

Secondary Science Teachers' Employment System in China Mainland*

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Abstract

This article presents how in China mainland a school and a school district find their science teachers. Based on studying relevant materials and years of intensive involvement in teacher education and recruitment practices the authors draw three features of the current secondary science teachers' employment system in China mainland: certification control conducted very loosely selection criteria and process vary with schools and school districts due to the remarkable difference existed among them the normal universities/colleges established originally only for secondary science teacher education still play a vital role in shaping effecting quality of teacher candidates although no one of them for a long time have focused on only doing what they were supposed to do. For further development, changes and essential reform are expected duo to the increasing promotion toward the internal quality of education and therefore high quality of teachers and teacher candidates.

Key words: Teacher employment, China, Science teacher, Secondary, Teacher education

Introduction

Before operation of the Teachers Law of the People's Republic of China in 1994, there had been no legal basis of the certification for teaching qualification in China and the normal universities/colleges/schools specially established for pre-service teacher education had taken most responsibility for the provision of beginning teachers for all levels of schools. A certificate of graduation from a normal university/college/school meant also the qualification of being a teacher in a senior high/juniorhigh/primary school. However, with rapid economic and social development in China mainland, this independent teacher education system became no longer able to meet the demand for teachers in the sense of both quantity and quality. There was an increasing dissatisfaction to the quality of teacher education programs conducted in normal universities/colleges/schools. At the same time, many graduates from non-normal universities/colleges/schools and those although graduated from normal universities/colleges/schools but majored in other programs than teacher education would like to join the ranks of teachers. In this context, Regulation of Teaching Qualification was enacted in 1995 and put into full-scale implementation in 2001 after several years' piloting practices.

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Comparatively, China has only a very short history of adopting the teacher qualifying system. Nevertheless, based on the recognition of the obvious importance of teacher quality in maintaining a high quality education and presume that a improving teacher recruitment and screening practice in context of a improved teacher qualifying system will contribute a lot to the mass production of high quality teachers and teacher candidates, it is still necessary to check closely what has been done, how it worked and what should be changed and developed for the future. The authors of this article has made an primary study on the present situation of implementing the current teaching qualification system in China mainland and the outlook on the future development by means of consulting reference information and relevant people with the cases of Guilin, Guangxi, and Guangxi Normal University as the examples, and eventually summarized them in this paper for the interest of the readers.

Development and Current Situation on Teacher Certification

Since the full-scale implementation of the qualification system of teachers in 2001, there had been 19,636,300 people awarded qualifying for teaching in China mainland by the end of 2007. Among them, there are three different kinds of candidates who are respectively assigned to take twodifferent tracks. Those who took teacher education program in a normal university/college/school need no additional requirement to get certificates. However, those who had not taken teacher education program in both normal or no-normal system have to take examination specially arranged for teacher certification. From the development and practice of the teacher certification, one can figure out the main concern and trend of implementing such a system in the current stage.

I. The Development Since 1995

The table 1 shows development of the general requirementfor teacher certification in China mainland since 1995.

Table 1: Practice and Development of the Teacher Certification System in China Mainland

Year	Basic requirements	Qualification tests needed	Qualification awarding
Before 1995	Teacher college or normal university was established to prepare future school teachers. Both four-year program and two or three year program were provided.	No special tests for teachers' qualification. All the graduates of the teacher colleges or normal universities are expected to be qualified to teach their specialized subject in high schools.	The teachers' qualification is approved since the graduates get the certificates and diploma.
Starting from 1995	Based on the Teachers Law of the People's Republic of China* The requirements for applying	1. If Those who don't meet the requirements want to apply for the teachers' qualification, they must pass the national teachers'	The qualification of the applicants is evaluated by the local education administration authorized

	<p>teachers' qualification is changed and more specific:</p> <ol style="list-style-type: none"> 1. The students graduated from the normal universities can gain the qualification directly. 2. The students graduated from other universities are allowed to apply for the teachers' qualification if taking the necessary examination and courses. 	<p>qualification examinations prescribed by the Ministry of Education(MOE).</p> <ol style="list-style-type: none"> 2. The subjects, standards and outline of the examination are regulated by MOE. The design of test paper and conduct of test are arranged by local education administration. The test takes place once a year. 3. The non-normal university graduates who apply for the qualification must be interviewed and take trial teaching and may be required to take some courses, such as education and psychology. 	<p>by the local governments at or above the county level and approved by the higher rank.</p>
Starting from 2000	<p>Besides the requirement in 1995, more teaching competences are demanded for applicants:</p> <ol style="list-style-type: none"> 1. The applicants must have the basic competence to assume the teaching task. The standards and test are decided by the provincial education administration. 2. The proficiency of Mandarin must reach certain standard.(national level two or above) 	<p>The same as year 1995</p>	<p>According to the standards made by the provincial education administration, a special committee which is made up by a group of education experts is organized to test the qualifications of the applicants in the ways of interviewing and trail teaching.</p>
2001	<p>The same as year 2000</p>	<p>Based on the regulation in 1995, the applicants must take the courses of education and psychology and pass the examination which conducted by provincial administrative department of education.</p>	<p>The examination committee is in charge of the basic teaching competence. The committee is made up of administrators and experts of education as well assenior teachers.</p>

