Research on the Core Literacy of Mathematics for High School

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Abstract
With the progress of the times, people have not only paid attention to the scores, but also paid attention to the cultivation of comprehensive quality. High school mathematics teaching should not only improve students' mathematical learning ability, but also improve students' mathematical quality, so that students could meet the needs of modern society for mathematical talents. They could also adapt to future social life by continuously improving their mathematical literacy. The most important task of high school mathematics is to cultivate students' core competence, that is, to combine mathematical knowledge with mathematical thinking to solve practical problems. In the actual teaching process, cultivating students' autonomous learning ability, stimulating their learning desire, and mobilizing their enthusiasm for mathematics learning to improve their core literacy and guide them to adapt to the future social development.

Keywords
High School; Mathematics; Core Literacy

1 Introduction
Mathematics core literacy refers to the necessary mathematical character and key mathematical ability that mathematics learners should have to meet the needs of lifelong development and social development. It is a comprehensive ability with specific significance that students should achieve in learning mathematics. It should attract the attention of teachers and students in the process of teaching and learning. The core mathematical literacy is based on mathematical knowledge and skills, and takes the use of mathematical knowledge and skills to solve problems as the form of expression, which reflects the essence of mathematics and related mathematical ideas, is formed in the process of mathematics learning. According to the research on mathematics core literacy [1-3] at home and abroad, some domestic scholars have summarized the characteristics of mathematics core literacy, that is, comprehensiveness, periodicity and persistence.

Comprehensiveness means that mathematics core literacy is the comprehensive embodiment of mathematics core knowledge, core ability, mathematics thinking and mathematics attitude. The core knowledge and ability of mathematics are the expression, the mathematical thinking is the means, and the mathematical attitude is the ultimate goal. In addition to using basic knowledge and skills such as calculation, reasoning and imagination, students should also think about how to solve mathematical problems and what ideas to use to solve problems. This is a kind of comprehensive ability. The core mathematical literacy relies on the core knowledge and core ability of mathematics, and is externalized in the process of using basic knowledge and basic skills to solve problems, so as to form a correct mathematical attitude.
Periodicity means that students' mathematical core literacy is expressed in different levels and stages. For the same math problem, students of different grades will adopt different methods to solve it. The level of understanding and complexity of thinking will vary with age and knowledge level, thus forming math core literacy at different levels and stages. Persistence refers to the process that the core mathematical literacy is accompanied by students' further learning and moving towards life and work in the future. In their work and life, everyone will consciously use mathematical thinking to solve problems, including mathematical problems and problems outside mathematics. This is the basic embodiment of the persistence of mathematical core literacy [4].

The main body of high school mathematics core literacy training is students. Only when students' core literacy is effectively improved, can students actively respond to teachers, study hard, improve their academic performance, and improve their mathematics literacy. Teaching needs practice. When teachers pass on knowledge to students, they need students to actively give feedback and send a signal to teachers whether they have learned or not. In traditional teaching, teachers only pay attention to teaching, ignoring students' feedback, and the practice effect is poor. If high school mathematics teachers [5-7] pay more attention to students' quality based on cultivating students' core quality, they could form a resonance between mathematics knowledge and students, and make students more actively cooperate with teachers and study hard.

2 The necessity of high school mathematics core literacy

Mathematics core literacy is an important symbol of students' mathematics literacy. Mathematics core literacy is the thinking method and attitude of mathematics formed on the basis of basic mathematical knowledge and skills such as calculation, measurement, reasoning analysis, modeling and statistics. It also reflects students' understanding of the role and value of mathematics in real society and life. Mathematics core literacy is closely related to mathematics knowledge and skills, mathematics inquiry ability and problem-solving ability, which together constitute students' mathematics literacy [8, 9].

Mathematics core literacy is conducive to the cultivation of correct mathematics view. In short, the concept of mathematics is to answer the question of "what is mathematics". The view of mathematics is a general understanding of mathematics from philosophy. Mathematical abstraction helps students understand mathematical concepts, propositions and systems by cultivating their mathematical representation, abstract thinking and mathematical understanding abilities, and forms the premise of a reasonable mathematical view. Logical reasoning mainly involves inductive analogy, deductive reasoning, connection and communication, so as to help students understand the connection between mathematical knowledge and form an organized mathematical view. Mathematical modeling cultivates students' ability to put forward problems, construct models, explain and verify. Students can put forward problems from the perspective of mathematics, analyze problems with mathematical thoughts, express problems with mathematical language, and form a grounded mathematical view. Mathematical operation, visual imagination and data analysis cultivate students' sense of application and help students correct their mathematical views.

Mathematics core literacy can effectively guide mathematics teaching practice. Mathematics core literacy is not only a requirement for the cultivation of students' mathematics literacy, but also provides some references for teaching practice. It has become an international trend to develop curriculum standards based on mathematics core literacy. Under the guidance of the core quality, the educational reform is launched with education or curriculum standards as the starting point, which plays a guiding role in the practice of mathematics teaching. At the same time, the determination of mathematics core literacy is also of positive significance to the teaching process. Under the guidance of mathematics core literacy, teaching design pays more attention to reflect the thinking activities under the background of mathematics culture. Classroom teaching pays more
attention to the improvement of thinking and ability. Teaching evaluation pays more attention to the optimal design based on dimension and gradient.

3 Training methods of high school mathematics core literacy

The training methods of high school mathematics core literacy [10] is shown in Figure 1.

![Figure 1](image)

**Figure 1** The training methods of high school mathematics core literacy.

High school mathematics learning is an important way to cultivate students' core competence. By cultivating students' logical thinking ability and correct mathematical view, high school mathematics learning enables students not only to correctly use mathematical methods to solve mathematical problems, but also to flexibly apply mathematical thinking to daily life and enhance their core competitiveness. In high school mathematics teaching, mathematics teachers should organically combine the learning of cultural knowledge with the cultivation of core competence, and better implement the concept of quality education.

4 Conclusions

Mathematics core literacy is the standard to measure the quality of mathematics education, and it is also the baton of mathematics education reform. In school, students should not only learn scientific and cultural knowledge, but also improve their comprehensive quality, so that they can better adapt to the society, social changes and competition in the future. High school education is one of the most important education stages for students. High school mathematics education will also play a good role in improving students' comprehensive quality. Students have improved their core literacy and ability in high school mathematics learning, which can promote the all-round development of students, and students can grow into comprehensive talents.

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References


