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Feasibility and Path Analysis of Integrating Excellent Chinese Traditions into Early Mathematics Education

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Abstract: Against the backdrop of accelerated globalization and cultural diversity, the education sector is facing the challenge of how to improve the quality of education while inheriting local culture. This article explores the feasibility and specific paths of integrating excellent traditional Chinese culture into early mathematics education. The article elaborates on the importance of early mathematics education for children's cognitive development, as well as the profound significance of inheriting excellent traditional Chinese culture. Furthermore, the feasibility of integrating traditional culture into early mathematics education was analyzed, pointing out that the rich mathematical resources in traditional culture and the high acceptance of traditional cultural elements by children provide a solid foundation for this integration. The specific path to achieve this integration was discussed in detail, including curriculum design, teaching methods, teacher training, and home school cooperation at four levels. Integrating excellent traditional Chinese culture into early mathematics education not only helps to develop children's mathematical thinking, but also enhances their sense of identity and pride in traditional culture.

Keywords: Excellent Chinese Traditions; Early Mathematics Education; Feasibility

Introduction

Early mathematics education plays an irreplaceable role in children's cognitive development, logical thinking cultivation, and other aspects. It lays a solid mathematical foundation for children's subsequent learning and life, influencing their problem-solving abilities and the formation of their thinking patterns [1]. At the same time, excellent traditional Chinese culture is a spiritual treasure of the Chinese nation, and inheriting excellent traditional culture is of great significance for maintaining national characteristics and enhancing cultural confidence. However, in the field of education, there has not been sufficient research on how to combine excellent traditional Chinese culture with early mathematics education. This integration not only enriches the connotation of early mathematics education, but also opens up new avenues for the inheritance of excellent traditional Chinese culture. Therefore, in-depth analysis of the feasibility and path of integrating excellent Chinese traditions into early mathematics education has important theoretical and practical significance.

1. The importance of early mathematics education

Early mathematics education refers to the mathematical enlightenment and basic education carried out in the early stages of children (usually referring to pre-school and lower primary school) [2]. This stage of education has a profound impact on children's cognitive development, logical thinking cultivation, and future academic achievements.

1.1 Cognitive development

Early mathematics education is crucial for children's cognitive development. Mathematical activities can promote the development of children's thinking ability, memory, and attention. By solving simple mathematical problems, children can learn how to organize information, perform logical reasoning, and make decisions. These cognitive skills are not only crucial in mathematics learning, but also serve as the foundation for other subjects and daily life.

1.2 Cultivation of logical thinking

The core of mathematics education lies in cultivating logical thinking ability. Through mathematical activities, children can learn how to recognize patterns, classify, compare, and sort. These activities help children develop a systematic way of thinking and improve their analytical and problem-solving abilities. Logical thinking is an essential skill in modern society, which has a significant impact on children's future academic and professional development.

1.3 The foundation of basic mathematical skills

Early mathematics education lays the foundation for children's mathematical skills, such as numbers, addition and subtraction, geometric shapes, and spatial perception. These basic skills are the foundation for subsequent mathematics learning and are crucial for children to smoothly enter higher-level mathematics learning. If children fail to master these basic skills in the early stages, they may encounter difficulties in subsequent learning, affecting their confidence and interest in learning.

1.4 Promote academic achievement

Research has shown that early mathematics education has a significant positive impact on children's academic achievement. Children who have early exposure to mathematics often exhibit higher mathematical abilities and better academic performance after entering primary school. This not only helps them achieve excellent results in mathematics, but also enhances their performance in other disciplines such as science, engineering, and technology.

2. The significance of inheriting excellent traditional Chinese culture

The inheritance of excellent traditional Chinese culture has profound significance in various aspects, including enhancing cultural identity and national pride, inheriting values and conducting moral education, providing historical reference and wisdom enlightenment, enriching the treasure trove of human culture, and stimulating innovation and creativity [3]. In modern society, it is necessary to attach importance to the inheritance of excellent traditional Chinese culture, so that it can radiate new vitality and vigor in contemporary society.