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			The committee is divided into groups to test the applicants' and give final review with the group leader's signature.
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** According to the Teachers Law of the People's Republic of China, To obtain qualifications for teachers, corresponding records of formal schooling are required as follows (the high school part):*

To obtain qualifications for a teacher in a senior high school, or a teacher for general knowledge courses and specialized courses in a secondary vocational school, technical school or a vocational high school, one shall be a graduate of a normal college or other colleges or universities with four years' schooling, or upwards.

From the table above, we can see that in China the requirement of teachers' qualification is becoming more demanding and more specific: 1) on the one hand, the criteria for applicants become stricter; on the other hand, more and more people have the opportunity to involve in the teaching career. 2) There are more and various examinations to test applicants, especially for those non-normal university graduates. 3) The certification and supervision to the teachers' qualification is trying to be more scientific and more standardized. The experts from more fields are asked to supervise the teacher employment system.

II. The Current Requirements of Applying for Teachers' qualification

In practice of implementing the teacher certification system, the current requirements can be listed as follow with more details:

1. The Requirements of Applying for high school teachers

1) Requirements for applicants' education background

To apply for senior high school teacher: a graduate of a normal college or other colleges or universities with four years' schooling, or upwards;

To apply for junior high school teacher: a graduate of a normal college or other colleges or universities with three years' schooling, or upwards

2) Requirement for a graduate from normal university :

Education: bachelor degree or master degree in a normal university majoring the subject which the applicant is going to teach in high school.

The required courses : In addition to the specialized courses, the required courses also include teaching methodology, psychology, education and so on which are closely related to teaching skills and training.

The proficiency of Mandarin: The graduates must pass the National Mandarin Test, at least level 2.

Practice teaching: All graduates from normal university are required to participate in the internship which is arranged by the university or applied by themselves in their fourth year. Generally, the practice teaching activity is held in the high school. It consists of several stages: a) the preparation stage. With some theoretical knowledge about teaching methodology, the students are supposed to apply the methods in the pre-teaching activity, and then the instructors will make some comments on the students' teaching and give some advices. However, this doesn't happen in the real class. b) skill-learning stage. The students will go to the high schools to learn the teaching skills from those experienced teachers in the ways of listening at the classroom teaching and discussing with the teachers. d) lesson-planning stage. The instructors and students will work out a lesson plan together and make a rehearsal before the students teach in a real class. e) Teaching in the real class. f) Discussion after teaching. The instructors and the high school teachers will give some suggestions on the students' teaching and ask the students to make some improvement. After the practice teaching, the high school and the instructors will put forward a report to evaluate the students' performance. If the student passes this evaluation, then he can apply the qualification for high school teacher. And this can be used as the references for their application of teaching position in the future.

The graduating students who are qualified for the above requirements can apply for teachers' qualification with the academic transcripts and other documents. Those who get the approval from the teachers' qualification examination committee will get the certificate at graduation.

3) Requirement for a graduate from non-normal university :

Education: bachelor degree or master degree of the subject which the applicant is going to teach in high school

The proficiency of Mandarin: The graduates must pass the National Mandarin Test, at least Rank 2.

Additional tests: the applicants are required to take relevant course, such as education and psychology. After meeting certain credit requirement and passing the examinations, they are qualified to submit their application.

Review of the teaching competence and quality: this is charged by the teachers' qualification examination committee. The committee is made up of the administrative officials of education, education experts, and senior teachers. The committee is divided into several groups to test the applicants' qualification and give some advices and submit final review in the application form, and the group leader must sign on it. The applicants' ability is mainly reviewed in the following ways: interview, written exams and trial teaching. The interview aims to test the applicants' behavior, manner, thinking pattern and oral expression; the written exam is to test applicants' theoretical knowledge and ability to combine the theory with practice and to solve the real problem in the student management. The trial teaching mainly concerns the applicants' ability to reach the teaching objectives, implement the curriculum, understand the content and apply the teaching language and recourses. The skills of questioning,

blackboard writing and explaining are also tested in the trial teaching.

