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The Integration Strategy of Traditional Cultural Elements in the Cultivation of Core Mathematical Literacy in Primary Schools

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Abstract: ***With the continuous deepening of primary school mathematics education, cultivating students' core competencies has become an increasingly prominent and urgent problem in the field of education. Realizing this goal is not an overnight task, but requires long-term accumulation and precipitation, coupled with in-depth cultural education. Given the vast and profound nature of traditional Chinese culture, its rich connotations not only inspire students' thinking, but are also an indispensable component in cultivating core competencies. Therefore, integrating traditional cultural elements into primary school mathematics classrooms plays a crucial role in enhancing students' core competencies.***

Keywords: Traditional culture; Primary school mathematics; Core competencies.

1. SELECTING TRADITIONAL CULTURAL RESOURCES TO ENHANCE STUDENTS' INTEREST IN LEARNING

In the treasure trove of excellent traditional Chinese culture, there are many mathematical elements, including famous mathematical classics, outstanding deeds of ancient mathematicians, traditional mathematical games rich in historical background, and practical mathematical tools. These charming teaching materials inject new vitality into mathematics teaching, help deepen students' understanding of mathematical concepts, and expand their horizons for exploring mathematics. When selecting suitable traditional cultural resources, teachers should follow the following key steps: first, ensure that the selected resources are closely connected to the core content of mathematics education. This requires teachers to select resources that are closely related to mathematical knowledge, skills, methods, ideas, etc. based on mathematical curriculum standards and textbook content when screening resources, in order to strengthen and expand learning in related mathematical fields. For example, when teaching decimal system, teachers can use classic content such as "commercial law" and "square opening techniques" in "Nine Chapters on Arithmetic" to deepen students' understanding of numbers and decimal principles, in order to enhance their logical reasoning and mathematical operation abilities. Secondly, when selecting traditional cultural resources, it is necessary to consider the age characteristics of students. Teachers should select suitable traditional cultural resources based on students' cognitive level and psychological development stage, in order to stimulate students' learning interest and enthusiasm, and guide them to actively engage in mathematics learning. For example, when exploring the properties of cubes, the ancient cultural element of the "Eight Trigrams" in the Book of Changes can be utilized to cultivate students' observational and logical thinking abilities by observing and analyzing graphic rules such as squares and lines.

Meanwhile, the selected resources should be closely linked to the students' life experiences. In practical teaching, teachers should combine traditional cultural resources with students' life experiences, select resources closely related to students' lives, and make learning content fit with students' actual lives and social situations, in order to achieve the practical application of mathematical knowledge. For example, when teaching the area of plane figures, teachers can introduce Paper Cuttings, a cultural element with national characteristics, create colorful plane patterns through Paper Cuttings, and calculate its area, so that students can deeply feel the beauty of mathematics and the charm of art [1].

2. CONSTRUCTING TEACHING SCENARIOS TO ENHANCE THE EFFECTIVENESS OF CULTIVATING LITERACY

When examining the current compilation status of primary school mathematics textbooks, it is evident that there is a deep integration of traditional Chinese cultural elements. However, compared to intuitive and explicit language and writing, the traditional cultural elements hidden in mathematics textbooks are more abundant and profound. In

order to deeply explore and showcase the traditional elements embedded in mathematical knowledge, teachers should actively create diverse mathematical contexts, guide students to explore and discover independently, deepen their understanding and cognition of mathematical knowledge, and give them a new mathematical learning experience. In the actual process of mathematics teaching, teachers should closely focus on the mathematical knowledge taught, carefully design learning situations related to traditional culture, so that students can not only learn mathematics, but also appreciate the unique charm of Chinese culture. This teaching method not only enhances students' understanding and cognition of traditional Chinese culture, but also deepens their grasp and application of mathematical knowledge, thereby effectively improving their mathematical core literacy. For example, when teaching the mathematical concept of "ton", it is important to ensure that students accurately understand the definition of "ton", which is 1 ton=1000 kilograms. Only when students have a clear understanding of this quantitative relationship can they apply it correctly in real life, thereby stimulating their interest and enthusiasm for mathematics.