2.1 Cultural identity and national pride

Chinese excellent traditional culture is an important symbol of Chinese national identity. It carries the historical memory, values, and national spirit of the Chinese nation for thousands of years. Inheriting the excellent traditional Chinese culture helps people to deeply understand the roots and development of their own nation, thereby enhancing their sense of national pride. For example, when people learn about the great achievements of ancient China in philosophy (such as the Confucian "benevolence" thought), science and technology (such as the the Four Great Inventions), literature and art (such as Tang poetry and Song poetry), they will naturally have a feeling of respect and pride for their own national culture, which can closely unite all Chinese people.

2.2 Inheritance of values and moral education

The excellent traditional Chinese culture contains rich values and moral norms, such as integrity, friendliness, filial piety, and respect for teachers [4]. These values and moral norms are the cornerstone of building a harmonious society. By inheriting traditional culture, we can pass on these excellent values to future generations and provide them with moral education. Taking "filial piety" as an example, although some of the content of the "Twenty Four Filial Piety" in traditional stories needs to be re examined in modern society, the core idea of respecting elders and being grateful to parents conveyed in it still has positive educational significance and helps cultivate good moral qualities in the younger generation.

2.3 Historical reference and wisdom enlightenment

Traditional culture is the accumulation of history, which contains the experience and wisdom of ancient people in various aspects such as politics, economy, and social life. Inheriting excellent traditional Chinese culture can provide historical references for modern society. For example, ancient ideas on governing the country, such as the Legalist concept of the rule of law and the Taoist concept of governing by inaction, can to some extent provide a perspective for modern national governance; For example, ancient agricultural production experience, water conservancy engineering technology, etc. also have certain enlightening effects on today's agricultural development and infrastructure construction [5].

2.4 Inspire innovation and creativity

Traditional culture contains endless sources of creativity. Many modern innovations are based on reinterpreting and recreating tradi-

tional culture. For example, modern fashion design often draws on elements of traditional Chinese clothing, such as the cutting and embroidery patterns of qipao; Some anime works also draw inspiration from Chinese mythology and legends, such as the rare and exotic beasts in the Classic of Mountains and Seas. Inheriting excellent traditional Chinese culture can stimulate people's innovative thinking and creativity, injecting new vitality into the development of modern society.

The mind map for the inheritance of specific cultural values is shown in Figure 1.

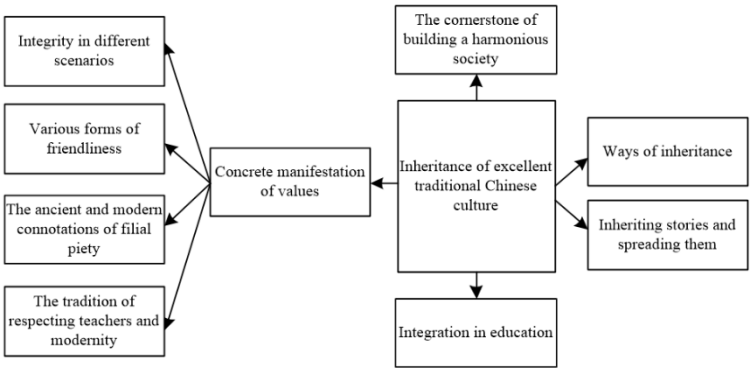

Fig 1 Mind map of cultural value inheritance

3. Feasibility of integrating excellent Chinese traditions into early mathematics education

From the perspectives of cultural resources, educational concepts, and the laws of children's cognitive development, it is feasible to integrate excellent Chinese traditions into early mathematics education.

Firstly, the excellent traditional Chinese culture contains abundant resources related to mathematics. Ancient mathematical works. After adaptation, they can be transformed into forms suitable for children, such as incorporating land area calculation problems into interesting story scenes to teach graphic area calculation methods. Traditional games such as tangram are composed of seven pieces that can be assembled into various shapes, which helps children understand geometric shapes, spatial perception, and graphic transformations. During the process of playing with them, they can intuitively feel the relationships between graphics and enhance their spatial imagination [6-7].

