

Application of the Mathematics Modeling Thought in Mathematics and Applied Mathematics

Zhang Gong-sheng

Jiangxi Vocational & Technical College of Electricity, Management engineering Department

Abstract—Under the background of new era, the application of mathematics is paid unprecedented attention to. The era calls for the application of mathematics. In the process of mathematics teaching, mathematical modeling is the key to cultivate students' overall mathematics quality, which is because mathematical modeling is bridge which is set between the mathematical theory and practical problems. Students have to have the mathematical modeling thought, then to apply the theory knowledge and combine the theory and the practice. But from the overall point of view, the cultivation situation to the students' mathematical modeling thought in the current mathematics teaching is not very optimistic. As a result, the paper summarizes the mathematical modeling and the importance of it in mathematics teaching through data survey. Then, in view of the existing problems, the paper also puts forward some suggestions of training the mathematics application consciousness of college teachers and students.

Keywords-*Mathematics modeling; Mathematics and applied mathematics; Thought; Cultivation*

I. INTRODUCTION

Mathematics is a discipline with abstract, rigour and application, which requires mathematics teachers and students to learn to use abstract thinking to understand some knowledge of mathematical theory in the whole process of mathematics teaching. No matter which grade of mathematics teaching, the ultimate goal lies in training students' practical mathematics application ability, encouraging students to learn mathematics knowledge to solve actual problems in real life. The so-called mathematical modeling is to solve some practical problems in life through the establishment of the mathematical model. Through the practice of the math and validation process, reflect the practical problems in the

form of mathematical formula. And then process mathematical solutions through the arithmetic and substitution. Thus, we can say that the fundamental aim of mathematical modeling is in consistent with that of mathematics teaching, which is to train the students' ability to solve practical problems in life.

Mathematical modeling is to cultivate students' ability in actual practice, and therefore it has been paid much attention to in the present quality education. Mathematics teachers will no longer confine mathematics teaching content to theoretical knowledge, but more to begin to pay close attention to the practical application process. And in order to make students deeply understand the purpose and aim of mathematics teaching and to play a mathematical discipline power, we should encourage teachers to cultivate students' mathematical modeling thought in each grade mathematics teaching, making student can firmly grasp the mathematical application knowledge theory. This paper will discuss how to cultivate the students' mathematical modeling thought and put forward some measures and suggestions.

II. MATHEMATICS AND APPLIED MATHEMATICS

Mathematics and Applied Mathematics is a professional disciplines which trains the senior specialized talents who have the abilities to master the basic theory and basic method of mathematics science, mathematical knowledge and the ability to use computers to solve practical problems, and who can be engaged in research and education in science and technology, education and economic department and actual application, development and research, and management in production and business operation and management department.

Mathematics and applied mathematics are mainly about basic theories and methods of mathematics and

applied mathematics, which is, by strict mathematical thinking training, to make learners master the basic principle and the using method of the computer, and through the educational theory course and teaching practice link, to form good teacher quality and to cultivate the basic ability of mathematics teaching, mathematics education research, mathematical science research and mathematics application ability, etc.

1. A solid mathematical foundation, a preliminary method to master the basic idea of mathematical sciences, including mathematical modeling, mathematical calculation, basic ability to solve practical problems;

2. Good ability to use computer, being able to perform simple programming, mastering mathematical software and computer multimedia technology, being able to carry on the simple secondary development to teaching software;

3. Good educational professional quality and the basic ability in mathematics teaching. Being familiar with education laws and regulations, mastering and basically adopting education law, basic principle of psychology and mathematics teaching principle;

III. THE CONNOTATION OF MATHEMATICAL MODELING THOUGHT

Before the formal interpreting of the connotation of mathematical modeling, we must know about the concept of the mathematical model. According to relevant mathematics teaching material data, the mathematical model can be defined as: the so-called mathematics model is to make some necessary assumptions for a specific object, to a specific goal, according to the characteristic of the inherent law, and then build mathematical structure through the appropriate use of some mathematical tools. The mathematical structure includes mathematical formula, tables, algorithms, graphic, etc. So we can believe that mathematical model is the bridge between the practical problems and mathematical theory.

First of all, the mathematical model is a thinking method in mathematical discipline, that is to say, we can abstract and simplify the practical problems in life by using some mathematical methods and the concrete mathematical language, and solve problems through the establishment of a mathematical model accords with the practical problems. Secondly, in mathematics teaching at

present, more and more mathematics teachers begin to be aware of the urgency and necessity of mathematical modeling course, therefore, more attention has been paid to the combination of mathematics theory and mathematical application. In the process of understanding mathematical modeling, we should make difference between it and mathematical problem solving process. Although the mathematical modeling is a mathematical method to solve problems, it is different from the mathematics method to solve problems. The former is part of the latter.

IV. THE TEACHING SUGGESTIONS OF MATHEMATICAL MODELING CONSCIOUSNESS

Mathematics spirit contains knowledge, methods and applications of thought and mathematics application consciousness. Therefore, training the consciousness of mathematics application of college teachers and students should be from the understanding and the idea. "Emphasis on the mathematics application is not back to measurement, drawing, remembering, etc. which ignore the basic theory, but to cultivate the consciousness and desire to apply mathematics knowledge and to make mathematics be into the entire quality and become a part of world view". Mathematics application is neither "mathematics word problems" nor simple "theory with practice", but a point of view, a kind of consciousness, an attitude and a kind of ability, including the use of mathematical language, mathematical methods, mathematical conclusion, mathematical thought, mathematical idea, mathematical spirit, etc., as follows:

(1) Read mathematics application information, understand mathematical reality application value. Normal colleges and universities have rich learning resources, including information about the mathematical applications. The teachers of normal colleges and universities can make use of spare time to read the information of this aspect.

(2) The students of normal colleges and universities should take the initiative to strengthen the exchange with the students of other colleges and departments. Mathematics application widely exists in physics, chemistry, biology and various subjects. Therefore, the exchange of the students of mathematics department of normal colleges and universities with the students of other

departments can much deeply feel the application of mathematics.

(3) Carry out mathematical activities and participate in social practice. Comparing to middle school students, the students of normal colleges and universities have relative abundant time, they can make use of their spare time to develop mathematical activities, which will be helpful for the students of normal colleges and universities to find out the problems in the actual life actively and be conducive from them to solve problem by the mathematics knowledge they learned.

V. CONCLUSION

Though on the whole, we found that the current situation of the mathematics teaching for the cultivation of the students' mathematical modeling thought is not very optimistic, we should also develop optimistic prospects. In mathematics teaching process of some middle school, we clearly see the teaching slogan, such as: mathematics cooperative learning, inquiry teaching activities and modeling. From this slogan of teaching, we can feel the emphasis degree for cultivating students' mathematical modeling of the relevant teaching education institutions, which becomes the main engine to drive to train students' mathematical modeling thought. In order to deeply cultivate students' mathematical modeling thought, students, teachers and parents should cooperate mathematics teaching under the new education pattern and

make mathematics study does not only stay in the classroom, but also return to life.

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