

Basic Characteristics of Mathematics Teaching Under the Background of the Chinese Culture:  
An investigation in Chinese Junior Middle School Classes  
(Abstract)

By Kong Qiping  
The Institute of Curriculum and Instruction  
East China Normal University, Shanghai, China  
qpkong@kcx.ecnu.edu.cn

Mathematics teaching in China presents a unique phenomenon. On one hand, Chinese middle school students have outstanding academic performances in their mathematics study. According to IAEP (International Assessment of Progress Education), 13-year-old students from Chinese Mainland rank top in a mathematics test among students from 21 countries and regions in the world. On the other hand, mathematics teaching in China also has some problems, including the phenomenon that Chinese students bear heavier academic burdens, and generally lack creative thinking. So what is the connection between this phenomenon and the everyday class teaching in China? Through a survey in mathematics classes of Chinese junior middle school, this study provides some insight into the basic characteristics of the mathematics teaching in China

This study adopts the approach of “class observation-questionnaire-discussions among experts”. To be more specific, several characteristics of class teaching were generalized, based on the analysis of over 20 mathematics classes. A questionnaire was designed afterwards on the basis of the observed characteristics, in which over 100 teachers from all over China were asked to prioritize those characteristics, so that several significant characteristics were selected. Finally, two discussions were held among university professors of mathematics education, to make further improvements on the expressions of the characteristics.

The study identifies the following basic characteristics of mathematics class teaching in China. Firstly, teachers pay great attention to introducing new knowledge by revision, to build up acquisition of new knowledge on the stock of old knowledge. Secondly, they adopt the method of progressive teaching and learning, with emphasis on the structure of the class teaching, which usually consists of 4 to 5 phases. Thirdly, emphasis on the analysis of sample exercises, the discussion and explanation of which plays an important role in mathematics classes in China. In each class teachers typically spend a third of the time on analyzing the sample problems. By doing so, students can better understand the basic knowledge and methods of mathematics. Fourthly, they pay much attention to consolidation of knowledge by revision. Teachers often guide students in imitative exercises, sometimes with repeated content of teaching. Fifthly, in each mathematics class, students are expected to complete

some exercises, and teachers attach great importance to designing exercises with variation, to develop students' abilities and to enhance their understanding of mathematics knowledge. Sixthly, teachers often make use of tests to examine students' performances, and to correct their mistakes in learning.

The above-mentioned characteristics are closely related with traditional Chinese culture. Ideas about teaching, including "learning the new by restudying the old", "practice makes perfect", "step by step", "learning at due times to repeat what one has learnt" and "learning through practice", have long been well acknowledged since ancient times. Exercise has always been considered extremely important in mathematics learning in China. Chinese teachers not only regard exercises as a basic means of acquiring skills, but also trust that applying mathematical knowledge by exercises students' understanding of mathematics can be enhanced and their mathematical thinking developed. Therefore, these 6 characteristics reflect Chinese cultural traditions; as a matter of fact, they constitute a basic structure of mathematics teaching under the background of the Chinese culture.

These 6 characteristics reflect the basic principles held by most mathematics teachers of Chinese junior middle schools about class teaching. We find that these characteristics are significant, whether the teachers' lecture is dominant, or students' independent exploration of methodology is dominant. Such teaching and learning approach plays an important role in laying down a solid foundation of basic knowledge and skills. Currently, a large number of mathematics teachers and researchers in China are studying how to combine the traditional teaching methodology in China with modern ideas and methods of mathematics teaching, to try to unburden the students to some extent, and to promote the overall development of mathematics competence of Chinese students.