ICT IN THE PRIMARY EDUCATION TEACHERS` EDUCATION PRACTICE IN PR CHINA

doi: 10.34142/astraea.2020.1.2.06

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ABSTRACT

Educational reforms of late 80s-early 90s of the XXth century faced the educational science of China with the need to create a totally new approaches to the educational practice, including the vocational training system for teachers which would take into consideration three important factors: borrowing international experience, making maximum use of the achievements traditional for the educational system of China and requirements of the country's ideology. Special attention in this concept was to be let to ICT technologies in the vocational teachers` training and education process as well as to the teachers`-to-be readiness to use ICT in their practical work. The article aims to represent the modern approaches of the Chinese teachers` training system to ICT both as an educational method and a requirement for teachers-to-be that also influence the whole educational practice in the country. On the other hand the article presents COVID-19 quarantine as the positive factor for developing the ICT technologies as the teaching method in China as well as the steps made by the educational authorities of the country to make this process real.

Key words: PR China; professional education; teachers` training system; ICT; self-motivation; self-development.

АНОТАЦІЯ

ІКТ у початковій освіті та підготовці вчителів у КНР

Реформи освіти кінця 80-х-початку 90-х років XX століття постали перед освітньою наукою Китаю необхідністю створити абсолютно нові підходи до освітньої практики, зокрема щодо системи професійної підготовки вчителів, яка враховувала б три важливі фактори: впрвадження міжнародного досвіду, максимальне використання здобутків традиційної освітньої системи Китаю та вимоги ідеології країни. Особлива увага в цій концепції полягала в тому, щоб залучити ІКТ-технології у процесі професійної підготовки та навчання вчителів, а також сформувати готовність вчителів використовувати ІКТ у своїй практичній роботі. Стаття має за мету представити сучасні підходи китайської системи підготовки вчителів до ІКТ як навчального методу, так і обов'язкового компоненту практичної роботи учителів, що також впливає на всю освітню практику в країні. З іншого боку, у статті розглядаються питання карантину COVID-19 з точки зору його позитивного впливу на процес розвитку ІКТ-технологій як методу навчання в Китаї, а також кроки, зроблені освітніми органами країни для того, щоб зробити цей процес реальним.

Ключові слова: КНР; професійна освіта; система підготовки вчителів; ІКТ; самомотивація; самовдосконалення.

INTRODUCTION

The development of ICT as a technology had a huge impact on education as a whole: technological processes, content, goals and objectives of educational process, etc. China did not stand aside and also decided to take advantage of ICT to modernize national education system, in particular, the teachers` training system (and primary teachers' one in particular). Today as to the vocational training system of primary teachers China is actively building the infrastructure of specialized educational ICTs (the network of digital resources and educational innovations for teachers) and the management of education system supported by ICTs. Teachers` education in the field of ICT and high demands on a teachers` ability to use ICT are seen as a solution to many of China's current educational needs and problems. Also, according to the Chinese leadership, ICTs have high potential for expanding access to education in general and to teachers` training and education system in particular.

Ensuring fair and high-quality "electronic education" or using ICTs for teaching and learning in primary and secondary schools across the country is considered to be a national priority (Gu, Zhu & Guo, 2013). At the same time, the development of using ICTs teaching and self-educating methods can exacerbate the existing digital and technological imbalance between urban and rural areas. While in Chinese cities about 80% of students use Internet at home for homework and self-study, in rural areas only 2% of school-age youth have Internet at home, and only half of them use it to communicate with a teacher or search for information necessary for educational process, etc. (Trucano, 2012).

LITERATURE REVIEW

Contemporary research of the Chinese educators as well as of the abroad ones reflects different issues of the problem mentioned starting from the general prospects of the ICT development as an educational and practical method for future Chinese teachers (including the primary school ones)(Ding, 2005; Kuai,2006; Liu, 2014) etc. and up to general prognosis of ICT development in China as a teachingmethod and aim of the Educational Paradigm for the century coming (Wan,2010; Zhu, Gu, Collis & Moonen, 2011; Miao, 2007) and others. Some of the modern publications on the issue reflect main difficulties China faces in ICT development. For example, according to F.Miao (Miao, 2007) and M.Trucano (Trucano, 2012) they are mainly of two kinds:

- psychological and educational one: teachers (especially working ones whose age is over 40) are psychologically not ready for huge amount of ICT (Miao, 2007);
- financial and technical one: technical weakness of the rural area schools makes usage of ICT as a practical method of teaching quite difficult (Trucano, 2012).