Secondly, the educational philosophy of excellent traditional Chinese culture is similar to early mathematics education. The heuristic teaching philosophy of traditional education. Teachers can guide children to think and ask questions, and provide inspiration when children encounter difficulties. Traditional culture emphasizes the cultivation of morality and comprehensive qualities, and early mathematics education not only imparts knowledge, but also includes the cultivation of patience, concentration, logical thinking ability, etc. It tells the story of ancient mathematicians who worked hard to study, such as the story of Zu Chongzhi calculating pi, which can inspire children to cultivate good qualities in mathematics learning.

Thirdly, the excellent traditional Chinese culture aligns well with the cognitive development laws of children. During early childhood, children exhibit a natural interest in stories and games. Therefore, myths, legends, and folk stories can serve as engaging vehicles for mathematics education. Furthermore, activities like paper cutting, which incorporate concepts such as graphical symmetry and equality, allow children to learn mathematical knowledge through hands-on practice. This approach aligns with the natural progression of cognitive development, from concrete understanding to Abstract comprehension.

4. The path of integrating excellent Chinese traditions into early mathematics education

4.1 Course design level

4.1.1 Develop specialized courses

We can develop school-based curriculum with the theme of traditional Chinese mathematical culture. For example, based on the ancient mathematical classic "Nine Chapters on Arithmetic", select the parts that are suitable for children to understand, such as simple arithmetic operations, geometric measurement, etc., and write specialized textbooks. Calculate the area of rectangles and squares as described in the

"Fangtian" chapter. These contents are related to children's graphic cognition and multiplication operations in basic mathematics learning. For example, when writing textbooks, one can first tell the story of ancient farmers cultivating square fields, leading to the need to calculate the area of the fields. Then, a detailed introduction will be given on how ancient people measured the length of a field using steps and converted it into numbers for area calculation, just like the saying "Fangtian Shu: Multiply the number of steps to obtain the product step". The textbook content can adopt a storytelling approach, integrating ancient mathematical problems into interesting story scenes, such as telling how ancient merchants used mathematical knowledge to calculate in the transaction process. This can enable children to understand ancient commercial culture while learning mathematical knowledge. The association between "Nine Chapters on Arithmetic" and children's mathematics learning and traditional cultural scenes is shown in Table 1.

Table 1 Association between "Nine Chapters on Arithmetic" and Children's Mathematics Learning and Traditional Cultural Scenarios

Content of "Nine Chapters on Arithmetic"	Corresponding content for children's mathematics learning	Examples of traditional cultural scenes integrated
Score calculation (such as regular score and general score)	Understanding the concept of simple fractions and comparing the size of fractions	In ancient times, when there were three cakes to be divided among four people, how many cakes each person could receive involved score calculation. By dividing the cakes, children could understand the meaning of scores
Calculation of geometric figure area (such as formula for rectangle and triangle area)	Fundamentals of calculating the area of rectangles and triangles, understanding the unit of area	In ancient land allocation scenarios, a rectangular piece of land is 5 steps long and 3 steps wide. Calculating its area is like ancient farmers calculating the size of their cultivated land, allowing children to understand the application of area calculation in practical life
Proportional issues (such as proportional distribution)	Simple concept of proportion, such as a 1:2 ratio relationship	The distribution of goods in ancient commerce, for example, a batch of goods was divided into two merchants in a ratio of 2:3, and the quantity of goods allocated to each merchant was calculated to help children understand the significance of proportion in distribution
The concept of positive and negative numbers	Preliminary understanding of positive and negative numbers, such as the positive and negative numbers on a thermometer	In ancient accounting scenarios, income was recorded as positive and expenses as negative. For example, the monthly income and expenditure of a family, with an income of 10 taels of silver recorded as+10 and an expenditure of 5 taels of silver recorded as -5, helps children understand that positive and negative numbers represent quantities with opposite meanings

