005). According to recent feedback from teachers and principals who have participated in its programmes, the satisfaction rate is 83.36 percent.

Collaborative endeavours

CCRTVU's involvement in a complex range of partnerships with different institutions and agencies leads to collaboration endeavours, but with specific responsibilities for each party involved. CCRTVU is mainly responsible for the development and central management of the courses, which might also involve other institutions and agencies. Although it cannot compete with the long-established, conventional universities in terms of status, reputation, teaching, students, research, and facilities, CCRTVU's unique infrastructure and operational structure have reached the learners that traditional universities have failed to reach. It makes endeavours in the development and improvement of the quality control system adaptable to open education. It has demonstrated excellence in the academic content and teaching quality of its programmes by establishing a framework with the "five unities" as its core:

(1) unified curricula;
(2) unified syllabi;
(3) unified textbooks;
(4) unified examinations; and
(5) unified assessments.

For example, among the 1,000 courses offered, each course is under the same vigorous quality control procedure through joint administrative and academic staff collaboration, as shown in Figure 2.

This process starts with setting up the guidelines of a new teacher education programme after a needs analysis and evaluation of a similar programme in a conventional university. This is followed by the design of a list of courses and a plan for producing multimedia materials. After that comes the selection of eminent professors, scholars and specialists at home and abroad for writing textbooks, study guides and other related print materials. The next process is the video production, followed by producing CAI courseware or IP courseware, and online course materials.

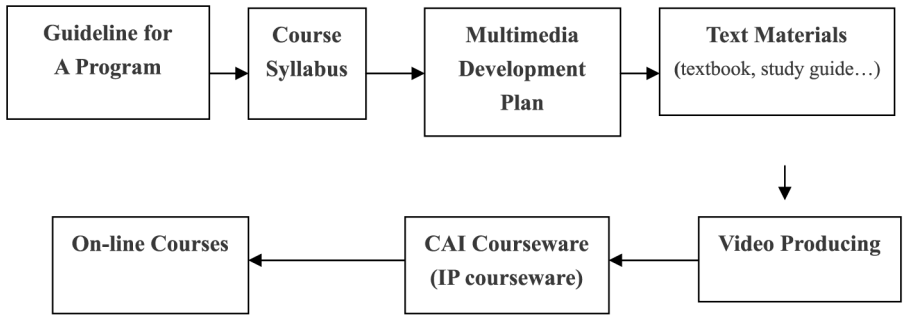

Figure 2.
Process of developing a CCRTVU programme

Every step is under the close supervision of the MOE and evaluated by a working committee consisting of eminent professors, scholars and specialists to safeguard the credibility, reliability and quality of the programme. So far, CCRTVU has cooperated with more than 1,000 eminent professors, specialists and scholars from other institutions, regarding the design and development of quality curriculum resources.

CCRTVU has a nationwide system of open and distance education that is managed at the three sub-levels: 44 provincial TV universities, municipalities and autonomous regions as the top level; 945 branch schools in prefecture and cities as the middle level; 2,021 work stations at the county level; and over 22,237 teaching units as the bottom level. Through the multi-level structure of the system and its collaboration with other conventional normal universities/colleges, CCRTVU strives to guarantee the quality of teaching and learning by emphasising the five core elements:

(1) teaching resources;

(2) the teaching and learning process;

(3) learning support;

(4) teaching management; and

(5) systematic operation.

For example, Zhang and Hung (2007) reported the results of a pilot in-service English teacher training programme undertaken from 2001 to 2004. This programme was initiated by CCRTVU in collaboration with the British Council, Beijing Foreign Studies University and Jiangsu Radio and Television University. They reported that the participants benefited from online learning activities, oral and written assignments, and face-to-face tutorials as a result of integration of high technology (computer-based) and low technology (traditional). Additionally, they found that both the tutors and participants reported an improvement in their language learning and teaching skills.

Integrating degree and non-degree programmes

In-service teacher professional development in China is divided into degree and non-degree programs. CCRTVU offers two levels of award-bearing degree programmes:

(1) the Associate Degree Programs for elementary teachers; and

(2) Bacheloral Degree Programs for both elementary and secondary teachers.