MATERIALS AND METHODS

In the process of writing, the authors used methods and techniques typical for scientific research in the field of social pedagogy and theory of education:

- general scientific methods (analysis, generalization, comparison) for

analysis and research work with encyclopedic, psychological, pedagogical and methodological literature on the subject of research;

- problem-targeted methods for the analysis of scientific and methodological literature, periodicals and normative documents related to educational process for teachers organization in both pedagogical and non-pedagogical education institutions of China;
- comparative pedagogical methods for analyzing and research study in using and treating ICT as an educational method (as well as the method of self-education of teachers and teachers-to-be) and one of aims of vocational training system for teachers and educators in China .

Moreover, such methods as authors` personal observations during internship and work in the education system of China, interviews with teaching staff, summarizing data of official statistics were also of great use.

RESULTS

ICT exerts revolutionary influence on the development of education. Most developed countries attach great importance to ICT in education and have worked out a series of national strategic plans to support and promote the development of ICT in education. China has also made a strategic choice to facilitate education modernization through ICT in education in its education reform and development. Using the model "everything starts with a teacher" a huge effort of the Chinese government was and is made to make ICT not only a method of teacher training programs (including the primary teachers' ones), but also to make it a practical instrument of a ll levels teachers which is obligatory to be used. The historical realities of the the Chinese state's development as well as peculiarities of the national mentality of the Chinese always have seen panacea for many "diseases" of the society in the work of educators and educational institutions as the official representatives of the state in this area. Mainly it was set upon the idea that the state knows best what kind of citizens it would like to have, what habits and skills the citizens should obtain, what kind of personal values and social rules they are to follow. That is why "educating of educators" is seen by the Chinese as the basis for the development of the society and the country, quality changes of the society and one of the main tasks of the educational process in the country in general (Mei, 2009). Though a number of programs were started on

local and state levels ("Computer Literacy" (1990-2000), "Connecting Every School Project" (2000), "National Development Plan for ICT in Education (2011–2020)" etc), China still faces lack of local, regional as well as national programs on avoiding ICT illiteracy both for students and teachers.

DISCUSSION

1. Genesis of ICT as a form of education in China

Hieroglyphs are a form of writing that is used not only in China. Today hieroglyphic writing is used in Korea, Japan, Egyptian hieroglyphs and Mayan hieroglyphic writing are widely known (they already exist as dead languages). However, while Korean and Japanese scripts use hieroglyphics as a form of sound designation (and they are closer to alphabetic languages), Chinese characters represent a unique type of script, where each significant element gives an additional hint to the meaning of the character in general, but the meaning of the whole hieroglyph cannot be deduced from the meaning of its parts. This phenomenon (the so-called "internal meaning of the hieroglyph") provides additional bonuses for researchers in the field of social and humanitarian processes (which also includes education). On the one hand, the constancy of hieroglyphic writing gives a complete continuity of the particular reality perception over a long historical period, and on the other hand, it teaches a person to perceive a particular social phenomenon with a fixed content and practically eliminates variability in its understanding.

However, it is precisely the "internal meaning of the hieroglyph" that makes it difficult for the Chinese language to penetrate neologisms, internationalisms, etc. with the phonetic transcription preserving as there is a need to select hieroglyphic characters that are content-related to the reality for the specific sound of the word. And the Chinese language solves this problem towards the dominance of the meaning over the sound. The same principle applies to the functioning of professional vocabulary and terms in the Chinese language: the meaning and idea of language categories mentioned when translated from foreign languages becomes much wider. If we get the character-by-character understanding of the hieroglyph «信息通讯技术» which in the direct translation means «ICT», we shall get:

信息- xin xi - information, news;

通– tong - through;

讯– xun - fast, rapid;

技术- jishu - technology; way of doing something; skills.

As the result, we get the following meaning of ICT that function in the Chinese language and is the only one to them: «the way of spreading new information quickly». It widens a lot the meaning of ICT in education as it is used to be seen in English-language literature where it is mainly associated with the use of computer technology in the educational and teaching process (Marcial, Fortich & Rendal, 2014). The Chinese also include in this process all information spreading sources like educational radio, television, educational and training movies, training app for cell phones etc. (Chan, 2017).