Design a curriculum that integrates traditional games with mathematics. If a tangram course is offered, at the beginning of the course, children should be introduced to the historical origins of tangram, its transmission in ancient Chinese folk culture, and how ancient people used tangram to entertain and inspire intelligence. In the teaching process, first teach children to recognize the seven small boards of the tangram, and what shapes they are, such as triangles, squares, and parallelograms. Then guide children to use tangram to assemble simple shapes, such as squares, rectangles, etc. In this process, children are allowed to experience the combination relationship between different shapes through practical operations, such as two isosceles right angled triangles being able to form a square. Next, we will delve into mathematical concepts. After children are proficient in piecing together various shapes, guide them to calculate the area of the shapes they are piecing together. For example, the area of a large triangle is composed of two small triangles. By measuring the side lengths of the small triangles, the area can be calculated to understand the combination relationship of the graphic area. At the end of the course, children can be encouraged to unleash their creativity by designing patterns using tangram puzzles and sharing their design ideas with other classmates. Through this process, they can further consolidate their understanding of mathematical concepts such as shape and area.

4.1.2 Integrate existing courses

Integrating traditional cultural elements into existing mathematics textbooks. For example, in elementary school mathematics textbooks, when teaching numbers 1-10, one can introduce counting in the narration or expanded knowledge section of the textbook. During classroom teaching, teachers can encourage students to use sticks to imitate counting sticks to represent numbers, deepening their understanding of numbers and also allowing them to learn about the unique counting methods of ancient China. When teaching triangles, you can show pictures of triangular roofs in the architecture of the Forbidden City and ask students why the roofs are designed as triangles? Guide students to think from a stability perspective. Then explain in detail the important role of the stability of triangles in architecture, such as the three sides of a triangle supporting each other and being able to withstand greater weight. When teaching squares and rectangles, we can combine the square courtyard of the Forbidden City for explanation. Let students observe the shape of the courtyard, count the number of sides, meas-

ure the side length, etc. At the same time, it can introduce the symmetrical beauty of square structures in ancient architecture, as well as the important significance of squares in architectural layout, such as reflecting the ancient Chinese concept of symmetry.

4.2 At the level of teaching methods

4.2.1 Situational teaching method

Create traditional cultural contexts for mathematics teaching. explain the multiplication mnemonic in combination with ancient life scenes. For example, the teacher said, 'I have a farmer with three fields and five rice plants per acre. How many rice plants are planted in total?' Guiding children to think about this is a 3 by 5 question, the answer is 15 plants. Sir, you can write down the formula "3 × 5=15" on the blackboard (or use an ancient bamboo slip style teaching aid) and explain in detail the meaning of multiplication, which is adding several identical numbers together. Next, the teacher can have the children act as farmers and calculators in groups and practice multiplication mnemonics in similar scenarios. After children become proficient in the application of multiplication mnemonics in this ancient context, teachers can ask some open-ended questions. If the farmer's field is increased to six pieces and seven rice plants are planted per mu, how many rice plants will be planted? "Let children use the multiplication mnemonics they have learned to solve more complex problems. Finally, the teacher can allow children to create ancient life scenes on their own and use multiplication formulas to calculate, sharing them with other classmates.

