Analysis on Mathematical Thinking Method and Its Role in Higher Mathematics Education

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Abstract: Mathematics is a discipline that enhances students' logical thinking. Mathematics education in higher education also has such a function, and learning mathematics is more important for college students who face employment pressure and need to improve their comprehensive skills. In recent years, relevant scholars in the field of mathematics in China have studied the organic combination of mathematics thought and college mathematics education, and have achieved certain results.

1. Introduction

The mathematical thinking method includes two aspects: mathematical thinking and mathematical methods. The so-called mathematical thinking refers to the results of the real world spatial form and quantity relationship reflected in the human consciousness, through the thinking activities; the mathematical thinking is systematic, theoretical, Rationalized mathematical knowledge is an essential understanding of mathematical facts and mathematical theories, and a rational understanding of mathematical laws. The so-called mathematical methods refer to the steps, procedures and formats for solving mathematical problems, understanding the world, and implementing mathematical ideas. Techniques and means, mathematical methods are the concrete implementation methods to solve problems. Mathematical thinking is the spiritual essence and theoretical basis of its corresponding mathematical methods, and it is a generalization of the essence of mathematical methods. The mathematical method is to provide ideas for mathematical activities under the guidance of mathematical ideas. And logical means, as well as tools for specific operational principles. Since certain mathematical ideas are always realized by some mathematical method, and a specific mathematical method always reflects certain mathematical ideas, mathematical ideas and mathematical methods are not Strict boundaries, unnecessary or impossible in mathematics teaching research Mathematical thinking and mathematical methods are strictly distinguished. So under normal circumstances, people refer to these two concepts as mathematical thinking methods without specific distinction. Commonly used mathematical thinking methods are: Thoughts and collections using letters instead of numbers Thought method, corresponding thought method, thought method combined with number and shape, thought method of classification, thought method of parameter, thought method of function, thought method of limit, thought method of returning, statistical thought method, analogy thought Method, thought method of equation, thought method of transformation, inductive thought method, abstract generalized thought method, modeled thought method, constructed thought method, axiomatic thinking method, optimized thinking method, mathematical beauty thinking method and many more.

2. The connotation and characteristics of mathematical thought

Studying the connotation and characteristics of mathematics thought is of great significance to the development of mathematics education in China. The following is a detailed analysis: Some scholars believe that the connotation of mathematics is the spirit of mathematics and concepts, etc. If in a broad sense, there are mathematicians and mathematics history. And the humanities in mathematics and the connection with society. These characteristics of mathematics determine the important characteristics of mathematics thoughts such as extensiveness, abstraction and rigor.

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Mathematics is a tool discipline. It is a tool for students to understand the world and change the world. It can be said that its role is very great. In addition to the function of tools, mathematics also has unique ways of thinking and phenomenological methods. It is related to literature and art. Similarly, it also has a very clear ideological value. It is embodied in that it can continuously train people's thinking, and at the same time it also has a positive effect on people's world outlook and morality. Mathematics is the product of the interaction of human wisdom and the wealth in the process of human development. Mathematics has the characteristics of transcending specific science and universal application, and has the status of public foundation. Mathematical thinking has particularity. From a linguistic point of view, mathematics is actually a special language. People use this language to interpret and study mathematical problems in various natures. The consciousness of using this language can be called For mathematics thinking, the application of mathematical ideas in higher mathematics education has a very positive effect on improving students' ability to apply mathematics.

3. The role of mathematical thinking methods in higher mathematics education

Mathematical thinking method is an important part of scientific thinking method, an important part of mathematics basic knowledge, and an important part of human mathematical literacy. Mathematical thinking method is implicated in the occurrence, development and application of mathematical concepts and mathematical knowledge. In the process of mathematics, the method of mathematics is the essence of mathematics, the essence of mathematics, the soul of mathematics, and the link between all kinds of mathematical knowledge. Looking at various fields of science and society, the use of mathematical methods and methods is everywhere, and there are many Therefore, the study and mastery of mathematical thinking methods should be one of the important contents of higher mathematics education. In the teaching of higher mathematics, strengthening the teaching of mathematical thinking methods has at least the following effects:

Higher mathematics knowledge does not only refer to basic concepts, basic theories, basic formulas, rules, basic operations and basic applications, but also should include the mathematical thinking methods reflected in the deeper layers of these knowledge, that is, the mathematical thinking method is an important component of mathematical knowledge. Part. Mathematical thinking method, as the general principle and basis of mathematical knowledge, reveals the essence of mathematical concepts, principles and laws, and is the bridge to communicate basic knowledge and ability. Traditional mathematics teaching often focuses on imparting specific basic knowledge and basic skills. And neglecting to excavate the mathematical methods contained in it, does not reveal the spiritual essence of mathematics knowledge, does not let students master the essence of mathematics, so it is not conducive to the study of mathematics knowledge of students. Strengthening the teaching of mathematics thoughts in higher mathematics teaching can make Mathematical knowledge is easier to understand and remember. It helps students to find known and unknown connections, improve their ability to analyze problems, and truly master the mathematics they have learned. Therefore, strengthening mathematics thinking and teaching is beneficial to students' mathematics. Learning of knowledge.