After the founding of PR China in 1949 China faced a set of problems to be solved immediately as they were connected to existence of the country as it. And some of them were planned to be solved through education. The two great problems of this kind were illiteracy and the need to make the population (especially minorities) more loyal to the policy the state government provided. By 1949, over 80% of the population in China was illiterate (Report of the State Commission, 2005). As to the minorities, traditionally in old China for not han or man minority representatives it was rather difficult to get education in middle schools, not saying a word about Universities. The system of education through ICT the Chinese government in one hand provided the population with the information and education needed and fitted the new political and social conditions, and in the other hand provided potential problematic zones of minority location (Tibet, Xijiang, Qinghui, Inner Mongolia, Ningxia) with Chinese language and ideology. (Epstain, 1982). It was the reason to force all the forms of education through ICT sources development to reach the results as soon as possible.

In this perspective, we can say that China has a rather long history of using ICT as a means of training and teaching. Below, the authors of the article make an effort to present the main forms of ICT method of training and teaching in China:

- *education radio* - although this type of training (in the form of radio broadcasts and lectures on a specific topic) is the oldest in the world in the field of distance and ICT education, today it also has not lost its popularity. It acquired more local features (each school or university has its own broadcasting system), and is also focused on a more targeted audience (the older generation, rural residents, Buddhists, etc.).
- *education television* - for today China has 5 state TV channels that are included into the education system. They are:

- CETV-1 - officially began to broadcast in 1986, the channel of general secondary education for citizens of China. More than 2,000 colleges and universities as well as more than 400,000 primary and secondary schools are connected to this educational resource. The total number of channel users is about 971 million people. The programs of this channel are officially included in the educational process and are used for homework and workshops;
- CETV-2 is a specialized training channel for already working specialists and those who take continuing education courses at the workplace. Broadcasting content is mainly goes according to the state programs of Adult Education and Professional Education;
- CETV-3 is an educational channel for the Beijing region that broadcasts documentary and educational films in various fields;
- CETV-4 (previously - primary and basic education TV) is a specialized channel focused on primary and secondary school teachers, as well as on parents;
- CETV-5. (CETV kids) - officially began broadcasting in 2005 and is the only national channel for young children education. Basically, it broadcasts training programs for 0-12 year olds, but also offers courses in prenatal education for parents. (CETV, 2020).
- *education internet lines* - on the state level is presented by China Education Network Television, BAIDU and DOUDOU search systems:
- China Education Network Television is the only Internet television channel that is included to the state ICT and distance education and training system. This channel uses government resources to use the Internet, mobile networks, etc. It is the only professional national educational Internet channel that is designed not only for the Chinese, but also for foreign audiences and concerns education (learning the Chinese language, Chinese culture, archival documents, etc.). (CETV, 2020);
- BAIDU - a search system, by its functions makes the analogue to Google;
- DOUDOU - a special search-entertainment system for children of age 3 to 16, which has no ads, political or economical news, provocative or violent content etc.
- *education apps* - are quite popular in China and produced by many non-state firms. The most popular ones are of English language learning, driving training and knowledge of traffic rules programs etc.

We can say that China was one of the first countries in the world that created the centralized system of education through ICT, using as example models of USSR

and US that started 1930s used radio as a source of education.

2. Open University of China as a form of ICT teachers training system in China

By the beginning of XXI century delousing countries and countries with average incomes had 8 of 10 large complex institutions of education through ICT sources in the world. The largest among those 8 are University of Antalia (Turkey) with 578 thousand of students and Open University of China (OUC) with 530 thousand of students. (Altbax, 2016).China Open University (China Central Radio and TV University - CRTVU) as an educational system was established in Beijing in 1960 and initially was represented by 1 University which in 1979 dissociated and got the name of Beijing Central Radio and TV University. Initially, the main goal of such classes at universities (on the radio, mainly) was "just to keep the unemployed busy" and "to give the right ideological orientation to working specialists," and the diplomas of such a university were "equal in status to a college of two years." By the mid-1960s, more than 50,000 students were enrolled in the university system, but only 12,000 received a diploma. (Epstain, 1982). The CRTVU system was formed directly under the control of the Ministry of Education of PR China to make up staff shortages in specialists of various fields (and, first of all, pedagogical personnel), and also license the practical skills of those already working.