However, generally speaking, the actual certification control in China mainland is conducted still very loosely. First, for graduates who have taken teacher education program in their universities/colleges, the teacher certification process is actually done by the degree program itself. That is not bad if there was an effective mechanism to promote normal universities to do what they were supposed to do. However, criticism as follow can be easily found:¹⁾

"The existed teacher qualification system is far from effective. Practically, a teaching certificate has been degraded to be a slight supplementary of the diplomas or degrees. It means more symbolic and formalism than essential and practical. This is actually misleading the notion that teaching is not a professional vocation."

Present Situation on Teacher Recruitment Practices

Contrast against the relative lower initial requirement and loose certification control, the teacher recruitment practices done by schools and school districts are becoming more and more sensitive and attractive to the public attention. This is because of the more and more intense competition to the limited teacher positions. The tension, being kept with increasing scale for years without any indication to be weakened, mainly came from two sources. First, the sharp increasing number of the university enrollment in 1999 and the corresponding rapid growing figure of the unemployment of the university graduates as illustrated by table 2. Second, the student population decrease due to the effect of the stricter population control policy adopted since late 1960's in China mainland.

Table 2: Number of Full-time College/University Students and Unemployed Graduates in Recent Years

Year	Total student number	Total enrollment	Rate of total number increase	Number of graduates	Number of unemployment
1998	3,408,700	1,080,000	7.38%		
1999	4,134,200	1,570,000	21.28%		
2000	5,560,900	2,170,000	34.51%		
2001	7,190,700	2,650,000	29.31%	1,140,000	114,000
2002	9,033,600	3,170,000	25.63%	1,450,000	290,000
2003	11,085,600	3,370,000	22.72%	2,120,000	637,000
2004	13,335,000	4,050,000	20.29%	2,800,000	756,000
2005	15,617,800	5,040,000	17.12%	3,380,000	926,000
2006	17,388,441	5,300,000	11.34%	4,130,000	1,240,000
2007				4,950,000	

1) See for example, Pan Maoyuan & Wu Mei, "From normal education to teacher education", China Education Daily, 2004.9.14.

Resource:

1. 《全国教育事业发展统计公报》1998—2005年, http://www.edu.cn/HomePage/Zhong_guo_jiao_yu/jiao_yu_zi_xun/shu_zi/jiao_yu_fa_zhan/index.shtml, 2006年8月16日。
2. <http://www.evve.com/chuxing/zhaopin/200711/610.html>

However, the scale of the tension described above varies with schools and school districts due to the remarkable difference existed among them. In general, for positions in city areas and privilege schools where teachers enjoy better payment and working conditions have much more attraction to the candidates than those in countryside areas and less-privileged schools although both the government and society has recognized the problem and taken some measures to overcome it.

Nevertheless, both the selection criteria and process are not quite promising even at some very popular districts and schools. The common tool used to select applicants is no more than the examiners' observing and questioning to an assigned lesson taught by a candidate in real situation or just talking about his or her ideas about teaching the lesson. Some schools faced with huge applicants even asked the candidate to work on the same problems appeared in nation-wide unified college entrance examinations in order to screen down most of them first.

Present Teacher Education System and it's Special Role

The present teacher education system in China in general was adopted in 1950's from the former Soviet Union. A special higher education institute named teachers' college or normal university was established to prepare future second school teachers. In such a university or college the academic branches are arranged according to the school subjects. Graduates from senior high schools are enrolled in a four-year program conducting in each of the departments, such as Chinese, History, Mathematics, Physics, Chemistry, Physical Education, etc. A graduate from such program is expected to be qualified to teach in a senior high school his or her correspondingly studied subject. Two or three year programs are provided in the less prestige colleges in similar format and a graduate from there is expected to be qualified to teach in a junior high school. For primary school teacher preparation, a secondary level teacher education is provided and this is done by normal schools in which graduates from junior high school are enrolled in a five-year program without disciplines separation. The graduates from normal school are expected to be qualified to teach any subject in a primary school*. For in-service teacher training, there are independent institutes called teacher schools or education colleges to do the job. This makes the so-called three stages normal education system in which the normal school takes the largest number and the normal university/college with four-year program the smallest. Up to 1979, in China there are 59 normal universities and

* Up to now, the normal schools is almost no longer existed, either being updated to normal college or disbanded.