Currently, there are 12 degree programs, such as Elementary Education, Educational Administration, Math and Applied Math, Chinese Language and Literature, Art Education, English, and Music. Some new bachelor's degree programmes are being initiated, such as Educational Technology and Master's programmes. Each programme includes a set of courses, including the courses of general education, educational foundation, pedagogy, content areas, and teaching methods for the specific content. Master's degree programmes are being initiated for school teachers and principals.

Meanwhile, CCRTVU is paying great attention to the development of non-degree (non-award-bearing) programmes. Non-degree education for in-service teachers is the main constituent of continuing education, which requires a qualified teacher to take 240 hours of professional development within a five-year cycle. It offers a variety of

non-degree courses, such as Curriculum Design, Technology Literacy, Teacher Initial Credential and Teacher Recredential, and on-the-job training for school principals. These courses include areas in general education, educational foundation, subject methods, general pedagogy, school-based curriculum, and so on. Teachers and principals can acquire new knowledge and skills, and extend their existing experience. The courses help them to become more open-minded and to facilitate the shift from a teacher-centred orientation to a student-centred orientation.

CCRTVU has initiated the integration of courses between the degree and non-degree programmes. The elective courses for the degree programs can contribute to non-degree professional development training. The well-developed core courses for the non-degree programmes can be converted into credits for the degree programs. Additionally, the credits for the non-degree and degree programs can be exchanged, or converted into one another.

Moving toward e-learning

Currently, CCRTVU is moving towards e-learning by constructing open web-based courses to promote the life-long learning of teachers and school principals and it has striven to provide e-learning to the teachers and school principals to cater for their unique educational needs and expectations. Priority has been given to in-service teachers and school principals in remote, rural schools.

Blended learning is the major mode of distance education for in-service teachers through the "People Net": the face-to-face means of interaction between tutors and in-service teachers, and among in-service teachers themselves. There is a mix of teaching modes: self-instruction from printed texts, viewing satellite broadcasting, attending face-to-face classes organised by a local branch college/working station/teaching unit, and peer learning between in-service teachers. For example, in rural schools, teachers are arranged into a group of three or more to study from the print materials and view the off-air recording together. Face-to-face instruction is taught by full-time tutors from sub-institutions or part-time tutors drawn from conventional universities located with the vicinity of a learning centre. In addition to teaching, a tutor's responsibilities include proactively supporting and tracking learners' processes and progress. The summative assessment tends to have a unified written examination at the end of the programme, developed and supervised by CCRTVU.

Changes in emphasis from teacher-centred to student-centred teaching and learning have led to major revisions of the strategies for teaching and technology investment. Differing from conventional classroom learning, e-learning provides teachers and principals with greater flexibility to learn at any time and at any place by downloading and viewing CCTVU's "Video on Demand" at their convenience. In order to meet the needs of in-service teachers and school principals, the content is divided into small units: small case studies, short face-to-face instruction sessions and independent credits. More emphasis is given to analysing cases to link theory with practice. Teachers and school principals are required to engage in a variety of learning activities: designing a curriculum for a unit, case studies, inquiry into one's teaching, peer observations, and critiques. They are assigned to have practicums supervised by master teachers and school principals with selected elementary and secondary schools as their practicum sites. In addition, e-mail, instant messaging, listservs and bulletin

boards all make two-way interaction available in a large learning community consisting of teachers, lectures from CCRTVU, and tutors in the local learning centres. For example, after a teacher/principal posts a question onto the online Q&A, he/she can receive responses from the lectures and/or tutors and also her/his peers. Through the whole learning process, teachers and school principals "learn how to learn" by taking responsibility for their own learning. CCRTVU has adopted formative and summative assessment activities to evaluate the student teachers' progress through the programme. It develops and schedules examinations of the courses and supervises the examination and marking procedures.