Based on this, teachers can use Cao Chong's analogy as a foundation and modern multimedia technology to showcase this historical story video clip to students. During the viewing process, students can carefully understand the computational rules involved. By understanding Cao Chong's principle of "weighing objects", not only can students enrich their mathematical knowledge system and better grasp the application of "tons", but they can also deeply feel that in the material scarce ancient times, our ancestors were still able to create such accurate weighing methods, reflecting their intelligence and innovative spirit. This teaching method, which extends from the mathematical concept of "ton" to the historical story of "Cao Chong Weighing Elephants", can effectively enhance students' interest in mathematics, stimulate their curiosity and self-learning ability, and deepen their understanding of traditional Chinese culture while enhancing their mathematical abstraction and intuitive imagination abilities.

3. BASED ON THE REQUIREMENTS OF CORE COMPETENCIES, CARRY OUT TARGETED TEACHING

In educational practice, the integration of traditional culture plays a significant role in enhancing students' abstract thinking ability. Due to the limitations of primary school students' cognitive development stage, their logical thinking is still immature, and there are difficulties in understanding abstract mathematical concepts. Therefore, teachers should concretize and visualize mathematical knowledge to match students' cognitive level. By introducing examples closely related to daily life, it can promote students' rapid understanding and mastery of mathematical knowledge. In the continuous promotion of mathematics education, teachers should deeply explore the essence of traditional culture, carefully select teaching resources, and effectively use these resources to improve learning outcomes. Taking the mathematics course in the first grade of primary school as an example, when teaching the counting chapter, teachers can combine the ancient poem "Ode to the Mountain Village" to guide students to appreciate the numerical elements and establish correct mathematical cognition. Using multimedia courseware to display pictures and music can create a lively teaching atmosphere and deepen students' understanding of ancient poetry and mathematical knowledge. In addition, when teaching multiplication mnemonics, teachers can use the ancient poem "Staying at the Mountain Temple at Night" to let students practice multiplication mnemonics by calculating the number of words in the poem. Students will discover that each line consists of 5 words, for a total of 4 lines, and use the multiplication mnemonic of 5 to determine the total word count. This method not only allows students to feel the charm of ancient poetry, but also achieves the organic integration of mathematical knowledge and ancient poetry, improving teaching effectiveness.

On the other hand, the application of traditional culture is also of great significance in enhancing students' logical abilities. The cultivation of mathematical logic ability has a profound impact on personal growth, and educators should take corresponding responsibilities. Teachers should guide students scientifically and systematically to ensure a solid logical foundation is established in the early stages. However, the abstraction of mathematical content often leads to difficulties for students in the learning process. When the teaching content follows the main line, students find it difficult to effectively connect old and new knowledge, which affects their learning efficiency. To solve this problem, we can draw on the wisdom of Chinese culture, use cultural allusions to connect old and new knowledge, and optimize the teaching process. Taking the teaching of multiplication mnemonics as an example, simple memorization and memorization are difficult to deeply understand and apply. Teachers can explore mythological elements and combine them with mathematical knowledge to stimulate students' interest in learning and improve teaching efficiency. Specifically, teachers can use the role of Sun Wukong to teach. Sun Wukong stayed in the alchemy furnace for seventy-nine days and became the Fire Eye Golden Eye, capable of

seeing through all changes in the enemy. No matter how he was, no demon could escape Sun Wukong's gaze. Through this story, students can be exposed to the multiplication mnemonics of 7:49 and 3:21 in a short period of time.

4. CONCLUSION

Chinese traditional culture contains a profound and philosophical ideological system. Integrating it into primary school mathematics teaching not only helps to enhance students' sense of identity with local culture, but also promotes the significant improvement of students' core competencies such as mathematical abstraction, logical reasoning, and mathematical modeling through the deep integration of traditional culture and mathematical knowledge. Therefore, in primary school mathematics education, we should actively advocate and implement educational concepts with ethnic characteristics. To achieve this goal, flexibly utilizing mathematical stories for education and integrating them into diverse mathematical practice activities is undoubtedly an effective path.

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Author Profile

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