

China’s Mathematics Teachers and Teacher Education

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Abstract

China is a developing country. Mathematics education is taken into account by government and education departments. Mathematics teachers are excellent but fall behind times. They absent modern mathematics thinking. In order to enhance their quality, teachers education is carrying out. Three kind ways are seminar, postgraduate class and general professional development. But the effect is unsatisfying.

Riassunto

La Cina è un paese in sviluppo. L’educazione matematica è presa in considerazione dal governo e dai dipartimenti che si occupano di educazione. Gli insegnanti di matematica sono eccellenti ma non riescono a seguire i tempi. Non sono presenti metodologie di insegnamento moderne. Si sta migliorando la qualità d’istruzione degli insegnanti. Tre possibili vie sono: seminari, corsi di perfezionamento e sviluppo professionale in generale. Ma l’effetto è insoddisfacente.

1. INTRODUCTION

Mathematics is very important in modern society, so, mathematics education must satisfy the need of society. In fact, mathematics education is always behind the social development. Mathematics education must be never stop reform, it can become a power which push society forward.

In China, government and education departments all take into account mathematics education. They support and help mathematics education reform. Where is the mathematics education reform from? From technology? From textbook? Or from mathematics education system? All of these are very important. But the roles of teachers in mathematics education and mathematics education history tell the truth: the most important element in mathematics education is teacher. In mathematics education, we think that teachers’ role is essential and the most important. Teacher controls course of teaching and learning, guides and helps students’ learning, undertakes to get the goal of teaching and learning. In every phase and aspect of mathematics education, teacher’s role is decisive. Teacher is not only designer but also operator in mathematics education. To students, teacher is tutor, helper, and adviser. No mathematics teacher, no mathematics education. History of mathematics education also tells inversely us teacher’s importance. There are two typical examples: “new mathematics” in many countries and mathematics education in “culture revolution” in China.

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2. CONTRADICTION

China's mathematics teachers, from one aspect, are very excellent. They have firm mathematics base and work hard. They, from another aspect, fall behind the times. In a long run, Chinese mathematics education is traditional. For example, knowledge is more important than ability, repeat and many exercises. Traditional mathematics education produces traditional mathematics teachers. What they concern is just students' score in exams. Students' score is their everything.

I made a investigate to mathematics teachers some time ago, this investigate astonished me, and it shows mathematics teachers' thinking, I asked some mathematics teachers three questions:

- (1) Is mathematics truth?
- (2) Do you know problem-solving and constructivism?
- (3) Why do we use technology in mathematics education?

First question is about mathematics philosophy. How to view mathematics is on the grounds of how to teach mathematics. All of mathematics education is, including teaching methods, in relation to teachers' mathematics viewpoints. In my investigate, most teachers think mathematics is absolute truth. Mathematics is stationary, it is not developing. The answer reflects that their mathematics philosophy thinking is very laggard.

Second question is about modern mathematics education thinking. problem-solving and constructivism are two typical names in modern mathematics education. Maybe, we don't agree problem-solving and constructivism, but, as a mathematics educator, we must know them. In my investigate, most teachers don't know what are problem-solving and constructivism, some of them never hear of these two words. The answer gives us the information that some or most teachers have no modern mathematics education thinking or consciousness.

Last question is about modern mathematics education technology. Modern technology affects mathematics education profoundly. Someone said technology is the center of modern mathematics education reform. Now, technology is using in developed countries. Calculator and computer have become important tools in these countries' mathematics learning and teaching. China is a developing country, but its economics is developing fast. In some places, for example, south and some big cities, calculator and computer (including Internet) have entered schools and classrooms, some mathematics teachers are trying to use technology in their teaching. At the same time, some mathematics education researchers are researching about technology, they have written many relevant papers in some journals. For example, in Journal of Mathematics Education, the most important mathematics education journal in china, there are many papers about technology released. To sum up, using technology in mathematics education is a tendency. Every teacher should prepare in thinking and knowledge. In my investigate, answer is unsatisfying. Some teachers don't know graphing calculator, some think aim of using technology is interesting,

some focus on disadvantage of technology. These answers reflect teachers' blind to technology.

Most of china's mathematics teachers are traditional teachers. In mathematics education reform, modern mathematics education thinking, knowledge and skills must equip teachers and become themselves thinking, knowledge and skills. Obviously, mathematics teachers' condition and reform's demand are contradiction. Changing teachers become first work, how to change traditional teachers to modern teachers?

3. TEACHERS EDUCATION

Mathematics teachers are so important that we must take into account their training, including thinking, knowledge and skills. If they don't possess corresponding quality which mathematics education reform demands, reform never success. Teachers education is thought essential. There are many ways to make teachers education effective.

1) *Seminar* In some major normal universities, for example, Beijing Normal University, Nanjing Normal University, East Normal University etc, Some seminars are carried out. Excellent mathematics teachers are chosen to study in seminars. Lecturers are best mathematics education specialists. The aim of seminars is to cultivate these excellent mathematics teachers having modern mathematics thinking and knowledge, and becoming researchers of mathematics education. When these teachers finish their studies, they will bring new thinking and new knowledge to their schools, they will become new thinking and new knowledge' transmitter. Many mathematics teachers all over the country have studied in seminars for some years.

2) *Postgraduate class* This is a important way to improve mathematics teachers. In china, most normal universities and colleges cultivate postgraduates of mathematics education. Every year, the sum of postgraduates is small, in general, most of these postgraduates become teachers of normal universities or colleges, hardly any postgraduates works in primary, middle or high schools. The students of postgraduate class are mathematics teachers, they come from primary, middle and high school. Every postgraduate class has dozens of students. In postgraduate class, students study modern mathematics education theories, mathematics education technology and other courses. After finishing their courses, they return their schools. They are expected to become elite of mathematics education.

3) *General professional development* Both seminar and postgraduate class, just small part of teachers have opportunity to study. Mathematics education or mathematics education reform need every mathematics teacher get in with. Seminar and postgraduate cultivate elite, elite is very important, but only elite can't finish grate undertaking of mathematics education. To mathematics education, every teacher can't absent. So, general professional development is thought more important, because it provides ego enhancement chance to every mathematics teacher. Sponsors are normal universities, colleges and local teacher schools. Study time often is weekend, summer holiday and winter holiday. Minicourses and shortcourses,

in general, have three aspects. (1) Expending their mathematics knowledge. (2) Modern mathematics education theories. (3) About mathematics teaching and learning.

4. CONCLUSION

In order to enhance mathematics teachers' quality, some ways have proceeded, but the effect is unsatisfied. Some reasons can explain it. Two of these reasons are thought most important. First is that teacher has not immanent incentive. Second is exam system.

Enhancing quality of mathematics education is based on enhancing quality of mathematics teacher. In enhancing quality of mathematics teacher, the way is not short.

REFERENCE

- Yuxin Zheng (1999). *Modern Development of Mathematics Education*. Nanjing: Education Press.
- Rolf Biehler (1998). *Didactics of Mathematics as a Science Discipline*. Shanghai: Education Press.