

Teacher Training and Upgrading via Leapfrog:

Four Scenarios of Teacher Training Curriculum in China

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ABSTRACT: For the past over two decades, and especially the last five years, the People's Republic of China has taken the rest of the world by surprise with its astonishing economic growth. To sustain its rapid development, however, the Chinese government and other key stakeholders realize the urgency of reform of the national educational system. In China, it is widely recognized that ICTs make it almost impossible for learning to take place without using emerging new technologies to meet the demand from the ever quickening change in the external world. Based on findings from a recent research the author of this paper conducted, there is a good reason to believe that China will turn its education system upside down by introducing what we call Leapfrog principles and practices. This paper focuses its discussion on the reforms of teacher education in China by exploring the future(s) of curriculum reform for teacher education in the light of Leapfrog principles.

Introduction

Traditionally, teachers of elementary and secondary schools in China are trained through two main types of institutions at three levels: *pre-service* and *in-service* teacher training at the four year college level, at the two to three year junior college level and at the secondary level of teacher training institutes. Pre-service training institutes are normally full-time educational institutes to provide the education that beginning teachers need in order to enter into the teaching profession. In addition, each level of government from county level to provincial level has formed an in-service teacher training system along the following manner: the provincial level provides training for teachers from senior high schools; the prefecture level trains teachers from junior high schools, and the county level focuses on training teachers from elementary schools (Guo, 2002).

According to the Ministry of Education (Guo, 2002), four-year colleges are capable of producing approximately 51,000 graduates each year, while two and-three year junior colleges and secondary teacher training schools produce approximately 139,000 and

277,000 graduates respectively. With an increasing demand for qualified teachers, the national government is trying to upgrade the level of teacher training institutes from secondary level or junior college level to four-year college level. In addition, in recent years some comprehensive universities have been encouraged to undertake the responsibilities of training teachers. By the end of year of 2003, the number of secondary teacher training institutes was cut down to 500 from 892 in 1997(Guo, 2002).

As for the curriculum structure for the teacher training schools, especially those pre-service training schools, it normally consists of three main components: 1) general education courses which offer a series of classes to equip students with comprehensive training in political/ideological (including civic) issues, foreign languages, physical education and computer science, 2) subject matter courses which provide a wide range of classes within the academic areas in which the student teachers are enrolled (e.g. English, Physics, Chemistry, or History, etc), and 3) educational/pedagogical courses which offer classes to help student teachers with training in such areas as pedagogy, psychology, and subject matter content teaching methodology, etc. On the average, the percentage of teaching hours for general education courses, subject matter courses, and educational theory courses is usually 21%, 72% and 7% respectively (Li, 1998).

Similarly, the in-service training schools place a heavy emphasis on courses in the subject matter areas which account for 50% of the total teaching hours, whereas general education courses account for 10%, pedagogy/psychology and practicum takes 35% and professional development offers 5% of the total instruction hours (Guo, 2002).

It is also worth noting that the curriculum for teacher education is designed on the basis of disciplinary specialization. Prospective teachers are trained to be experts in their subject matter area because most of the graduates from teacher training programs will teach the same subject for the rest of their lives unless they choose to change their profession, or leave education entirely. Still, since China is well known for its examination system throughout all levels of its education system, these student teachers are expected to be experts in their subject matter to ensure that their students have the opportunity to perform better on tests at all different levels. This is true of teachers for all grades from one to twelve.

Overall, until recently the current curriculum system of teacher education in China seems to have done fairly well in providing educators for schools and in meeting demands from pre-information age development which itself was based on the development of various disciplines. Actually, the Chinese basic education system is well known in the world for its quality in producing students who display themselves marvelously well on several international knowledge competitions. Elementary and secondary students are often reported to have a solid knowledge foundation in most of the disciplinary areas, especially mathematics, physics and chemistry. It is undeniable that teacher education institutions have played a very important role in helping sustain the largest basic education system in the world.

Unfortunately, problems identified by key stakeholders have already begun to stand in the way of China's move to be one of the global leaders. While graduates from teacher training programs feel fairly competent at teaching for tests, they are facing increasing challenges from ever-faster changes taking place both inside and outside the classroom. The old mode of curriculum leaves the future teachers unprepared for these changes in the following four aspects: 1) change of learners, 2) improved educational technology at school, 3) change of demands from employers, 4) society's intensive concern about national and global issues like responsible citizenry and character development, etc. and 5) the interconnectedness or globalization of the nation's economic, social and political life with other parts of the world (Song, 2007).