4.2.2 Practical teaching method

Carry out traditional handicraft activities to learn mathematics. For example, for Paper Cuttings activities, teachers should prepare the materials needed for Paper Cuttings, such as various colors of paper, scissors, pencils, etc. At the same time, the teacher makes some examples of Paper Cuttings to show different Paper Cuttings patterns, such as symmetrical flowers, isometric geometric figures, etc. The teacher also needs to prepare an enlarged version of the Paper Cuttings operation and the corresponding table involving mathematical concepts for display in the teaching process. The teacher first shows a symmetrical Paper Cuttings pattern.,Then，organize traditional game competitions. For example, holding a tangram puzzle competition, teachers prepare a sufficient number of tangram puzzles to ensure that each participating child has a set. At the same time, teachers will create exhibition boards explaining the competition rules, including competition time, grading standards, etc. Teachers also need to prepare some materials about the cultural connotations of tangram, such as the historical development of tangram and its different applications in ancient and modern times. The teacher introduces the competition rules to the children. The competition is divided into individual matches and group matches. In the individual competition, each child uses a tangram to create the corresponding shape based on a given question within a specified time frame (e.g. 10 minutes). In the group stage, children work together in groups to complete a complex task, such as piecing together the outline of an ancient building. The scoring criteria include accuracy, speed, creativity, and other aspects of the puzzle. Before the competition starts, the teacher introduces the cultural connotations of tangram to the children. Teachers can talk about the origin of tangram in ancient China. It was originally circulated among the people as a puzzle toy, and ancient people used it to exercise their thinking ability and spatial imagination. At the same time, tangram has also spread abroad and gained popularity among people around the world, reflecting the charm of traditional Chinese culture. In the individual competition, under the command of the teacher, the children began to independently puzzle. The teacher observes each child's operation process beside them, recording their puzzle time and accuracy. In the group competition, children in the group work together, some are responsible for finding suitable tangram blocks, while others are responsible for conceptualizing the overall shape. The teacher observes the cooperation of the group and encourages children to actively communicate and collaborate. After the competition, the teacher summarized the competition. Firstly, the competition results will be announced, and the winning individuals and groups will be commended and rewarded. Then, the teacher evaluates the children's performance in the competition. For individual competitions, teachers can point out the strengths and weaknesses of each child in the puzzle process Finally, the teacher emphasizes once again the mathematical knowledge involved in tangram puzzles, such as the combination, transformation, and area relationships of geometric shapes, to further consolidate children's understanding of these mathematical knowledge through practice.

4.3 Teacher training level

Strengthen teachers' learning of excellent traditional Chinese culture. Schools can organize teachers to participate in traditional culture training courses to train them on how to deeply explore mathematical knowledge in traditional handicraft production. Take Paper Cuttings as an example, train teachers to recognize mathematical concepts such as symmetry, bisection and angle involved in the process of Paper Cuttings. Teachers should learn to analyze these mathematical knowledge from simple Paper Cuttings patterns, such as a symmetrical Paper Cuttings butterfly pattern. Teachers should be able to accurately point out the position of the symmetry axis, as well as the relationship between the shape and angle of the butterfly wings. Train teachers on how to discover unique mathematical knowledge in different handicraft productions, such as embroidery, weaving, etc. For example, in embroidery, the layout of patterns involves the combination and proportional relationship of geometric shapes; In weaving, the weaving pattern is related to the sequence. Teachers need to master the characteristics of these mathematical knowledge in order to guide children to discover in teaching. In traditional handicraft production teaching, train teachers on how to guide children to combine mathematical knowledge with handicraft production. For example, in the teaching of Paper Cuttings, when children want to cut a specific shape, teachers should learn to guide children to think about how to use mathematical knowledge to achieve. If the child wants to cut a hexagon, the teacher can guide the child to think about mathematical knowledge such as the internal angles and the relationship between sides of the hexagon, and then conduct Paper Cuttings. How to train teachers to guide children in mathematical thinking during the process of handicraft production. Conduct training on teaching methods. Train teachers on how to analyze mathematical knowledge in traditional game competitions. Taking the tangram puzzle competition as an example, teachers need to have a deep understanding of mathematical knowledge such as geometric shape combinations, transformations, and area relationships involved in tangram puzzles. Teachers should be able to accurately explain to children why different shapes of tangram can be combined into various shapes, as well as how the area remains unchanged during the combination process and other mathematical principles. For other traditional games such as Jiuhuanlian and Huarongdao, training teachers need to analyze the mathematical logical relationships involved. Including the establishment of reasonable competition rules. Teachers should learn to formulate rules based on teaching objectives and the characteristics of children. During the competition, the training teacher should master guidance skills. For example, in a tangram puzzle competition, when children encounter difficulties, teachers should learn to use inspiring language to guide their thinking. For example, 'Where can you place this triangular block to form the shape you want?' Through such guidance, it helps children overcome difficulties and also enables them to better understand mathematical knowledge in competitions. The specific teaching methods, key points for integrating traditional culture, and examples of training objectives are shown in Table 2.

