

# Research on the Application of Mathematical Culture in Senior High School Mathematics Teaching

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**Abstract:** *With the comprehensive advance of the new curriculum reform, how to promote the effective application of mathematics culture in teaching has become a topic of wide concern to educators. This paper firstly summarizes the connotation and value of mathematics culture, then discusses the current situation of the application of mathematics culture in high school mathematics teaching, and finally puts forward the application strategy. It includes improving teachers' professional quality, building the atmosphere of mathematics culture and strengthening the connection with other subjects.*

**Key words:** *Mathematical Culture; High School Mathematics Teaching; Application Strategy*

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## I. Introduction

Mathematics culture is a research hotspot in the current stage of basic mathematics education, which plays a certain role in cultivating students' mathematical thinking, stimulating students' interest in learning mathematics and improving students' problem-solving ability. Mathematics education in high school should not only enable students to have theoretical knowledge, but also strengthen the spread of mathematical culture and cultivate students' mathematical thoughts and spirits. From the perspective of current high school mathematics teaching, teachers generally pay more attention to the explanation of theoretical knowledge and the improvement of students' problem-solving ability, ignore the connection with students, and mathematics culture is less involved, which obviously does not meet the requirements of quality-oriented education and new curriculum reform. Therefore, teachers should strengthen the application of mathematical culture and infiltrate mathematical culture into teaching in order to promote students' future development.

## II. The Connotation and Value of Mathematical Culture

Mathematical culture is the thought, spirit, language, method and viewpoint of mathematics, and their formation and development. It also includes the contribution and significance of mathematics in human life, science and technology, social development, as well as the humanistic activities related to mathematics. It is of great significance for high school mathematics teaching to consciously integrate mathematics culture into mathematics teaching.

Mathematics culture contains a large amount of background knowledge, and is related to other cultures. When teaching, teachers explain mathematical cultural knowledge which is new to students, and it is easy to stimulate their interest in learning. In mathematics teaching, explaining mathematical cultural knowledge to students can make students understand the experience of mathematicians in the process of exploration, let students have a more comprehensive understanding of relevant mathematical knowledge, feel the mathematical atmosphere, and improve students' scientific and cultural literacy.

## III. The Present Situation of the Application of Mathematics Culture in High School Mathematics Teaching

### (1) Backward Teaching Concept

Even though quality-oriented education and the new curriculum reform have proposed to improve the comprehensive quality of students, most senior high school mathematics teachers still adhere to the traditional teaching concept, teaching service to the test, score first, resulting in the daily classroom teaching to explain theoretical knowledge, a large number of math problem training and problem solving methods to impart. The learning process is too mechanical, students are tired to deal with, over time students will lose interest in learning.

(2) Insufficient Interaction between Teachers and Students

In traditional mathematics classroom teaching, teaching and learning are separated, teachers only pay attention to their teaching on the platform, students only pay attention to their learning in the seat, the interaction between teachers and students is insufficient. Teachers and students only communicate in a short class of dozens of minutes, which is not conducive to the emotional transmission between teachers and students, and also leads to low teaching efficiency. As the saying goes, "Teaching and learning reinforce each other", the interaction between teacher and student is the key to building an efficient class.

(3) Students' Low Interest in Learning

High school mathematics knowledge is difficult for students. Teachers seldom involve mathematical cultural knowledge in the teaching process, perhaps out of the need to complete the teaching task, and often use the Instruction Method throughout the whole class, resulting in very boring mathematics classroom teaching. Many students wander or sleep in class, and students have low interest in learning mathematics. Interest is the best teacher, students lose interest in math, teaching efficiency naturally can not be high.

#### **IV. The Application Strategy of Mathematics Culture in High School Mathematics Teaching**

(1) Teachers Improve their Professional Quality

In order to do a good job in the infiltration of mathematical culture, teachers should first realize the importance of mathematical culture education, change the teaching concept, and take the initiative to study the infiltration method of mathematical culture, and constantly improve their professional quality. At the same time, schools should also provide support for the infiltration of mathematics culture, actively organize teachers to conduct relevant training, regularly hold teaching exchange meetings, promote the sharing of information resources and the circulation of teaching experience among teachers, and improve professional quality during learning and reference.

(2) Build an Atmosphere of Mathematical Culture

In order to cultivate students' good mathematical literacy, in classroom teaching, teachers should not only pay attention to the teaching of mathematical theories or problem-solving ideas, but also pay attention to students' understanding of teaching content, timely adjustment of teaching and construction of a good mathematical cultural atmosphere. At the same time, in order to mobilize students' enthusiasm for mathematics learning and promote their understanding of mathematics, teachers can use modern teaching tools or innovative teaching methods to create a good teaching situation for students, increase the interaction between teachers and students, promote the emotional communication between teachers and students, and realize the infiltration of mathematics culture in teaching.

(3) Strengthen the Connection with Other Subjects

In order to make the mathematics classroom teaching more vivid and full, enhance students' interest in learning, teachers can also strengthen the integration of mathematics and other subjects in the application of mathematics culture, so that students form a sense of mathematics everywhere in life, improve their ability of observation, imagination and mathematics aesthetic ability. For example, in the teaching of circular equation, the teacher can introduce the ancient poem "The lonely smoke in the desert is straight, the long river is falling yen", so that the students can analyze what kind of picture it is with mathematical aesthetics. Engaging students' attention and promoting students' understanding of mathematical concepts, while allowing the culture of mathematics to permeate the learning of other subjects.

#### **V. Conclusion**

Mathematics culture reflects the connotation and scientific nature of mathematics subject. Its penetration in high school mathematics classroom can not only promote the study of theoretical knowledge, but also cultivate students' mathematical spirit and mathematical thinking. Teachers should face up to the factors affecting the infiltration of mathematics culture, take active measures to improve the problem, realize the application and dissemination of mathematics culture, develop students' comprehensive quality, and build an efficient high school mathematics classroom. But it doesn't happen overnight. First of all, teachers should give full play to the educational value of the subject and pay attention to the spread of the discipline spirit. Secondly, we should pay attention to the application of mathematical culture, expand students' horizon, and promote the development of their innovative spirit and practical ability. Finally, education and teaching can keep pace with The Times and promote the continuous progress and development of education only by constantly adapting to the new development trend of society.

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