As a result, since the beginning of the 21st century, many measures and efforts have been taken to strengthen the curriculum for teacher education in China. Many studies have since been conducted by leading Chinese educators and researchers that suggest the need for reform. Findings from these studies reveal that apart from acquiring a sound academic training, future teachers must be given opportunities to develop themselves as not only mere executors of teaching, but also as thinkers, researchers and innovators of education. Teachers' initiatives and innovative orientation are considered essential to the development of student creativity, and this is increasingly viewed as a fundamental prerequisite for the development of the nation in general and individuals in particular. Obviously, the qualities that are required of teachers cannot be developed through a compartmentalized curriculum that fails to equip future educators with a healthy menu of options to help them construct their own knowledge structure by allowing them to make choices on their own. Such failure results in the inability of future educators to adequately provide their own students with the freedom of inquiry, and this failure is considered detrimental to the development of student creativity.

Therefore, I would argue that, to ensure a high quality of education, the nation must have a large pool of qualified teachers, and this depends upon pre- and in-service teacher training programs that offer an innovative curriculum system allowing for ICTs and interdisciplinary/transdisciplinary paradigm to replace the discipline-confined traditional training pattern. Only when such a system is in place can teacher training programs produce future educators who are balanced in their knowledge structure and, therefore, qualified to develop the full creative potential of their students in the future.

As Harkins rightly points out in his paper of this issue, it is essential that teachers be prepared "to help expand ingenuity, creativity, and knowledge to help us all cope with a future that is becoming increasingly unpredictable" (Harkins, 2007). This is particularly true of China's teacher education since teacher training programs play such an important role in turning China's huge human resources into a great human power rather than human burden to the society.

Look into the Future

In response to the increasing demand for curriculum reform, the author of this paper conducted a Delphi-based scenario study (Song, 2007) on curriculum futures for teacher

education by interviewing a group of individuals directly involved in teacher training programs in China. This research involved a variety of key stakeholders including senior administrators, scholars, teacher educators, and researchers. Prior to constructing scenarios, I had researched two main questions with respondents: 1) how did the current curriculum system in Chinese teacher education come into being; and 2) what are the related problems associated with the fulfillment of educational and national goals in China. The whole process consists of three phases: environmental scanning through literature review, Delphi research through interviewing identified experts on three rounds, and scenario construction by analyzing those the data of feedback with high consensus from the respondents (For a full description of the research, please refer to Song, 2007).

One thing worth noting here is that the main part of the Delphi research statements was designed by using Harkins' "Leapfrog 12" (Harkins, 2007). The findings of the data send us a clear message that China needs and is ready "to take maximum advantage of the imaginations, knowledge production, problem solving, and opportunity generating potentials of children and youth, together with their adult collaborators" (Harkins, 2007). As a result of the studies, four scenarios were constructed. These four scenarios include "HOARDER" (1-H Model), "EXPERT" (2-H Model), "LEADER" (3-H Model), and "BEACON" (3-H + *i* Model). The names for each scenario are derived from acronyms of English words that stand for underlying principles or characteristics of the curriculum design each symbolizes (see Song, 2007).

Due to the limitation of space, this paper will only introduce two of the four scenarios: LEADER (3-H Model) and BEACON (3-H+*i* Model) which are both consistent with the Leapfrog principles. Through this research, it is safe to argue that China is at a critical point facing both opportunities and challenges. The next decade or so will determine whether China will stand as a global leader or follower on an international stage, depending on whether or not it is in a position to transform its teacher education programs via paradigm shift reflected in the Leapfrog principles and practices discussed in this special issue.

Scenario of LEADER (3-H Model)

As China aspires to become a global leader in the political, cultural, and economic sectors, there is an increasing demand for reform in education, in particular, teacher education, in particular. Government and business leaders "have grown concerned that too many students have become the sort of stressed-out, test-acing drone who fails to acquire the skills — creativity, flexibility, initiative, leadership — said to be necessary in the global marketplace" (Hulbert, 2007). As a response to this challenge, the LEADER scenario finds favor within society.