Table 2 Example table of teaching methods and key points of traditional culture integration and training objectives

Teaching method	Key points for integrating traditional culture	Example of Training Objectives
Teaching method	Explore mathematical stories and anecdotes of mathematical celebrities in traditional culture for knowledge explanation. For example, telling the story of Zu Chongzhi calculating pi to introduce the concept of pi.	Teachers can proficiently use at least 5 traditional cultural stories to assist in explaining mathematical concepts, enhancing students' interest and understanding of mathematical knowledge.
Discussion method	Discuss mathematical problems in traditional culture, such as the mathematical mysteries in ancient architecture (such as the relationship between acoustics and mathematics in the echo wall of the Temple of Heaven).	Teachers can guide students to engage in effective discussions around mathematical topics in traditional culture, with at least three guiding questions raised during each discussion, promoting students' mathematical thinking and exploration ability of traditional culture.
Demonstration method	Use traditional teaching aids (such as arithmetic) or traditional skills (such as Paper Cuttings to show symmetrical figures) to demonstrate mathematical concepts.	Teachers can proficiently operate 2-3 traditional teaching aids or skills to demonstrate mathematics, allowing students to intuitively feel the connection between mathematics and traditional culture, and enhancing teaching effectiveness.
Exploring hair	Guide students to explore the mathematical principles behind traditional cultural phenomena, such as the mathematical laws in ancient calendars.	Teachers can design at least three exploratory mathematical learning tasks based on traditional culture, cultivate students' independent thinking and problem-solving abilities, and enhance their enthusiasm for exploring mathematical elements in traditional culture.

4.4 At the level of cooperation between family and school

4.4.1 Family aspect

The integration of traditional culture and mathematics education in families can be approached from two aspects: the development of traditional mathematics games and mathematics education in daily life.

In the development of traditional math games in the family, the game preparation stage is very important. If playing the 24 o'clock game with a calculation chip, parents can work with their children to make a calculation chip. First, collect materials such as small wooden sticks or bamboo sticks, and then use ancient calculation chip representation methods to make different lengths and shapes to represent different numbers. For example, one small wooden stick represents 1, and two parallel small wooden sticks represent 2. They can also purchase calculation chip teaching aids online; For tangram games, it is necessary to prepare tangram boards, which are made of high-quality wood and have a comfortable feel for operation. You can also prepare puzzle examples. In terms of game rule explanation and guidance, when playing the 24 point game, the basic rules should be explained to the child first, such as drawing cards or rolling dice to obtain 4 numbers, using four to calculate 24, and teaching the child to lay out numbers before starting the game when using chips to represent numbers. During the game, guide the child to think about combinations of operations, such as drawing 3, 4, 6, and 8, and guide them to find combinations close to 24 through multiplication; The tangram game should explain to children the components of the seven piece board, and inform them that the game rules are to puzzle according to the picture or creatively puzzle. When children puzzle, they should be guided to observe the shape and angle relationship of the shapes. For example, when piecing together triangles, they can be guided to think about the angle relationship between the size of the triangles.

In terms of mathematics education in daily life, guiding visitors to ancient buildings is a great way. When preparing for the visit, parents can let their children learn about ancient architectural types such as palaces, temples, and residential buildings by reading books or watching documentaries. At the same time, they can ask questions about the arrangement of columns in ancient buildings for their children to explore with questions. During the visit, parents guide their children to observe the mathematical elements in the building from multiple perspectives. For the arrangement pattern of columns, they ask the children to count the number of columns, observe whether the spacing is equal, and explain the concepts of symmetry and equal division of this arrangement in the building structure; For the geometric shape of the roof, ask children to describe the shape such as the roof of a pavilion or a gable, and then analyze geometric knowledge such as slope angles and triangular structures. After the visit, parents and children summarize the mathematical elements in ancient architecture together, ask the children to draw ancient architectural drawings and annotate the mathematical elements, and then discuss the application of these elements in modern architecture to broaden their thinking.