Now the CRTVU system operates through 44 Provincial Radio and Television Universities (PTVUs), 279 Provincial School Branches, and 625 District Workstations. The RTVU system employs about 85,000 employees (including 52,600 full-time employees). It offers educational and continuing education programs (including those in the workplace) in 75 programs, 9 disciplines and 24 specialties, including science, technology, agricultural science, medicine, literature, law, economics, management and education. The number of graduates of the system of these universities today has exceeded 9 million. And the number of students who took short-term courses at these universities is about 50 million. (Liu, 2014). For today the most large and well-known regional universities in the system of OUC are:

- *Beijing Open University* (CRTVU) considers to be the central one that forms the content and ideological orientation of the entire system of the Open University of China. Provides educational programs on following departments: Faculty of Arts and Law, Faculty of Economics and Management, Faculty of Engineering, Faculty of Teacher Education, Faculty of Foreign Languages, Faculty of Agroforestry and

Medicine (BJOU, 2020);

• *Shanghai Open University* (SHOU; formerly known as Shanghai University of Radio and Television) today is an open university, conducting distance education programs based on ICT, broadcasting and television, as well as computer and other equipment. (SHOU, 2020). SHOU has 9 major education directions, among which the most famous are Education and teaching, State and Business administration, Chemistry etc.;

• *Open University of Hong Kong* is an international institution for specialized training in ICT and distance models. The University was founded in 1989 as an open type educational institution, which allowed workers and employees to obtain higher education or improve their qualifications in their existing specialty. This University as an education center was established by Chinese Ministry of Education to force its education system and educational values in Hong-Kong (then still under British protectorate) according to Sino–British Hong Kong Joint Declaration of 1984. In 1997 the University was re-certified, changed its name to «Open University» and officially entered the Chinese Open University system as a regional representative. Today, the University employs about 2,000 teachers (more than half of the specialists are also employees of scientific institutions of the PRC) and more than 20,000 students are studying. (OUHK, 2020).

Over the past years, the Open University system, providing diverse forms of education, created and improved new mechanisms to ensure the quality of distance learning with the help of ICT. Starting with the idea to provide as many people as can with the opportunity to receive higher education and improve their qualifications in various specialties, now it turned to be the leading force in the implementation of e modern distance learning program, as well as an important component of the Chinese higher education system, representing a unique type of educational service which is based on ICT achievements.

3. **ICT in the system of professional training of teachers in modern China**

Today, ICT as a method of teachers` training can offer China a wide range of tools and products, both of foreign and domestic production: online educational platforms, access to electronic databases and libraries, as well as software for their use. However, at present, many of these products remain insufficiently demanded and their usage is largely limited exclusively by top Chinese universities or by non-formal educational institutions. The state makes large investments to expand access

and adapt ICT programs, methods and practices for middle and elementary schools and even kindergartens, as well as for teachers` and teachers`-to-be specialized trainings. China has announced an ambitious plan to create the whole China digital educational environment by 2030, promising to provide broadband connectivity for all K-12 classes. To take advantage of this Project, all provinces are to connect all educational institutions on their territory to high-speed Internet and start to test the «ICTeducation system» software in 2025. (Chan, 2017)

ICT education technologies for teachers do not noticeably differ in China and other countries, but the difference can be seen in the role of the state in the process of ICT`s implementation as an educational and practical method. The Chinese Government, traditionally playing a great role in all the aspects of the Chinese life, definitely could not have an idea to exclude ICT from the sphere of its interest. China's official "Plan for ICT in Education 2011-2020", which was published in March 2012, states that "Special focus should be put on ICT use and infrastructure building in rural areas, poor areas, and ethnical areas, aiming to narrow the digital divide among regions and schools" (Trucano 2012). According to this plan the Chinese government started a set of programs and projects to implement ICT as an educational and self-educational method both for students and teachers. These initiatives include:

- Distance Education Project "School-to-School Project" (launched in 2000, this aimed to bring Internet access to ~ 90% of Chinese schools via three basic models: instructional DVDs played on televisions; satellite TV + computers; and Internet-enabled computer classrooms plus satellite TV);
- Experiment on Leap-forward Development and Innovation of Basic Education (228 "experiment" schools in rural areas are involved in this project overseen by Beijing Normal University);
- MOE – Microsoft "Partners-in-Learning" Project (large scale public-private partnership began in 2003);
- Modern Distance Vocational Education Resources Construction Project (from 1999-2003, the Ministry of Education developed and delivered more that 130 online courses mainly for rural teachers and educators from the private sector);
- "One Village, One College Student" Plan (begun in 1999 by the open University of China, this higher education project offers courses of study in 18 agriculture-related majors);
- Poverty Alleviation through Distance Education Project (begun in 2003

by Tsinghua University, 1,018 county-level and 2,440 village and township level teaching stations have been set up in 539 high poverty sites);

- University Agricultural Science and Technology and Education Network Coalition (since 2003, agencies in this coalition have trained over 500,000 people);
- Village and Township Digital Learning Demonstration Center Based on the Public Service Systems (targeting farmers and others engaged in rural agriculture);
- National Teacher Education Network Coalition Plan and National Training Program (building a teacher education network in China since 2003, latest initiative is training 435,000 teachers through distance learning);
- Continuing Education Network for Primary and High School Teachers (continuing education network launched by Northeast Normal University in 2002);
- New Form of Distance Teacher Education for Less-Developed Regions (small pilot project exploring creation of distance education learning centers in Yulin, Shaanxi);
- Training of Substitute Teachers in Primary and Junior High Schools through E-learning (training substitute teachers in 15 less developed cities in Guangdong province). (Trucano 2012; Unesco-China Project on ICT … 2017).
- Education programs provided by Open University of China system.

As to the courses provided by OUC for teachers, they aim to enable working teachers to undergo the necessary advanced training courses, prepare for qualification exams to receive a category, and also receive additional teaching competencies (which is especially important for teachers of rural schools and educational institutions organized at the expense of territorial communes or local self-government bodies). The educational process in such programs is organized as follows:

- two or three years programs are offered (depending on the teacher's existing level of education and his / her goals);
- each year consists of 2 semesters of 18 academic weeks each;
- the curriculum consists of micro-courses of 18 teaching hours each;
- each micro-course ends with a credit;
- to be admitted to final exams, a student must pass 160 credits in a two-year study program or 240 credits in a three-year program;
- credits are taken through mailing or smart-phone applications;
- the student must work out laboratory classes and internship on the basis of the nearest state university or its branch;

usually a week, the student has 82 academic hours using television or smart-phone applications, of which 33 hours are lectures on the curriculum directly, and 49 hours are a selection of additional information on courses taught;

- once a year OUC`s regional office conducts final exams for a diploma (sometimes this function is delegated to the local education department in the case of hard-to-reach areas);
- after final exams, a state-level diploma is issued, which, however, is not equal to the diploma of pedagogical university graduation. Depending on the needs of the province for teaching staff, this diploma can be equated to the diploma of a pedagogical college graduate or the level of "junior bachelor in the field of education». (Ding, 2005; Fan 2011; Fu, 2017; SHOU, 2020).

Recent years, Chinese government has organized many programs for facilitating teacher ICT education. Examples include: Facilitating Education Informatization for Teachers, Enhancing High-Quality Teacher and Management Team Engineering, and Planning for the Development of National Teachers' Competences of Educational Technology in Schools. Distance training programs were also added to the national training program and over 2.7 million teachers attended IT-aided subject training. At the school level, all high schools, 95% of middle schools, and 50% of primary schools are required to provide ICT compulsory courses for their teachers (National Statistical Report on Education 2015).

4. Challenges for ICT as a teaching and learning method in China

Recently, teacher education institutes have made efforts preparing pre-service teachers to integrate ICT into their future teaching practices. There were presented several key strategies to introduce ICT integration to pre-service teachers: delivering a single technology course; offering mini-workshops; integrating the technology in all courses; modeling how to use technology, etc.