In this scenario, education is widely esteemed as one of the most important factors in shaping the future of the nation; teacher education is regarded as "the engine" or "carrier" of the entire education system. In the media, among those every day expressions include innovative leadership, systems thinking, critical thinking,

knowledge workers, ICT, collaboration, and simulation. Teacher training institutes in particular are charged with the primary mission of turning the world's most populous country into a nation with a well-developed reservoir of human capital. As Harkins (2007) asserts, future educated citizens are expected to have 12 basic liberal arts skills. We live in a society where ICTs are literally used in every aspect of daily life. Therefore, it is no longer a question of whether or not information technologies should be included in the curriculum, but rather how these technologies can best be employed to prepare individuals for a society that experiences changes at such an exponential rate, thanks to the wide application of ICTs.

As a result, teacher education curriculum in the LEADER scenario should embody *liberal* arts courses and simultaneously include courses that are *engaging* in instruction and *applicable* in content; both content and pedagogy of teacher training programs should also take into account the following key qualities: *dialogical*, *emancipatory*, and *reflective*. In order to prepare future teachers to produce knowledge workers and innovative leaders, it is essential to include elements that help to promote qualities compatible with the requirements of a society that is dominated by ICTs and characterized by an exponentially changing pace. In this scenario, citizens are required to be expert in two types of communication: discussion and *dialogue* to promote team learning among community members. Similarly, citizens are expected to challenge their own thinking while actively contributing to the creation of new knowledge in the society. Since this scenario focuses on the development of the *head*, *hand*, and *heart* of individual learners, I call this the "3-H model". This scenario appears to fit into what Harkins (2003) terms the "innovative paradigm"¹ which places a great importance on the creation of new knowledge.

In this scenario, to train a contingent of forward-looking professionals, teacher education curriculum is to embody a large range of interconnected theories and practices. Also, the development of creativity is deemed so crucial that all activities throughout the training programs are designed with this chief concern in mind. Furthermore, ICTs are used extensively in every possible way to assist future teachers in "accessing and selectively employing information in pursuit of opportunities and problem resolutions" (Harkins, 2007).

Finally, in the LERDER scenario, in addition to the traditional cognitive tests, it is required that a more integrated, holistic and authentic examination be instituted to assess abilities of future teachers as leaders of learning communities, including schools. Prospective teachers will be assessed in knowledge, skills, and dispositions acquired throughout their training programs. Among those key qualities to be evaluated are abilities to use ICTs to promote learning and independent inquiry, to promote the values and practices of citizenship, "to anticipate and build preferred new futures rather than simply respond to current challenges and trends, to emulate leading edge work force, including a shift from memorization to knowledge production and innovation" (Harkins, 2007), and to work collaboratively with others, etc.

¹ It refers to a paradigm which "is the sine qua non of the new 'knowledge workers,'[but] this paradigm is currently and pedagogically rare in [education system]" (Harkins, 2003, p.17).

Scenario of BEACON (3-H + i Model)

Within next decade or so, all walks of life are to undergo rapid changes thanks to easy access to ICTs. This reality completely changes the conventional concept of knowledge and education in a manner similar to what the industrial revolution did to that of the agricultural tradition. In this scenario, books are no longer the exclusive or even a chief means of acquiring knowledge. This requires that every educator stay abreast of the existing technologies (Harkins, 2007) they use to deal with their own concerns and to help enhance students' learning. Under this situation, ICTs make it almost impossible for learning to take place without using emerging new technologies to meet the demand from the ever quickening change in the external world. They simultaneously make it very convenient for everyone to study at his/her own pace to maximize his/her potentials. Also, everything in the external world appears pretty much like a chaos where routines are no longer the norm; instead, in order to thrive in the midst of challenges (Harkins, 2007) everyone has to think, plan, and implement according to a systemic way. We are not only connected between races and between past and future, but we are also connected with the environment. This means that we can never look at any event or activity in an isolation. Living in this changing world is exactly like sailing in the vast ocean at night, without knowing what lies ahead.

As a result, in this scenario, the entire process of education is regarded as “navigating” through a chaotic sea of information. As the title of this scenario indicates, future teachers should be trained to function as *beacons* for learners to safely navigate in the midst of “dark” and uncertain world into which their students are “tossed.” This scenario also embodies the key characteristics of a curriculum a successful teacher training programs should have: curricularly *basic* or fundamental, *coherent*, *exemplary*, pedagogically encouraging future teachers to be *adaptive*, *open* and competent to *navigate* their future students. Since this scenario emphasizes the intelligence training (e.g. multiple intelligence²), problem solving skills, emotions, and innovative creation (e.g. *head, hand, heart, and innovation*), I also call this scenario the “3-H + i Model.”