4.4.2 Regarding schools

There is a lot of work that schools can do in terms of integrating traditional culture with mathematics education, promoting and communicating in parent teacher conferences, and providing training and guidance for parent schools.

In terms of promotion and communication at parent teacher conferences, schools should carefully prepare promotional materials including PPTs and brochures. The PPT covers examples of mathematical elements in traditional culture, such as interesting questions in ancient mathematical works and the beauty of mathematics in traditional art; The promotional brochure provides a detailed introduction to the importance of integrating traditional culture with mathematics education, such as increasing children's interest in mathematics and cultivating national pride. It also lists activities that can be jointly carried out by families and schools, such as traditional mathematics game play and daily life mathematics education scenarios. In terms of the design of the parent teacher conference process, mathematics teachers or education experts first give a keynote speech, which includes the background, significance, and school teaching plan of the integration of traditional culture and mathematics education, such as introducing relevant mathematics teaching activities for this semester such as the Traditional Mathematics Culture Festival. Then, a PPT is played to showcase successful teaching cases, such as a class where students' interest in mathematics has significantly increased after learning ancient mathematics history. After that, time is set aside for parents to ask questions, exchange ideas, and answer questions about conducting relevant education at home. Finally, promotional brochures are distributed to encourage parents to participate in their children's mathematics learning.

5. Conclusion

In summary, the integration of excellent Chinese traditions into early mathematics education has high feasibility and profound significance. By exploring mathematical elements in traditional culture, integrating traditional cultural values into mathematical education concepts, innovating teaching methods, and optimizing curriculum design, the organic integration of the two can be achieved. This not only helps to improve the quality and attractiveness of early mathematics education, allowing children to experience the charm of traditional culture in the process of mathematics learning, but also effectively inherits and promotes excellent traditional Chinese culture, making traditional culture shine with new vitality and vigor in the modern education system. In future educational practices, educators should actively explore and promote this integration model, contributing to the comprehensive development of children and the inheritance of national culture.

References

[1]Yi S .The Meaning and Needs of Early Childhood Mathematics Education Recognized by Mothers of 5-Year-Old Children[J].Korean Association For Learner-Centered Curriculum And Instruction, 2023, 70(1):1-13.

[2]Feng Y , Liu Q .The Promotion and Dissemination of Chinese Excellent Traditional Culture in English Teaching in Colleges and Universities under the Background of Informatization[J].Applied Mathematics and Nonlinear Sciences, 2024, 9(1).

[3]Mackay K L , Mcmillan B G , Young T A ,et al.Mathematics Content in Early Childhood Classroom Libraries: Alignment with Common Core Mathematics Standards[J].Early Childhood Education Journal, 2024, 52(7):1325-1337.

[4]Hawes Z , Merkley R , Stager C L ,et al.Integrating numerical cognition research and mathematics education to strengthen the teaching and learning of early number[J].British Journal of Educational Psychology, 2021, 12(4):1-10.

[5]Williamson C A .Pre-service Early Childhood Teachers' Attitude Towards Mathematics: A Jamaican Inquiry[J].Psychology Research, 2021, 11(1):10-15.

[6]Can D , Durmaz B .An Analysis of Teachers' Beliefs About the Integration of Children's Literature into the Mathematics Education[J].International Journal of Science and Mathematics Education, 2023, 21(2):489-512.

[7]Groth R E , Bergner J A , Austin J ,et al.Undergraduate Research in Mathematics Education: Using Qualitative Data About Children's Learning to Make Decisions About Teaching[J].Mathematics Teacher Educator, 2020, 5(2):1-9.

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