The mathematics ability of higher mathematics focuses on computing ability, spatial imagination, thinking ability, and the ability to use mathematical knowledge to analyze problems and solve problems. The accumulation of mathematical knowledge creates conditions for the formation of mathematical ability, but mathematical knowledge cannot be automatically converted into Mathematical ability, the level of mathematics knowledge is not directly proportional to the size of mathematics. Under normal circumstances, a person's mathematical ability is gradually formed on the basis of mastering and applying the corresponding mathematical thinking method after possessing certain mathematical knowledge. Therefore, under the premise of corresponding mathematical knowledge, the main determinant of a person's mathematical ability is the degree of mastery of mathematical methods. The mathematical thinking method is the essence of mathematics, through the teaching of mathematical thinking methods, so that students Accumulating perceptual knowledge in mathematics activities, as the accumulation of perceptual knowledge reaches a certain

level, students' understanding will undergo a qualitative leap, forming a rational understanding of a class of mathematical activities, that is, related mathematical ideas. With the ability of students to understand Continuous improvement, students' mathematical ability has gradually formed. Therefore, plus Strong mathematics thinking method teaching is conducive to cultivating students' mathematical ability.

In history, all the discoveries and innovations of mathematics are always accompanied by the transformation of mathematical thinking methods. They are always based on the innovation of mathematical thinking methods, because mathematical thinking methods are scientific summaries of mathematical research, discovery and development laws, and are mathematical creations. The foundation of source and development. The core of higher mathematics thinking method is innovation consciousness and practice consciousness. The emphasis of higher mathematics curriculum reform is to cultivate students' awareness of mathematics innovation. This requires us not only to let students learn and master mathematics. Basic knowledge and basic skills, but also let students master the ideological methods of higher mathematics. Only with the corresponding mathematical knowledge, with the participation of new mathematical thinking methods, there will be mathematical innovation, and then there will be mathematical re-creation. Therefore, Strengthening the teaching of mathematical thinking methods is conducive to cultivating students' awareness of mathematical innovation.

Strengthening the teaching of mathematics thinking methods, it is necessary to further reform the teaching content, teaching methods and learning methods of current higher mathematics according to the goals and requirements of mathematics thinking methods teaching; strengthening the teaching of mathematics thinking methods, it is bound to require mathematics teachers to change their concepts, and conscientiously excavate the implications of mathematics The mathematical thinking method in knowledge promotes teachers' active study, research and practice on mathematics education reform and mathematical methodology, and then improves the level of mathematics teaching and scientific research. Therefore, strengthening the teaching of mathematics thinking methods is conducive to the reform of higher mathematics education. In-depth development. Mathematical thinking method is an important part of mathematics knowledge, is the viewpoint and culture of mathematics, is the spirit and attitude of mathematics. Strengthening the teaching of mathematics thought method, is conducive to students mastering mathematics knowledge, forming mathematics ability; strengthening mathematics thinking method teaching It is conducive to improving the quality of students and cultivating their ability to innovate; strengthening the teaching of mathematical thinking methods is conducive to students forming a correct world view and is conducive to the further development of higher mathematics education reform. Therefore, in the higher mathematics education, it is necessary to strengthen the teaching of mathematics thinking methods. .

4. Conclusion

China vigorously advocates quality education, which requires that in the disciplines of mathematics, Chinese, and English, we should also dig deeper into the connotation of quality education, apply theoretical knowledge to practice, and improve the ability of students to combine theory with practice. Mathematics contains many theorems and formulas. If the teacher only teaches this knowledge in the classroom, it will easily lead to the suppression of the classroom atmosphere. Although the students know these theorems and formulas, but can not apply them to the actual life, then there is no such teaching. Significance. The mathematics discipline is originally abstract, and it is a discipline that expresses the world's spatial form and quantitative relationship. This is the basic ability that people should have in understanding the world and transforming the world. Incorporating mathematical ideas into higher mathematics education is to enable students to apply what they have learned, to gain income, and to achieve an overall improvement in quality.

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