Teacher education in this scenario is aimed to equip future teachers with qualities, enabling them to help optimize human capital development, by guiding their navigation through the rough seas of chaotic information world, so that teachers can become both innovative knowledge workers for the world where they are living and creators of a meaningful and peaceful human society.

This scenario is within the framework of systems thinking and constructivist learning theories. Here learners are no longer students who sit on their hands listening to their professors; instead, they are all survivors of “sailing through rough seas” and they must each share stories about their pasts and create simulations of their futures. In other

² Multiple Intelligence theory was first proposed by Howard Gardener (1983). According to him, there are eight different kinds of intelligences: Linguistic intelligence, Logical-mathematical intelligence, Spatial intelligence, Bodily-Kinesthetic intelligence, Musical intelligence, Interpersonal intelligence, Intrapersonal intelligence, and Naturalist intelligence (1983).

words, student teachers are contributors to the world they are entering under the guidance of teacher educators along with professionals from other fields, all through interdisciplinary training. Also, in order for future teachers to function as reliable “*beacons*” in the midst of a chaotic world, human relationship (the central part of which is mutual love and respect) will hold a center-place in the curriculum. This relationship signifies a common vision, motivates a passionate action, and sustains a joint effort to fulfill one’s life purpose. In addition, ICTs constitute an integral part of teacher education curriculum since they are inseparable in our daily lives.

As in the LEADER scenario, the rigid written examination no longer exists as the only form of evaluating the outcome of an individual’s learning activities. A list of integrated and effective ways of examining student teachers’ knowledge, skills, competence, and other qualities is required for all qualified teachers. Just like a driver license test where a combination of a written test and a road test is used to ensure a result of a knowledgeable and safe driver on the road, an authentic assessment that places importance on the development of creative leadership and moral characters is needed to create a reliable “BEACON” for young people in the midst of a chaotic world. This assessment must include tests of knowledge, skills, and dispositions (e.g. vision, passion, and wisdom, etc.).

Concluding Remarks

Based on the above discussions on LEADER and BEACON scenarios, here are some reflective thoughts regarding how to improve teacher training programs via Leapfrog. First of all, as Leapfrog principles introduced in this special issue suggest, future students are expected to be “able to create new framings, meanings and innovative applications of knowledge” (Harkins, 2007). In order to meet that end, curriculum design for teacher education should go through a paradigm shift from disciplinary thinking to systems thinking. In other words, current curriculum should be designed in such a way that student teachers are prepared to be *able* and *willing* to “think systemically and simulationally..[and] take personal responsibility [for their own decisions]” (Harkins, 2007, p.6).

Secondly, it is crucial for teacher educators to take advantage of existing ICTs not only to enhance effectiveness of instruction but also equip prospective teachers with cutting edge technology which will in turn revolutionize their teaching in schools. Similarly, prospective teachers should be encouraged to utilize simulation process to “anticipate and build preferred futures” (Harkins, 2007) to avoid undesired scenarios with which we would otherwise end up (Song, 2007).

In addition, by using Leapfrog principles and practices, it is also paramount to develop and value the spirit and attitude of lifelong learning community which will “identify, create and utilize new and future-oriented formats for sharing the knowledge” (Harkins, 2007). In brief, throughout their pre-service training programs, prospective teachers should be provided with “environments that better facilitate the creation, innovative application, and sharing of new knowledge” (Harkins, 2007). In this way, the inherent

advantages of the Chinese education system (e.g. solid subject matter knowledge) can be maximized while students' creativity and problem solving abilities can be developed by engaging them in proactive learning³.

Lastly, today's students will interact with people from other cultures, and therefore, they will inevitably influence and be influenced by others. In order for them to live a healthy and constructive life, it is essential to "foster development of inter-culturally competent and socially responsible cosmopolitanism among students, staff and faculty" (Harkins, 2007) through globalization and internationalization.

³ Proactive learning is a multi-faced approach to learning that emphasizes the importance of being learner centered and exercise oriented; it also ensures facilitated learning, reflective learning, shared experiences and collaborating with others (Dodani, 1999)

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