In the case of China, the government has given big emphasis to the effect of ICT integration, and dedicates to make ICT an important means for teaching as well as a new type of tools for learning. Since China has huge differences in its geographic, economic and educational level in different regions, the way that ICT is being integrated in the system of professional trainings of teachers is diversified. In developed areas, such as Shanghai and Beijing, many educational authorities make full use of their advantages, conducting various kinds of ICT innovation activities that cultivate teachers` and teachers`-to-be problem-solving abilities by integrating ICT into classrooms. One-to-one e-learning, mobile education, miniature learning

and digital whiteboard-based interactive learning are all new approaches of using ICT application in pedagogical teaching and learning process (Zhang, 2002).

Rural and less economically developed areas (as well as the ones geographically located far from big cities and popular touristic areas) face the problem of poor network connection that definitely influences the usage of ICT as learning and teaching method both for students and teachers. Also the Chinese government speaking about challenges for ICT in these regions found at least two categories of barriers tightly related to teachers' behavior: the lack of specific knowledge and skills about technology integration and attitudes and prejudice towards technology as a teaching method. Even many teachers have strong desires for integrating ICT into teaching, they encountered significant barriers, such as lacking confidence and competence, or having negative attitude and inherent resistance (mainly it concerns the teachers of the age over 40) (Wu, 2014).

Not only teachers' passive attitudes can cause barriers, but students can also pose challenges to ICT integration process. New generations, which are also called the Millennials, are much more skilled and adopted at using technology than their teachers. Under this circumstance, students have different patterns of thinking and communication, notions of learning, needs for control, and even personal and social values with their teachers. The same gab can be noticed in the educational institutions for teachers as well where about 68% of teaching staff is over 40 years old and especially in the retiree courses for teachers where about 80% of listeners and students obtain degrees and represent the generation of 45-55s. (Hu & McGrave, 2011)

Chinese teachers, in particular, expressed more doubts about the effectiveness of using ICT applications in collaboration, independent learning and self-education. Moreover, Chinese teachers regard themselves more of an authority role when compared to Western teachers. The authority figure hinders the interactive use of ICT, as this is not consistent with the formal traditional education (Fu 2017, p.21)

5.COVID-19 quarantine and the ICT education process in China

Unlike other countries (especially the ones of the former Soviet territory) the quarantine restrictments and study-at-home form of education did not much China due to self-organization of the Chinese teachers and students, thanks to technological readiness of the education system and the introduction of ICTs and distance learning methods, which began long before CORONA. Also, own money at universities allowed them to sharply increase the number of technical personnel for organizing

and maintaining the educational process in the new conditions. This allowed the entire education system in the PRC (from kindergartens to universities) quickly and entirely go into online space with minimal loss in the quality of educational services. Through the OUC system and other ICT sources were organized special training courses for teachers at rural areas to help them to adopt the new form of teaching. But as a result of the ICT revolution, which took place in the PRC's approaches to education in general back in the 2010s and the new paradigm of teacher training (and ICT as an indispensable part of this paradigm), compared with other countries, it did not lead to a boom in high technologies in the field of education in China.

CONCLUSIONS

From the development of ICT in China in recent decades, one can see the significant progress made by the Chinese government, researchers and educators. ICT also provides opportunities for effective communication between teachers and students that has never been achieved before. In the second section, some barriers and challenges of ICT integration are identified. As it is often in case of China, some uncertainty surrounds the future of ICTs as a part of teachers training system in this country, but emerging trends inspire confidence that they will be in demand and seamlessly enter local educational practices. A large number of students (both in the system of formal and non-formal education), rapidly growing incomes and an increase in general level of education in the country, the needs of the Chinese economy based on new information technologies, are constantly increase the demand for ICT in this country. And it is ICTs that can fill the existing gaps in the teachers training sector, which still uses more traditional educational methods. Also introducing ICT into pedagogical practice of PRC corresponds with general orienting of the education system in general and teachers` training system in particular to adopting of foreign educational methods to the needs of China. As further perspectives for the research over the issue it could be mentioned such lines as usage of ICT as a practical method of education and self-education in vocational training programs for representatives of different professions (state servants, medical workers, business elite etc.), development of ICT education system in China both for working teachers and the new ones, psychological aspects of using ICT in Chinese educational system etc.

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Received: 17.08.2020
Accepted: 17.09.2020

Cite this article as:
Shulin Niu (2020). ICT in the primary education teachers` education practice in PR China. *Astraea*, 1(2), 102-117. doi: 10.34142/astraea.2020.1.2.06