colleges enrolled 131,000 students with four-year program; 102 colleges enrolled 180,000 students with two or three year program, and 1053 normal schools enrolled 484,000 students, providing different level pre-service teacher training to meet the demand of relative level basic education.²⁾

The independent system of teacher education is compatible with the highly planned economy period in China. Generally speak, it served well the demand of basic education in teachers' preparing and training because at that time the most people's education was schemed and taken care of by the government. Their individual requirements for more and better education, if they did have, had no official way to be satisfied. In such system, the education was very well organized but obviously lack of vitality and very weak to a change, not to say innovation and creation. A very strange but presently even still very commonly existed phenomenon illustrates this failing well: In a university established specially for teacher education, the more prestige it has, the less attention it will pay toward its teacher education program. Teacher education conducted in normal universities actually is subject matter knowledge centered. The curriculum for producing future physics teachers has no difference than those for producing future physicists in other universities except for having some educational courses which takes about 10% of the total student course works.

In the ten-year so-called culture revolution in the time period from 1966 to 1976, the teach education in China, like in other field, was in chaos. So, the first several years after 1976 were spent on restoring everything in order. However, with the policy of reform and opening-up to the outside world implemented in China and its consequent economic and society development, a lot of changes have taken place both inside and outside the teacher education institutes. First of all, taking teacher education is no longer free of charge and graduates, along with their counterparts from other higher education institutes, have no guarantee to have a teaching job position assigned by the government as in the former time. So, almost all the teacher colleges and normal universities tried their best to expand their disciplines to cover more non-educational fields in order to be a real comprehensive university and more competitive with other universities. Secondly, more and more colleges/universities traditionally not involved in teacher education tried to enter the field to share the "cake" with the normal colleges and universities, although at present this tendency has not yet essentially expanded to those prestige universities. Furthermore, voice of discontent to the teacher education has been stronger than ever before from the basic education which is now becomes a public focus of attention in Chinese society. In 2001, the new national curriculum of school level aims at holistic development of a learner as an individual and responsible member of the present and future society in China was put into the pilot use among 1.5% students' population. This large scale curriculum reform is still ongoing toward a wider and deeper level with strong government promotion and extensive public concern. However, the process of

2) HU Yan, "An analysis on the problems of teacher education and its causes in past 50 years in China," *Journal of Educational Studies*, 5, 88-96(2005).

reform experienced big difficulty due to various barriers or factors of limitation. One of the very hotly discussed issues is the inefficiency in teachers' preparation and professional development. It is very understandable because one can not image how a knowledge-centered teacher education will support a basic education for preparing scientifically literate and responsible future citizen.

However, in recent year the pace of reform became shrinking. It seems that government would not like to change too fast due to worrying about lack of qualified teachers. By adopting free-tuition teacher student policy in 7 leading normal university the central government showed strong dependence on existed normal university system in solving teacher education problem. So, it is quite clear that, for quite a period in the future, the normal universities/colleges established originally only for secondary science teacher education still play a vital role in shaping effecting quality of teacher candidates. We have to dance within the old stage!

Building Core Competence of Teacher Education to Transform the Challenges into Opportunities

No matter dancing in old or new stages, what are the most important issues we as science educators should pay special attention? It is very clear that the purpose of changing the teacher education system is to make it more sensitive to the demand of its clients, e. g. basic education; it is to improve the quality of teacher preparation and training. So, it is also very clear that we should pay more attention on building our capacities of serving our clients. Through years of discussion inside, the idea of considering capacities of serving basic education as one of the core competence of the university has been recognized by more and more faculties in the author university-GNU, especially the science education group led by one of the authors of this article.

Driven by the new national curriculum in China mainland and inquiry-based science teaching at school levels recognized widely as a big challenge to most practicing school science teachers who have not been taught in such a way in their own school years, the group in the past 8 years focus their research attention onto the practicing science classrooms in implementing the new national curriculum and conducted a systematic effort in enhancing the competence of their science and physics in particular teacher students. The most successful innovation is done in the framework of a physics didactics course series call "School Physics Curriculum and Instruction" which was awarded a "National Classic Course" title in 2007 by MOE and it is up to now the only science didactics course in China mainland getting such a high level recognition. The basic notion guiding their innovation is as follow:

We should teach a future physics teacher in an inquiry-based way because we want them to teach their students in such a way.

We should teach a future physics teacher to teach by teaching because teaching can be seldom learnt by listening.

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We should provide a future physics teacher with high quality resources and platform for effectively involving them into scientific inquiry and in-depth science learning.

A web-based platform has established and run well to support such a curriculum objectives. More details can be gotten from: www.risechina.org.