For example, Elementary Chinese Teaching is a core course for the bachelor degree of Elementary Education. It is a four-credit, 74-hours, one semester long course. The print material is designed by a reputable professor from Shanghai Normal University. The open online course (see: http://media.open.edu.cn/media_file/netcourse/asx/xxyw/index.htm) contains a study guide, a syllabus, content review, practice tests, a forum, information on new trends, and references. This course relies heavily on self-learning which requires the in-service teachers to make full use of print materials as the main sources for self learning, and use video materials (CD-ROM), IP courseware, CAI courseware, and online resources as supplementary sources. The required number of hours for viewing the video is 18. The required number of hours learning from IP courseware is 11. In addition, the course participants are required to attend face-to-face tutorials, to post questions online, to analyse cases, and to conduct inquiries about one's own teaching by engaging in individual and peer learning. Teachers can receive support in a variety of ways, such as a telephone helpline, by letter, by fax, and by e-mail. There are two components to assessment:

(1) formative assessment (30 percent) including daily homework, comprehensive homework, and practicum;

(2) summative assessment (70 percent), which is a written test.

Therefore, e-learning eliminates the traditional boundaries of conventional and normal universities, between pre-service preparation and in-service education, between CCRTVU and sub-institutions by involving these parties in the design and development of national pilot online courses. CCRTVU shares these courses on the National Teacher Education Network and National Pilot Curriculum Sharing to benefit to the whole of society.

According to its strategic plan, CCRTUV (2005) continues its efforts to construct and expend curriculum resources in different formats in order to meet the needs of teachers and school principals in remote rural areas. It uses the national standard to strengthen TV broadcasting programmes, and to develop online national pilot courses. By 2010, there will be 300 multimedia courses for degree and non-degree programs. Between them, 6,000 hours of video will be produced. Between the 200 multimedia courses for non-degree courses, 2,000 hours of video will be produced. CCRTVU also plans to develop and produce 80 national pilot TV courses, and 30 online national pilot courses. Meanwhile, it focuses on degree education by redesigning the existing curriculum with the collaboration with its sub-institutions to create 260 multimedia courses, of which 5,000 hours are in video. In addition, CCRTVU aims to choose the best courses among the other educational institutions to co-construct them into online

open resources. By 2010, it will establish an online teacher education platform to reach millions of schoolteachers and principals.

Challenges and conclusion

Although e-learning provides a promising structure for teacher education, it is challenged by some divides, which are caused by a bimodal distribution of wealth (Levy, 2003): the Eastern provinces tend to be wealthy whilst those in the West remain relatively poor. These divides include educational conditions, resources, and quality of teachers. Accordingly, they remain to be bridged between the schools in Eastern developed areas and Western undeveloped areas. Particularly, there is a "digital divide" – a large gap between those who have easy access and those who have little or no access to information technology. According to Hu (2002), there are three kinds of "digital divide" in China:

(1) between China and the rest of the world;

(2) between the different regions of China; and

(3) between urban cities and rural areas of China.

These social problems cannot be solved overnight. One possible solution is to increase teacher technology competency as an essential for preparing students to function competently within an increasingly technologically information-based society. There is, however, a discrepancy of availability of advanced technology facilities and teacher competency for between urban and rural schools. First, there is no adequate technology equipment in the rural schools. The statistical data for Shannxi Province in 2003 indicted that there was no internet access in one third of elementary and secondary schools. During a recent research trip to three remote, rural junior secondary schools and two primary schools in Xiannxi Province during 2006, the second author of the paper found that there were few resources – even teachers' reference books and audio video equipment. Availability of computers was far below teachers' expectation. One teacher reported little improvement within the last five years. Second, the teachers in rural schools have no or limited computer skills and knowledge. They are disadvantaged by:

- heavy teaching loads;
- a large portion of teachers being substitute teachers; and
- low rates of computer ownership.

Therefore, information technology is not yet becoming a part of teaching and learning in rural schools in Western regions (Wang and Liu, 2006). The availability of information technology deprives opportunities for these in-service teachers in rural schools to participate in e-learning that is specially designed to meet their needs.

CCRTVU is to shore up its many efforts to promote open and distance education for ten million in-service teachers, and a million school principals for life-long learning in China. It has played a significant role in improving the coordination with the conventional and normal universities involved in such initiatives, improving the dissemination of the best curriculum resources in teacher education, and committing itself to stronger research on what works and how to reach teachers and school principals in remote, rural areas.

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